

CDTC/CDRPC TECHNICAL ASSISTANCE PROGRAM

TECHNICAL MEMORANDUM

EVALUATING PREVIOUSLY DEVELOPED TRANSPORTATION ALTERNATIVES FOR THE NY 50/JONES ROAD AREA IN THE TOWN OF WILTON

August 2019

BACKGROUND

The Town of Wilton's adopted Comprehensive Plan noted that an increase in average weekday traffic, especially during peak travel periods, is a growing concern for residents of the Town. The Plan clearly indicated that continued commercial and residential development throughout the Town is not only expected to increase the number of car and truck trips on roadways serving the Town, but will also increase the demand for new conflict-prone intersections and driveways.

The Comprehensive Plan identified NY 50 (Route 50) east of the Northway as a high priority corridor. Recent residential proposals in the Putnam Lane area of the Town would add more than 250 single-family homes, impacting NY 50 and its intersections with Jones Road, Ingersoll Road, and Old Gick Road. In response, the Town commissioned a traffic assessment that evaluated the traffic impact of this development, and identified and evaluated the ability of several different intersection alternatives to mitigate the traffic generated by the proposed and other speculative development in the town.

Town planning staff requested help under the joint CDTC / CDRPC Technical Assistance Program to review GPI's assessment with an eye toward confirming their planning assumptions and findings, and to provide guidance on developing additional alternatives and mitigation cost approach to help with implementation.

PURPOSE OF CDTC'S TECHNICAL ASSISTANCE EFFORT

CDTC will work with the Town – and its engineer, VHB – to review the traffic evaluation completed by GPI in March, 2018, to confirm the following:

1. That the approach is consistent with CDTC's policies and practices.
2. The reasonableness of the study's alternatives to mitigate the impact of the development proposals currently on the table. CDTC will also evaluate the impacts of other possible development in the town within the framework of CDRPC land use forecasts.
3. Shorter-term, less costly actions
4. The ability of these alternatives to improve safety
5. Develop a preliminary version of CDTC's mitigation cost approach as a possible way to help finance improvements

CONSISTENCY WITH CDTC POLICIES & PRINCIPLES

The traffic engineering approach used by GPI in developing alternative intersection treatments is only partially compliant with CDTC planning policies and principles. New Visions 2040 – the region's long-

range transportation plan – encourages transportation investment that is based on a complete streets framework which supports the convenient and safe travel of all people of all ages and abilities. New York’s complete streets policy described in New York’s Complete Streets Act signed into law on August 15, 2011 states the same principle. The NYSDOT Design Manual and other transportation planning and design resources encourage designing for non-auto based transportation alternatives, including the right-sizing of roadways instead of expanding road capacity just for automobiles and trucks. While the GPI study offered alternatives that avoided or minimized expanding the capacity of Route 50 intersections, it did not integrate pedestrian or bicycle features into the designs. As Wilton continues to develop over the next 10-20 years, creating a safe and convenient walkable environment, especially along Route 50, will be critical to making the Town an attractive community – a goal clearly expressed in the Town’s Comprehensive Plan.

CONFIRMATION OF TRAFFIC FORECASTS

Predicting future traffic is difficult, especially in high growth areas.

GPI developed traffic forecasts using the traditional traffic engineering approach. The approach involved using accepted traffic engineering tools – ITE to calculate trip generation for the proposed development, comprehensive traffic count inventory of study area intersections and traffic observations to identify a trip distribution pattern, and a micro-simulation model to assign trips to the roadway network. While an adequate tool for measuring the impact of one or two local developments in stable growth areas, the approach does not capture the global traffic impact of town-wide, county-wide, and regional development for a popular town like Wilton.

Regional travel demand models are the best way for forecasting over long timeframes, because models are developed in conjunction with land use plans. In order to capture the impact of all expected growth in the Route 50 corridor, CDTC evaluated the impact of continued development using CDTC’s STEP Model. The Systematic Traffic Evaluation and Planning (STEP) Model is a travel demand model which utilizes VISUM software. The simulation of travel is based on the premise that the magnitude and pattern of travel is a stable function of the characteristics of the land use pattern and of the transportation system. In travel simulation modeling, those aspects of land use development and of the regional transportation system demand are identified

The findings of CDTC’s STEP model assessment:

- *Land Use:* According to Capital District Regional Planning Commission (CDRPC) and the US Census Bureau, there are roughly 7,100 households and 5,414 jobs located in the Town of Wilton. The proposed housing development will add another 250 households. According to CDRPC, the town will be home to another 995 households and 192 jobs by 2030. The Forest Grove development represents roughly 25 percent of total future household growth in the Town. Table 1 below shows background growth rate of the NY 50 corridor based on CDRPC forecasts. Table 2 below shows the distribution of growth in population, households, and employment by geographic area. Map 1 shows the location of Transportation Analysis Zones (TAZs) in the Town of Wilton.

Table 1:

Background Growth Rate for the NY 50 Corridor Based on a Review of Adopted CDRPC Growth Forecasts and Changes in Traffic Since 1990

Time Period	Annual Percentage Change in Traffic	Household Change
Historic 1990-2000	3.3%	3.0%
Historic 2000-2010	2.2%	4.0%
Actual Recent 2014-2017	1.4%	1.3%
GPI Study Background	0.5%	-
CDTC STEP Model Future growth 2018-2030	0.4%	0.8%

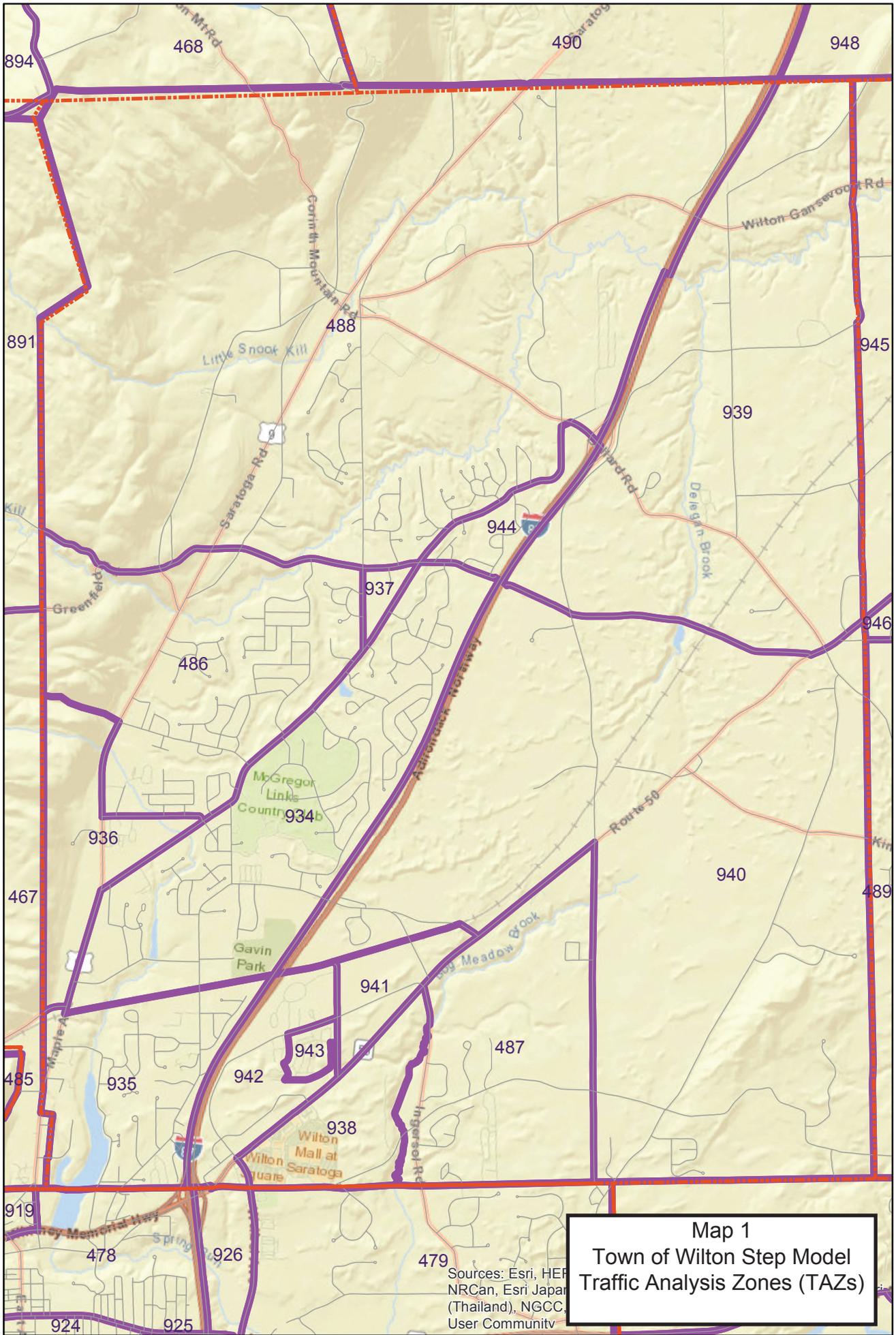
Note: Historic growth in traffic correlates fairly well with household growth in the Town since 1990. According to CDRPC, household growth in the late nineties and early 2000's was strong, increasing annually by 3.3 % and 2.2% respectively. Since 2014 the data suggests that growth in households has slowed.

