



Middletown Road/Billingsley Road Intersection Improvements

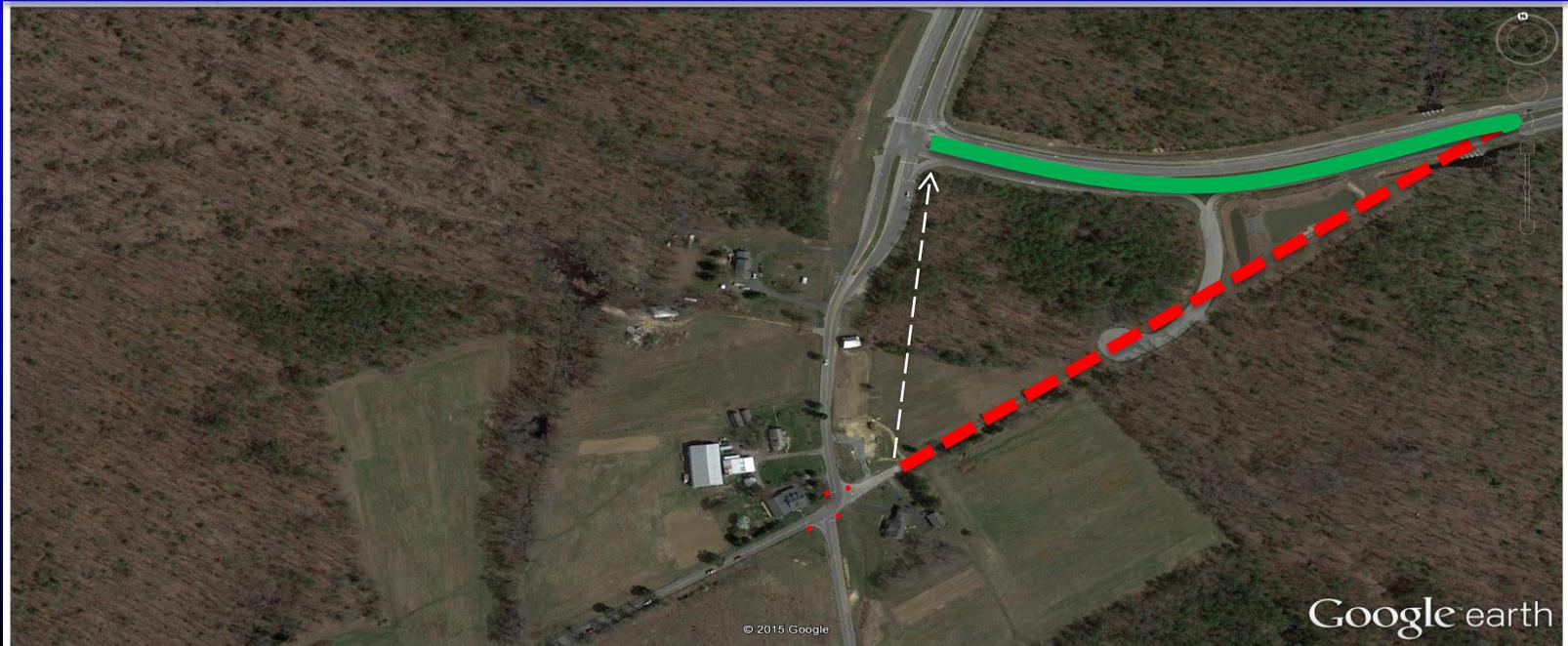
PROJECT STATUS UPDATE

September 2, 2016

Middletown Road/Billingsley Road Intersection Improvements

PROJECT BACKGROUND

As part of the construction of Phase 4B of the Cross County Connector roadway, the westbound approach to the intersection of Middletown Road and Billingsley Road was relocated north to a new signalized intersection, creating the need to make the original intersection a 4-way stop-controlled intersection.



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PROJECT BACKGROUND

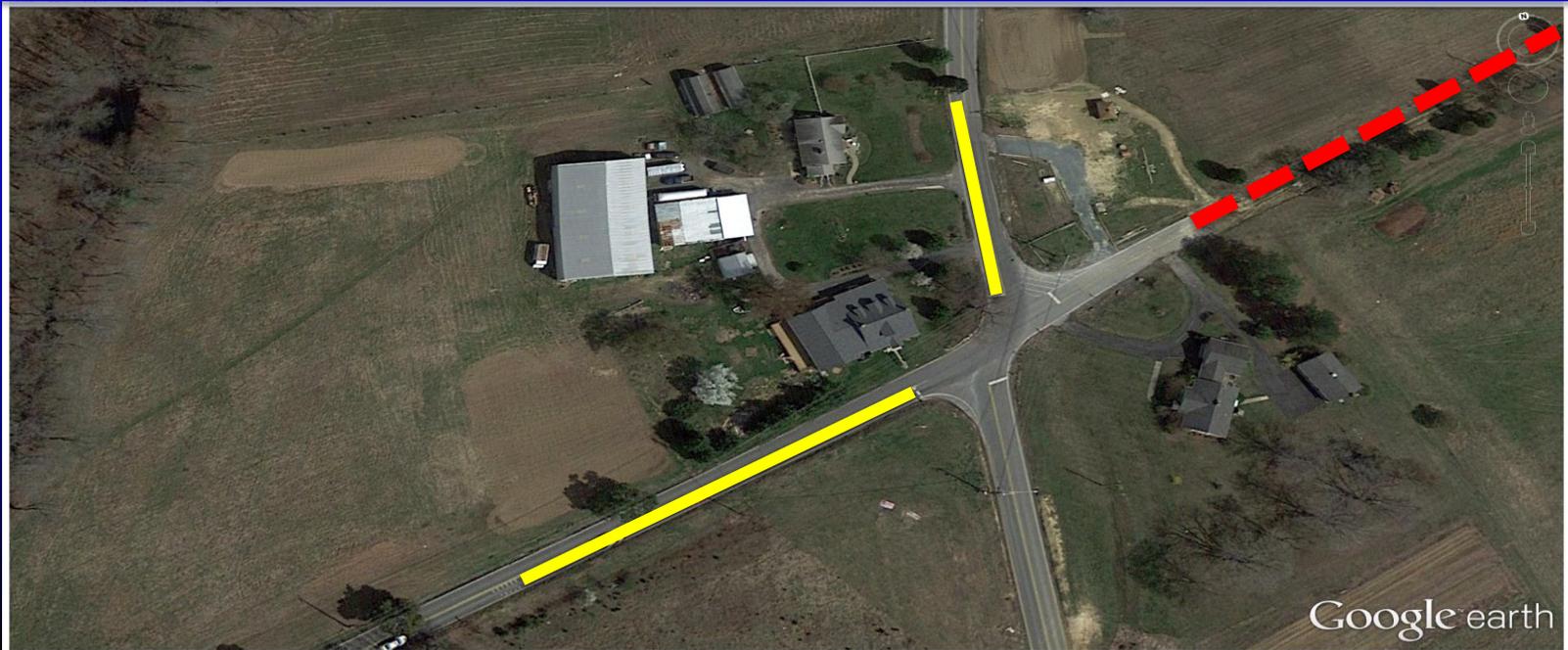
Current 4-Way Stop Controlled Intersection