Table 2:

Expected Change in Population, Households and Employment in the Town of Wilton by TAZ - 2018-2030

TAZ	Name	Population Growth 18-30	Household Growth 18-30	Employment Growth 18-30
486	Wilton	448	213	10
487	Wilton	75	36	2
488	Wilton	417	203	25
934	Wilton	219	92	11
935	Wilton	221	98	16
936	Wilton	98	62	4
937	Wilton	16	6	0
938	Wilton	1	-	43
939	Wilton	102	47	5
940	Wilton	203	85	5
941	Wilton	9	5	1
942	Wilton	125	86	66
943	Wilton	80	33	0
944	Wilton	76	29	3
		2,090	995	192

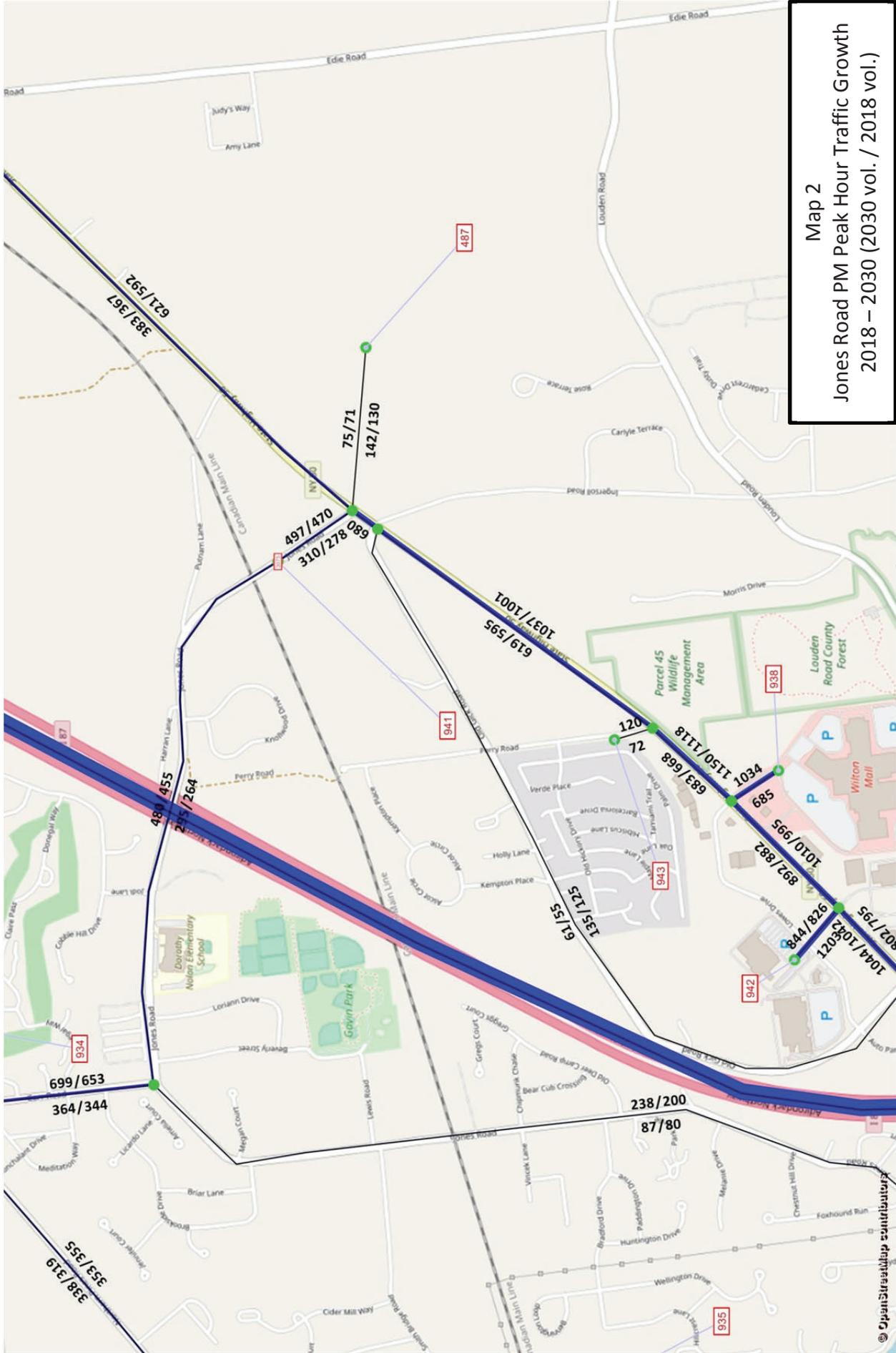
Note: This table does not reflect changes beyond the CDRPC forecast (i.e. the proposed Forest Grove Subdivision)



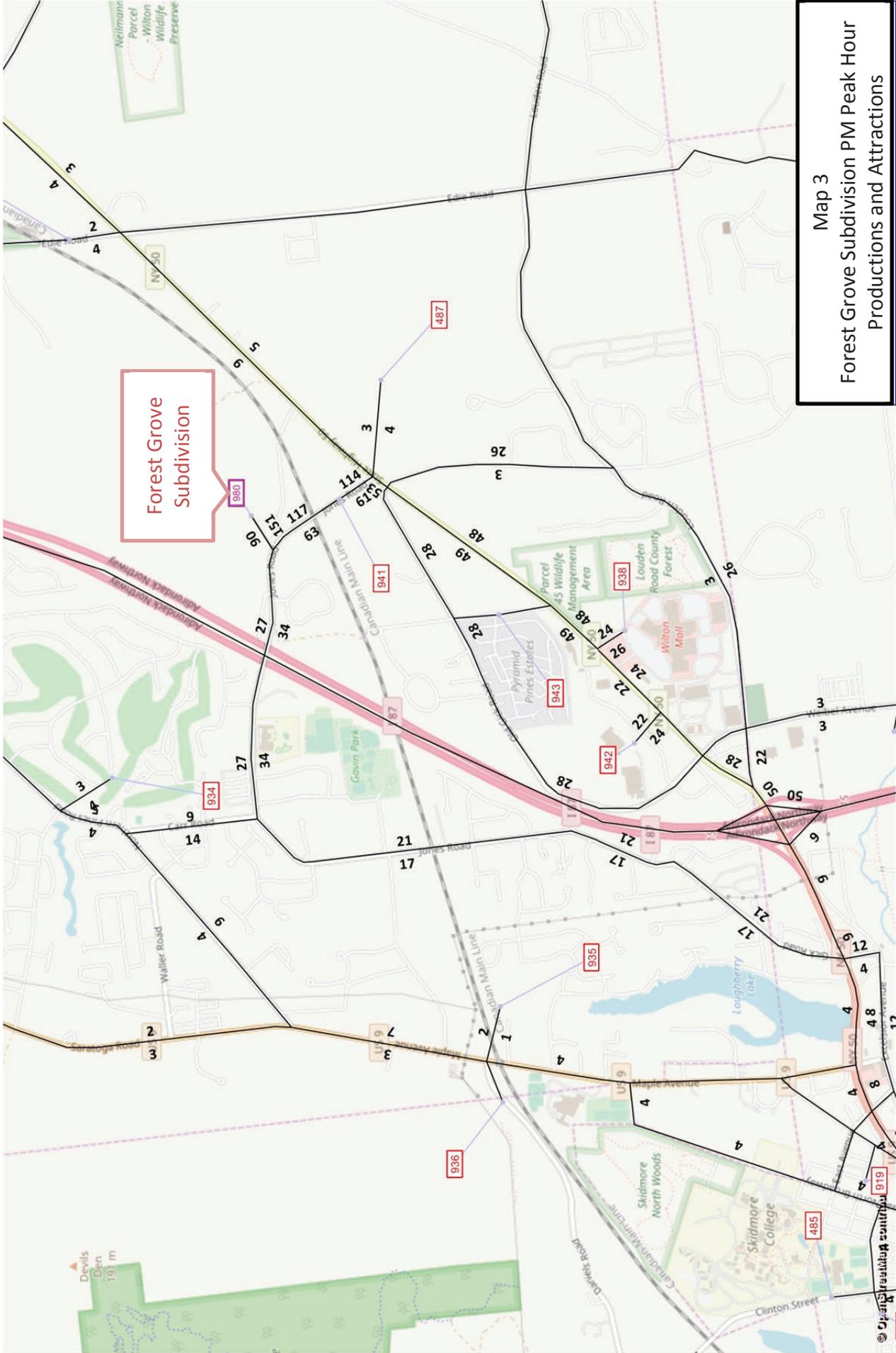
Map 1
 Town of Wilton Step Model
 Traffic Analysis Zones (TAZs)

Sources: Esri, HERE, NRCAN, Esri Japan (Thailand), NGCC, User Community

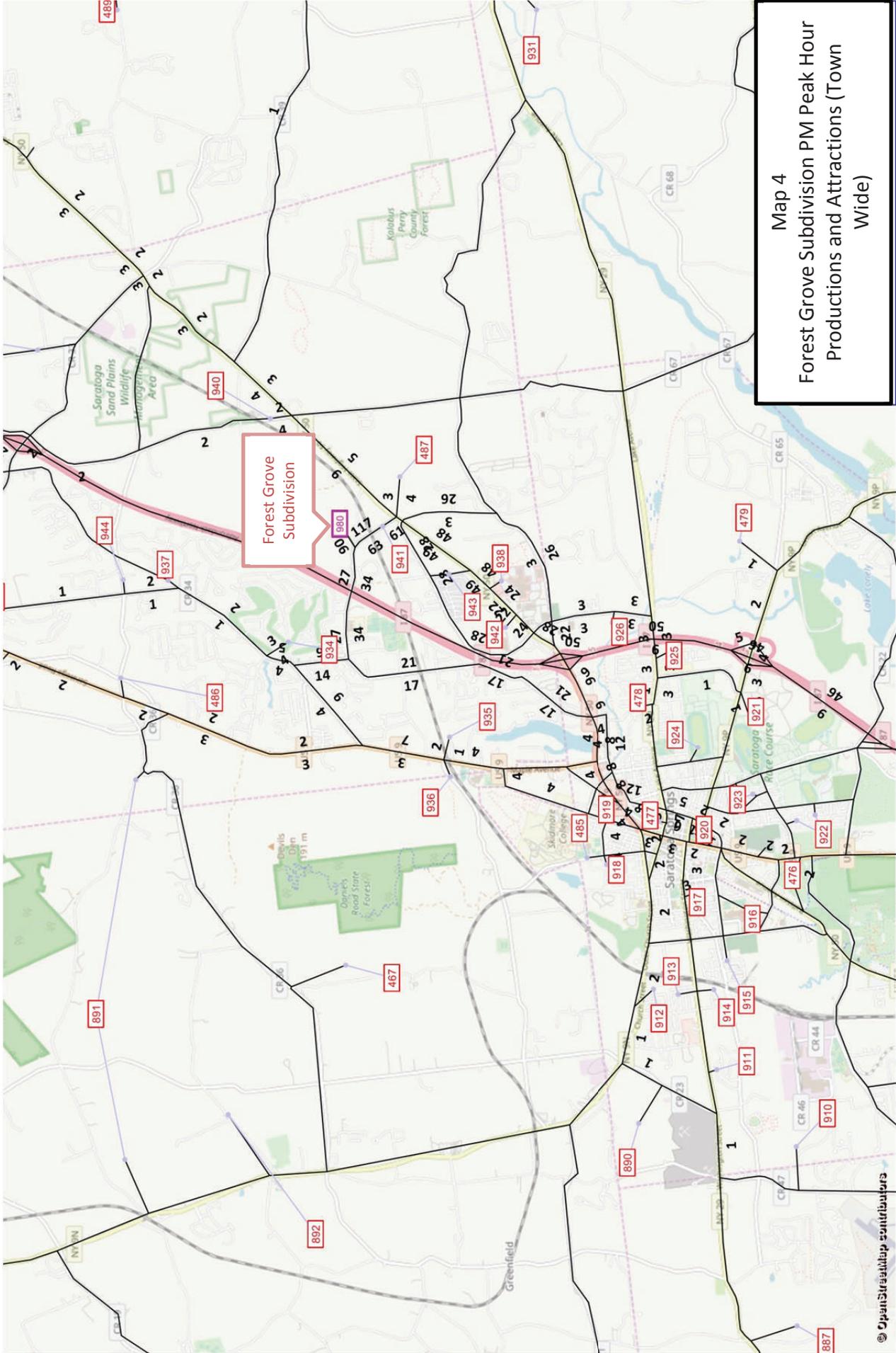
- *Travel:* Development in the Town of Wilton currently generates about 8,300 vehicle trips during the afternoon peak hour. (By comparison, the town of Clifton Park currently generates more than 18,000 vehicle trips during the afternoon peak travel hour). Under CDRPC's adopted 2030 land use forecasts, travel in the town will increase by 14-18 percent, generating another 1,145 peak hour vehicle trips. The Forest Grove development by itself would represent about 21 percent of new 2030 peak hour travel.
- *Trip distribution:* Based on an engineering analysis of current traffic patterns generated by nearby residential developments and on traffic traveling through Route 50 and Jones Road intersections, GPI estimated that roughly 60-70 percent of trips generated by the proposed housing development would pass through the Route 50/Jones Road/Old Gick Road intersections. CDTC's STEP model confirms about the same pattern, with about 70-75 percent of all trips using Route 50/Jones Road to access the development.
- *Trip Assignment:* Maps 2-4 show the total PM peak hour traffic growth in the Town of Wilton from 2018-2030 and the Forest Grove subdivision peak hour traffic demand for the area generated by CDTC's STEP model. (STEP model assigns future travel to the travel paths used for the base year simulation, then adjusts accordingly using calibration factors that were calculated for the base year simulation. The result is a measure of traffic demand for each roadway segment and intersection, constrained by the facility's capacity). Compared to GPI's analysis, STEP model demand shows slightly higher demand on some roadway links. In CDTC's judgment, there isn't a compelling reason to recalculate GPI's intersection highway capacity analysis at this time because of these relatively small differences in intersection demand.
- *Highway Capacity Analysis:* STEP model demonstrates that Route 50, inclusive of the Jones Road and Old Gick Road intersections, currently operates under acceptable travel conditions during the entire day. CDTC's analysis shows that under future travel conditions Route 50 would continue to operate well (not exceeding its one-directional mainline capacity of 1,200 vph). CDTC agrees with GPI's analysis, however, that the level-of-service of Route 50's intersections with Jones Road and Old Gick Road would decline.
- *Traffic-Land Use Conflict:* As conflict between the primary function of a roadway like Route 50 as a conveyor of through traffic and access to adjoining parcels increases, congestion and traffic crashes follow. This is an undesirable situation that has been found to limit the suitability of arterials for use by pedestrians and cyclists. At the present time – because of the Town's commitment to good arterial management practices – Route 50 operates with little traffic conflict but would worsen if driveways are constructed to serve new developments. However, the closely spaced Jones Road and Old Gick Road intersections have generated a large number of property damage only crashes.