Middletown Road/Billingsley Road Intersection Improvements

PROJECT BACKGROUND

During peak hours, the intersection experiences significant vehicular back-ups and delays in the Billingsley Road eastbound approach lane and in the Middletown Road southbound approach lane.



Middletown Road/Billingsley Road Intersection Improvements

PROJECT OVERVIEW

Purpose/Goal:

To lessen the peak-hour traffic congestion, improve safety, and construct intersection improvements that can address future needs.

Solution: Two (2) Alternatives

- (1) Design and construct a closed section urban double lane roundabout to allow free flow of traffic at reduced speeds, which would improve the congestion experienced during morning and evening peak hour traffic periods.
- (2) Design and construct a new signalized intersection with appropriate left and right turn lanes, acceleration lanes, and associated stormwater management improvements.

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ROUNDAABOUT ALTERNATIVE

Scope of Work

- Design a 3-leg urban two lane roundabout.
- Design with two (2) lanes to accommodate future needs and extensions of the Middletown Road four lane divided roadway.
- Incorporate turning movements for WB 67 and smaller design vehicles (semi-trailers, fire trucks, school buses).
- Include curbing, raised splitter islands and central island, truck aprons, landscaping, overhead street lighting, and consideration for hiker/biker facilities and crossings.

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ROUNDAABOUT ALTERNATIVE



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ROUNDAABOUT ALTERNATIVE

Benefits

▪ Traffic Flow

- A modern roundabout is a traffic control device with the **primary** function of controlling traffic movements through an intersection.
- Roundabouts generally reduce delays and improve traffic flow by promoting a continuous flow of traffic, which allows the intersection to handle more traffic in the same amount of time.
- Studies have proven that the roundabout is the most efficient traffic control device that exists today, based on overall vehicle delay and queue length (number of vehicles backed up).

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ROUNDAABOUT ALTERNATIVE

Benefits

- Environmental/Energy
 - Vehicles operating in a roundabout result in lower environmental impacts by keeping traffic moving at a more consistent lower speed and reducing idling time.
 - Shorter delays and “rolling” approach to roundabouts generally reduce fuel and energy consumption, greenhouse gas emissions, the carbon footprint, as well as a reduction in noise to the surrounding community.

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ROUNDAABOUT ALTERNATIVE

Benefits

- **Safety**
 - **The modern roundabout is the safest form of intersection control available. This fact has been verified worldwide and in the United States by several recent studies of intersection safety.**
 - **The combination of lower speeds, no light to beat, and one-direction of travel improve safety in and through the intersection.**

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ROUNDAABOUT ALTERNATIVE

Benefits

▪ Safety

- In a study by the Insurance Institute for Highway Safety, roundabouts reduced injury crashes at intersections where stop signs or signals were previously used for traffic control. The study showed that roundabouts typically achieve:
 - 37 percent reduction in overall collisions
 - 75 percent reduction in injury collisions
 - 90 percent reduction in fatality collisions
 - 40 percent reduction in pedestrian collisions

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ROUNABOUT ALTERNATIVE

Project Status

- Project Initiated: Effective July 1, 2012 (FY13 Budget)
- Budget: \$603,000 (FY13), \$487,000 (FY14), \$487,000 (FY15);
Total = \$1,577,000
- Advertised for Design: December 21, 2012
- Award of Design Contract: April 18, 2013 (\$177,296)
- Funding Removal: Via adoption of FY15 CIP Budget (6/10/14)
- \$249K was left in the budget to complete design (95% complete)

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ROUNDBABOUT BUDGET & LIFE CYCLE COSTS

I. Initial Costs

Design \$ 177,000

Construction \$ 2,400,000 (bid received)

Land Acquisition \$ 75,000

II. O&M Costs (30 yrs) \$ 90,000

TOTALS \$ 2,742,000

Middletown Road/Billingsley Road Intersection Improvements Summary/Conclusion

SUMMARY/CONCLUSION

The choice of a traffic signal vs. a roundabout depends largely on the specific application. A traffic signal offers an initial lower cost solution to addressing traffic congestion, but comes with the highest rate of injury crashes when compared to a 4-way stop and a roundabout.

A roundabout provides a better long term safety solution and optimal congestion relief, but at a cost well in excess of the next best solution, a traffic signal.