Map 2
 Jones Road PM Peak Hour Traffic Growth
 2018 – 2030 (2030 vol. / 2018 vol.)



Map 3
 Forest Grove Subdivision PM Peak Hour
 Productions and Attractions



Map 4
 Forest Grove Subdivision PM Peak Hour
 Productions and Attractions (Town
 Wide)

ALTERNATIVES ANALYSIS

Putting the absence of pedestrian and cycling treatments aside, GPI did a good job of identifying and evaluating the operational effectiveness of a range of alternatives (safety impacts were not evaluated):

- CDTC staff agrees with GPI's analysis that intersection level-of-service (performance) will decline. GPI developed and analyzed 10 total alternatives, which include signalization equipment and timing upgrades; signalization with new capacity; multiple roundabout configurations; intersection consolidation; and relocation of Old Gick Road. GPI's schematics of all evaluated alternatives are included in Appendix A.
- None of the alternatives would improve pedestrian and cycling environment.
- None of the alternatives included or encouraged development of a supporting local road network.
- **Alternative 50A** (adding a traffic signal at Jones Road w/out geometric changes) will not improve operations. In fact Route 50 Level-of-Service will decline according to GPI's HCM analysis. This action could reduce some crashes, but the reduction could be offset by an increase rear end crashes typically associated with new traffic signals.
- **Alternative 50B** (adding a traffic signal and addition of new lanes) will provide a good future level-of-service with minimal right-of-way acquisition and disruption. The safety benefits of this alternative need further review.
- **Alternatives 50C-E** (multiple roundabout options) will generally provide a safer environment than conventional designs. Operationally, single lane roundabouts will not improve level-of-service over the no-action alternative. Roundabout options are generally \$2-3 million more costly than traditional intersection improvements (i.e. additional turn lanes).
- **Alternatives 50F-G** (consolidated roundabout intersections) are also costly alternatives and would be more disruptive, requiring significantly more right-of-way. However, if properly designed, this type of alternative can provide significant operational, safety, access management, and aesthetic benefits.
- **Alternative 50H** (relocate Old Gick Road and Shift Traffic Signal) will not improve future level of service. Level-of-Service will decline according to GPI's HCM analysis.

ADDITIONAL ANALYSIS COMPLETED BY VHB

VHB prepared a technical memorandum dated June 27, 2019 (attached as Appendix B of this Memorandum) that provided further review of the initial study conducted by GPI. Although GPI's operational study evaluated a range of alternatives, it did not include an alternative that consolidated the two intersections into a single intersection. Based on discussions with the Town and VHB, it was determined that this alternative should be explored. VHB analyzed two additional options (Option 1) realign Jones Road opposite Ingersoll Road; and, (Option 2) realign Ingersoll Road opposite Jones Road. Both realignment options were evaluated with traditional signal control and roundabout control.

The initial review of these options VHB determined, and CDTC concurred, that Option 2 (Ingersoll realignment) is not feasible due to extensive design constraints associated with the topography on the south side of NY 50. VHB's analysis shows that Option 1 (realignment of Jones Road) can operate well throughout the day with either traffic signal or roundabout control. By creating a single intersection, the Jones Road realignment would result in an overall safer intersection by reducing traffic crashes and conflicts, especially with roundabout control. However, this alternative would be the most costly and disruptive, requiring extensive property acquisition.

CDTC FINAL THOUGHTS

- The realignment alternative would consolidate major traffic movements in this part of the corridor. Intersection consolidation would mitigate conflict, and help manage access to NY 50 from surrounding development. It is, however, the most costly with total cost exceeding \$4 million, and would be the most disruptive.
- The dual roundabout alternative would be the safest, having the greatest potential to reduce crashes. Capacity would be significantly increased and would provide reserve capacity to accommodate traffic beyond the plan design year. At just under \$4.0 million, this alternative is the second most costly, but right-of-way impacts would be small and safety benefits large.
- The dual signalization alternative is the least expensive, and would be the "simplest" to construct, assuming NYSDOT agrees with the signal warrant analysis. However, compared to the dual roundabout and realignment alternatives, vehicle queues between the intersections would be longer and safety benefit minimal.

Regardless of which alternative is selected, the Town's local road network (especially along Route 50) should be planned for before development occurs. The Town should plan for, and embrace, site designs that create a coordinated pattern of land use, streets, sidewalks, and bike paths that minimizes vehicular travel, turn movement conflict, and encourages walking/cycling – all of which will help prolong the life of Route 50. Developing a traditional neighborhood street system around a major arterial like Route 50 is more efficient and will minimize the need for major reconstruction.

MITIGATION COST MODEL

The inadequacy of local, state, and federal funds to meet the need for new infrastructure leaves communities like the Town of Wilton and others searching for ways to accommodate new growth without raising or creating new taxes. Notably, the Town of Colonie pioneered the use of mitigation cost for the implementation of the Airport Area Transportation Plan. The Town of Malta also uses a similar approach. Mitigation cost under this approach is calculated based on a development's consumption of new capacity added to the transportation system. For example, if traffic generated by a development sends 100 vehicles through a reconstructed intersection that added capacity for another 1,000 vehicles per hour, then that development would be responsible for using 10 percent of the new capacity, and therefore 10 percent of the cost.

Using the Albany International Airport Area Model as a framework, CDTC modified and applied the process to the Town of Wilton. Table 3 shows the calculation of the share of intersection capacity consumed by new peak hour traffic generated by the Forest Grove development, and capacity consumed by all planned development in the town expected to occur in the period 2018-30. For this

exercise, calculations are included for two generic intersection types -- a traditionally designed intersection with traffic signal and turn lanes, and some type of roundabout. In general, traditionally designed intersections have been found to be less costly by a factor of between 1.5 and 2.5, depending on location, traffic demand, and design standards.

Table 3:
Mitigation Cost Estimate for Route 50 Intersection Improvements Associated with the Forest Grove Subdivision & Other Planned Development

Traditional Improvement: Capacity = 600 vph, Cost = \$2.1M			
Development	Development Traffic	% Capacity Consumed	Development Cost
Forest Grove Subdivision	147 vph	24.5	\$514,500
2030 Town wide Development	315 vph	52.5	\$1,102,500
Roundabout Improvement: Capacity = 750 vph, Cost = \$5.0M			
Development	Development Traffic	% Capacity Consumed	Development Cost
Forest Grove Subdivision	147 vph	19.6	\$980,000
2030 Town wide Development	315 vph	42.0	\$2,100,000

CDTC takeaways from Table 3 are summarized below.

- Preliminary project costs would total between \$2.1 million for a traditional signalized intersection design and about \$5.0 million for a new roundabout.
- Town wide, development could recover between 42 and 53 percent of the project -- \$1.1 million for the traditional improvement and \$2.1 million for a roundabout alternative. Mitigation cost for the Forest Grove development would cover 20-25 percent of the total cost -- \$0.514 million for the traditional improvement and \$0.980 million for a roundabout design.
- A roundabout project would provide roughly 25 percent more capacity than a traditional design, but at more than twice the cost. However, roundabout would be the “safer” alternative.

An example of the mitigation cost procedure used in the Town of Colonie is attached as Appendix C.

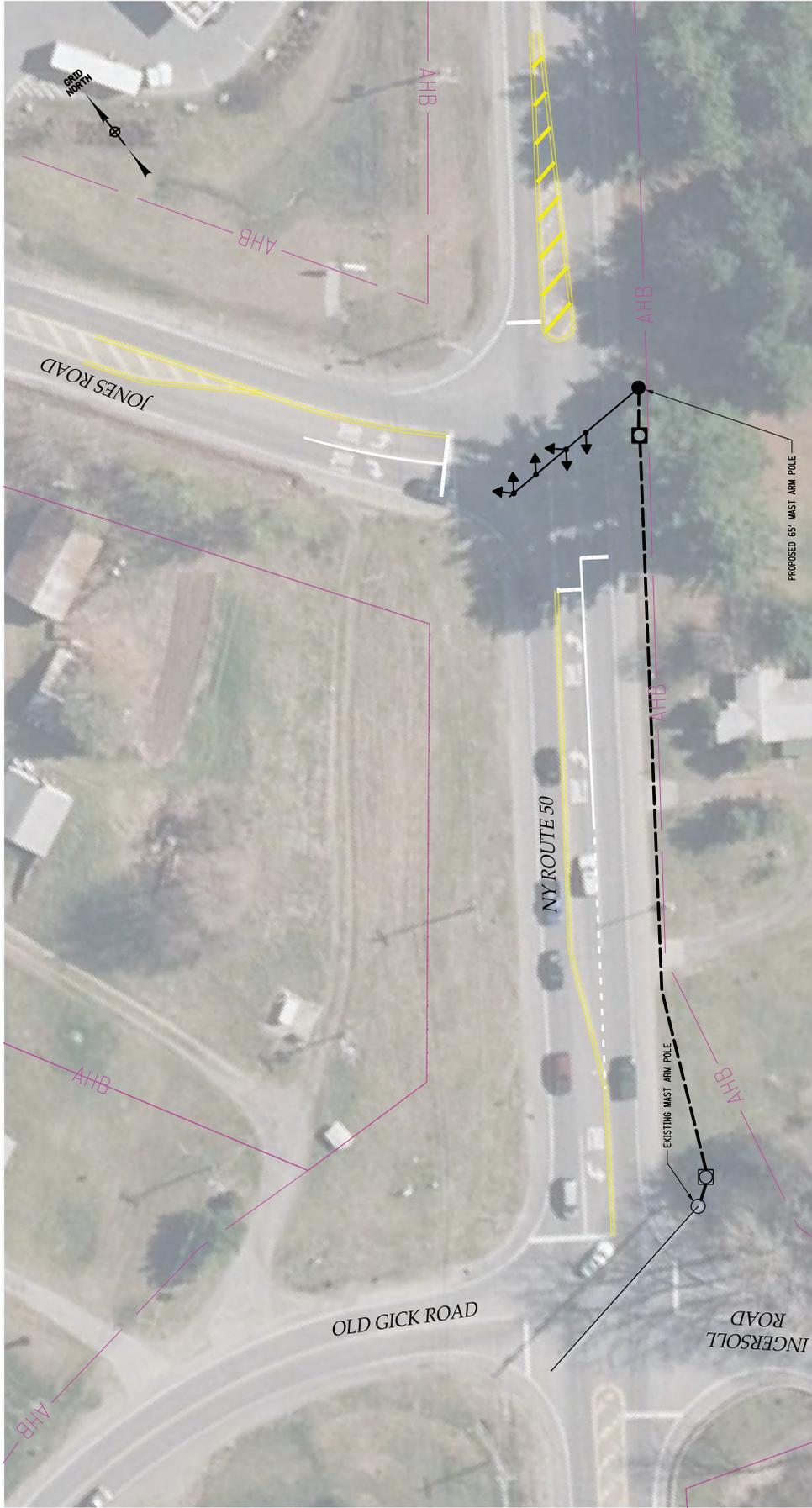
THE BOTTOM LINE

- Operationally, the two intersections operate acceptably throughout the day under current traffic conditions. In other words, existing traffic demand is not creating an operational issue at

the two intersections. However, GPI reported and CDTC confirmed that there are a significant number of property-damage only crashes.

- Traffic generated by new development in the Town over the next 12-15 years will increase traffic demand through the two intersections. This increase in traffic will worsen peak hour level-of-service, requiring some type of improvement by 2030.
- Roughly 70-80 percent of new traffic traveling through the Route 50 intersections will be generated by development located in the Town of Wilton. Only 10-20 percent would be attributable to development in other Saratoga County communities. The remaining 5-10 percent would be considered regionally-generated traffic.
- From a cost and cost-recovery perspective, a traditional design would be the most attractive. Roundabout would provide slightly more reserve capacity for development beyond 2030, and would theoretically be safer. Further safety analysis is required.

Appendix A
GPI Evaluated Alternatives



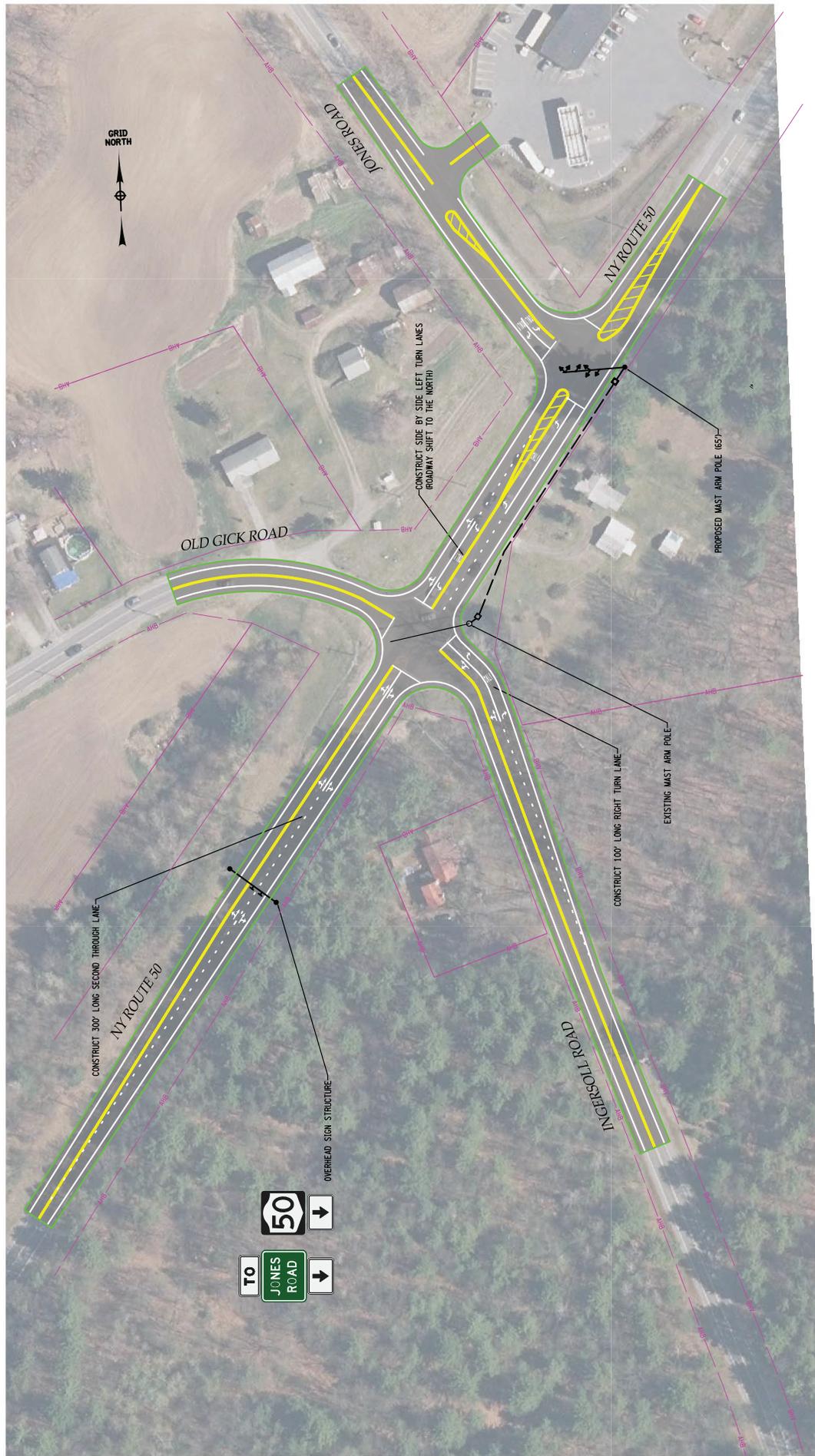
Greeman-Pedersen
CONSULTING ENGINEERS

GPI
80 Wolf Road
Shirley, NY 11965

FOREST GROVE/BISS SHAW SUBDIVISION
2017 TRAFFIC IMPACT STUDY
TOWN OF WILTON
SARATOGA COUNTY, NEW YORK

IMPROVEMENT ALTERNATIVE 50-A
JONES RD SIGNAL ADDITION
AND COORDINATION

JOB NO. 20170705.00
SCALE: AS SHOWN
DATE: JULY 2017
FIGURE NO. 1

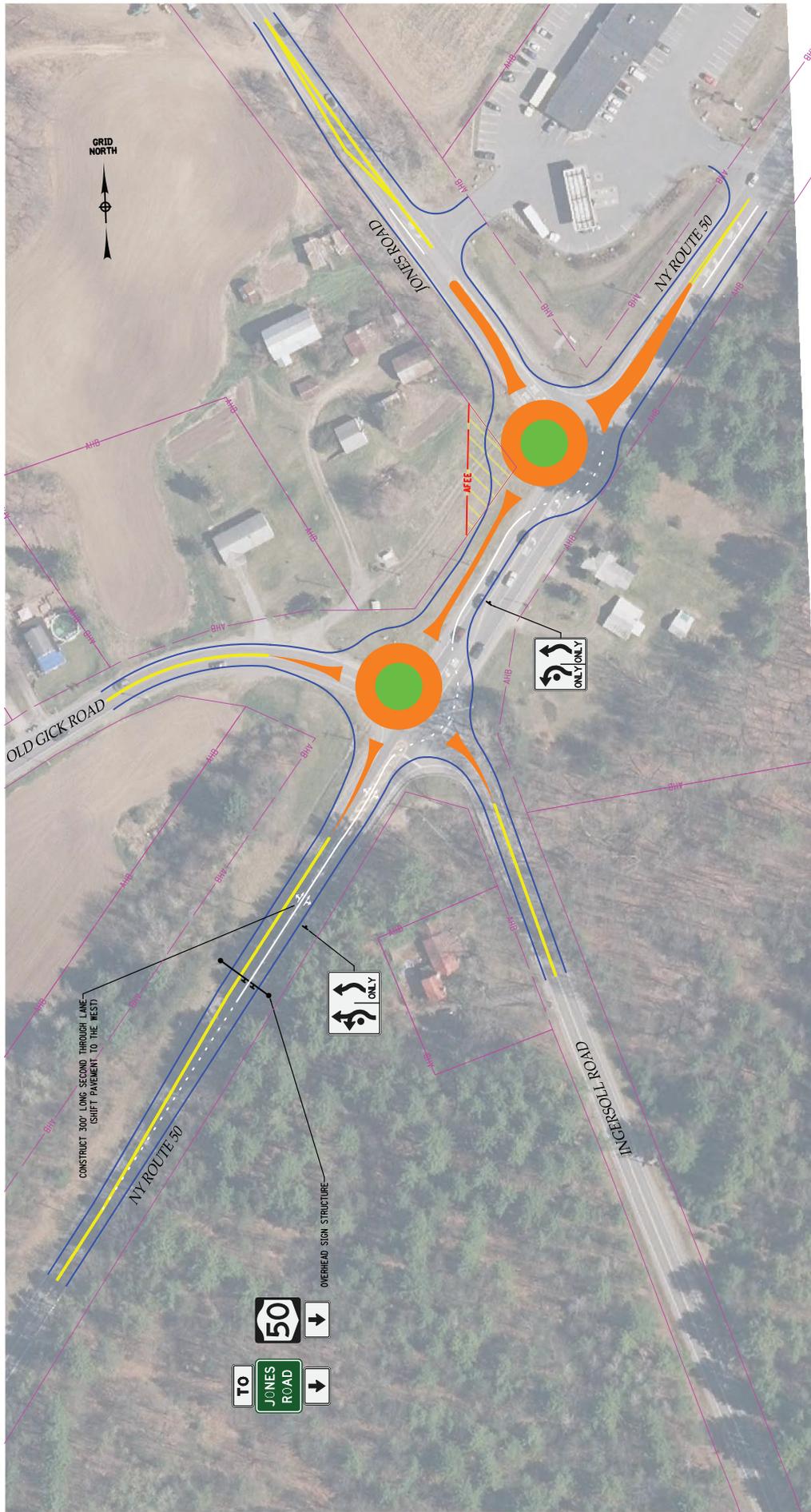


FEASIBLE IMPROVEMENT FOR CONSIDERATION

<p style="font-size: small;">Geosaurus-Pedersen CONSULTING ENGINEERS</p> <p style="font-size: large; font-weight: bold;">GPI</p> <p style="font-size: x-small;">80 Wolf Road Saratoga Springs, NY 12155 Albany, NY 12205</p>	<p style="font-weight: bold;">FOREST GROVE/BISS SHAW SUBDIVISION 2017 TRAFFIC IMPACT STUDY TOWN OF WILTON SARATOGA COUNTY, NEW YORK</p>
JOB NO. 20170729.00	SCALE: AS SHOWN
DATE: JULY 2017	FIGURE NO. 2
<p style="font-weight: bold;">IMPROVEMENT ALTERNATIVE 50-B JONES RD SIGNAL ADDITION AND LANE WIDENING</p>	



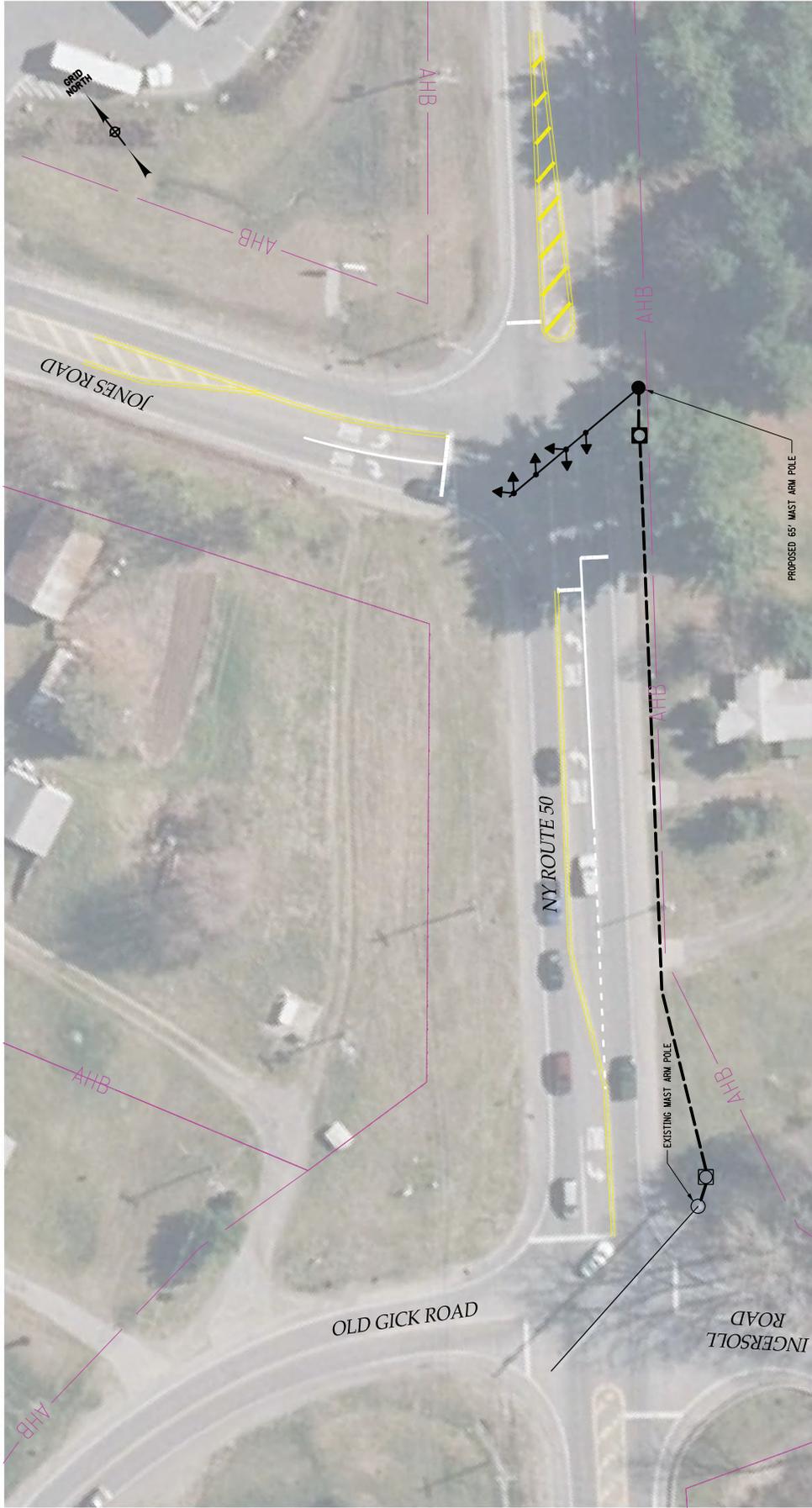
Geomatrix Pedersen CONSULTING ENGINEERS GPI 80 Wolf Road Saratoga Springs, NY 12155	FOREST GROVE/BISS SHAW SUBDIVISION 2017 TRAFFIC IMPACT STUDY TOWN OF WILTON SARATOGA COUNTY, NEW YORK		IMPROVEMENT ALTERNATIVE 50-C 120' DIA. DUAL ROUNDABOUTS (SINGLE LANE)	
	JOB NO. 20170729.00	SCALE: AS SHOWN	DATE: JULY 2017	FIGURE NO. 3



FEASIBLE IMPROVEMENT FOR CONSIDERATION

Geomatrix-Pedersen CONSULTING ENGINEERS GPI 80 Wolf Road Suite 200 Albany, NY 12205	FOREST GROVE/BISS SHAW SUBDIVISION 2017 TRAFFIC IMPACT STUDY TOWN OF WILTON SARATOGA COUNTY, NEW YORK	IMPROVEMENT ALTERNATIVE 50-D DUAL ROUNDABOUTS WITH ADDED NOUTHBOUND LANE
	JOB NO. 20170729.00	SCALE: AS SHOWN

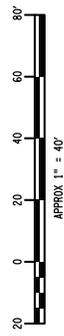
FIGURE NO.
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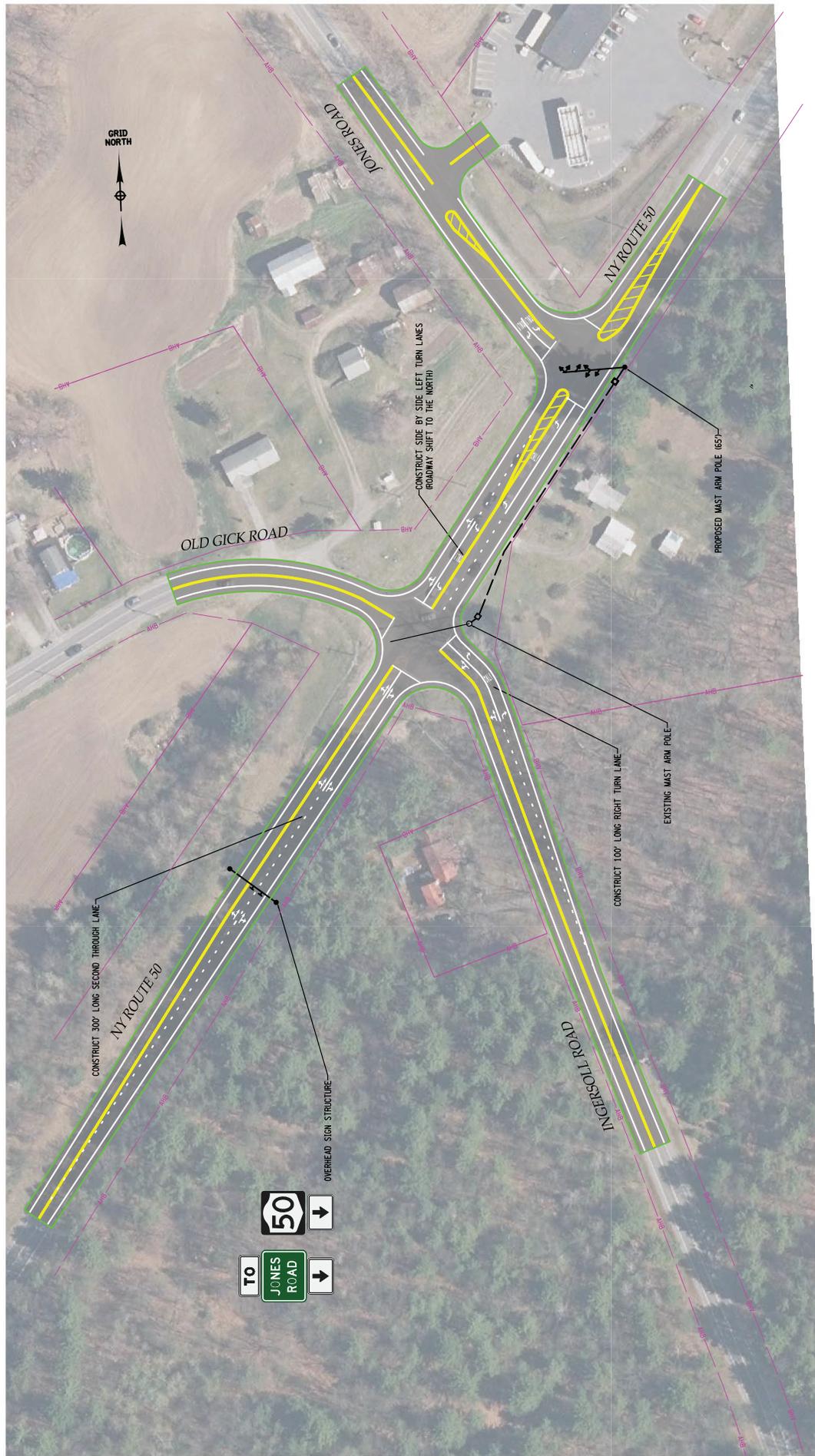


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FOREST GROVE/BISS SHAW SUBDIVISION
2017 TRAFFIC IMPACT STUDY
TOWN OF WILTON
SARATOGA COUNTY, NEW YORK

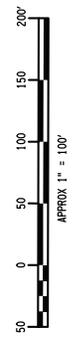
IMPROVEMENT ALTERNATIVE 50-A
JONES RD SIGNAL ADDITION
AND COORDINATION
JOB NO. 20170705.00
SCALE: AS SHOWN
DATE: JULY 2017
FIGURE NO. 1



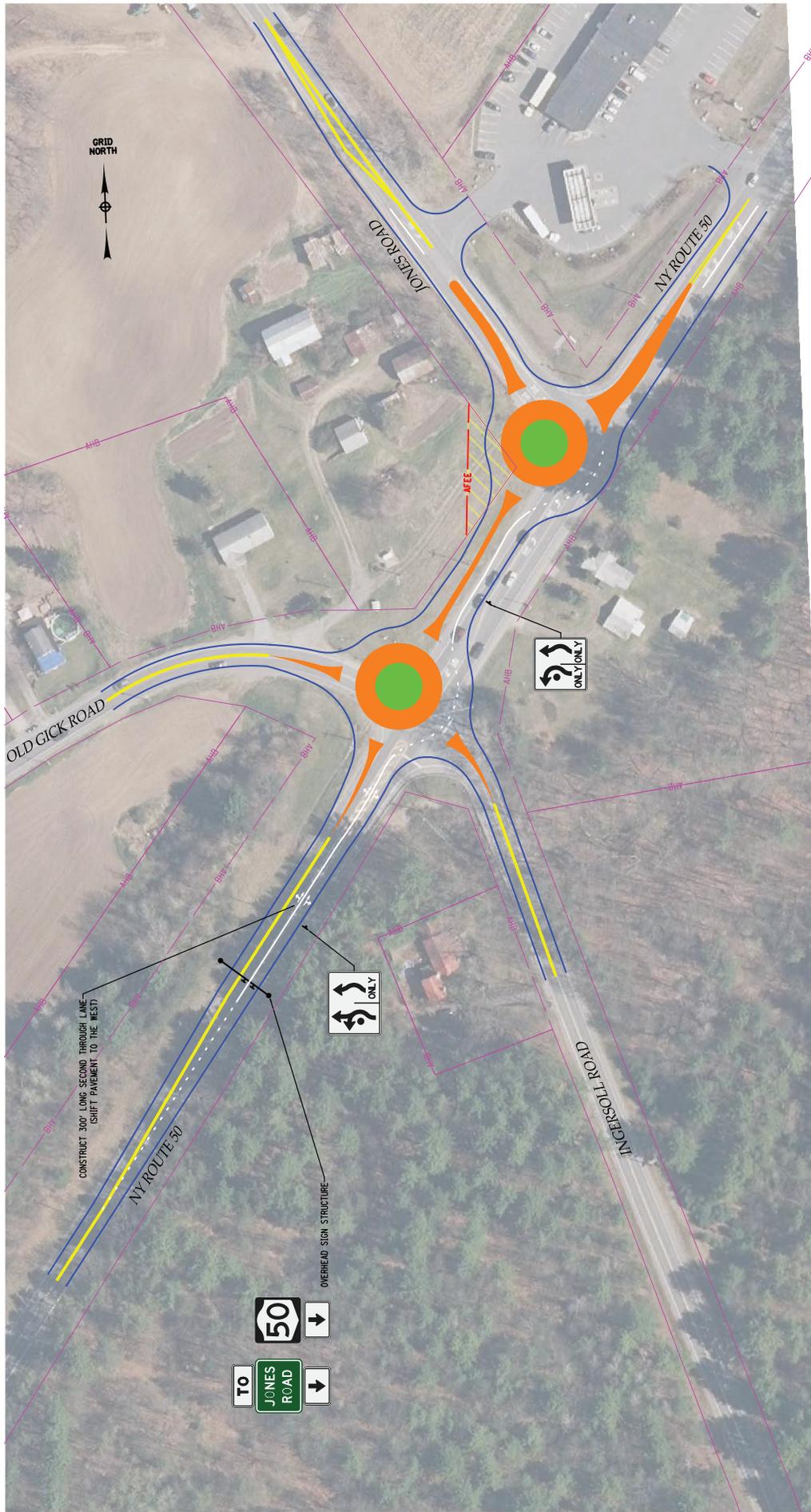


FEASIBLE IMPROVEMENT FOR CONSIDERATION

<p style="text-align: center;">Geosaurus-Pedersen CONSULTING ENGINEERS</p> <p style="text-align: center;">GPI 80 Wolf Road Saratoga Springs, NY 12155</p>	<p style="text-align: center;">FOREST GROVE/BISS SHAW SUBDIVISION 2017 TRAFFIC IMPACT STUDY TOWN OF WILTON SARATOGA COUNTY, NEW YORK</p>
<p>JOB NO. 20170729.00</p> <p>SCALE: AS SHOWN</p> <p>DATE: JULY 2017</p> <p>FIGURE NO. 2</p>	<p style="text-align: center;">IMPROVEMENT ALTERNATIVE 50-B JONES RD SIGNAL ADDITION AND LANE WIDENING</p>



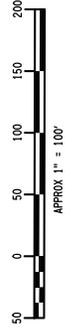
Geomatrix Pedersen CONSULTING ENGINEERS GPI 80 Wolf Road Suite 200 Albany, NY 12205	FOREST GROVE/BISS SHAW SUBDIVISION 2017 TRAFFIC IMPACT STUDY TOWN OF WILTON SARATOGA COUNTY, NEW YORK		IMPROVEMENT ALTERNATIVE 50-C 120' DIA. DUAL ROUNDABOUTS (SINGLE LANE)	
	JOB NO. 20170729.00	SCALE: AS SHOWN	DATE: JULY 2017	FIGURE NO. 3



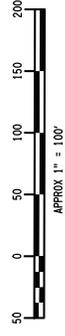
FEASIBLE IMPROVEMENT FOR CONSIDERATION

Geomatrix-Pedersen CONSULTING ENGINEERS GPI 80 Wolf Road Suite 200 Albany, NY 12205	FOREST GROVE/BISS SHAW SUBDIVISION 2017 TRAFFIC IMPACT STUDY TOWN OF WILTON SARATOGA COUNTY, NEW YORK	IMPROVEMENT ALTERNATIVE 50-D DUAL ROUNDABOUTS WITH ADDED NOUTHBOUND LANE
	JOB NO. 20170729.00	SCALE: AS SHOWN

FIGURE NO.
4



Geosaurus-Pedersen CONSULTING ENGINEERS GPI 80 Wolf Road Saratoga Springs, NY 12155	FOREST GROVE/BISS SHAW SUBDIVISION 2017 TRAFFIC IMPACT STUDY TOWN OF WILTON SARATOGA COUNTY, NEW YORK			IMPROVEMENT ALTERNATIVE 50-E
	JOB NO. 20170729.00	SCALE: AS SHOWN	DATE: JULY 2017	FIGURE NO. 5



Geosaurus-Pedersen CONSULTING ENGINEERS GPI 80 Wolf Road Saratoga Springs, NY 12155	FOREST GROVE/BISS SHAW SUBDIVISION 2017 TRAFFIC IMPACT STUDY TOWN OF WILTON SARATOGA COUNTY, NEW YORK	IMPROVEMENT ALTERNATIVE 50-E SINGLE 5-LEG ROUNDABOUT	
	JOB NO. 20170729.00	SCALE: AS SHOWN	DATE: JULY 2017

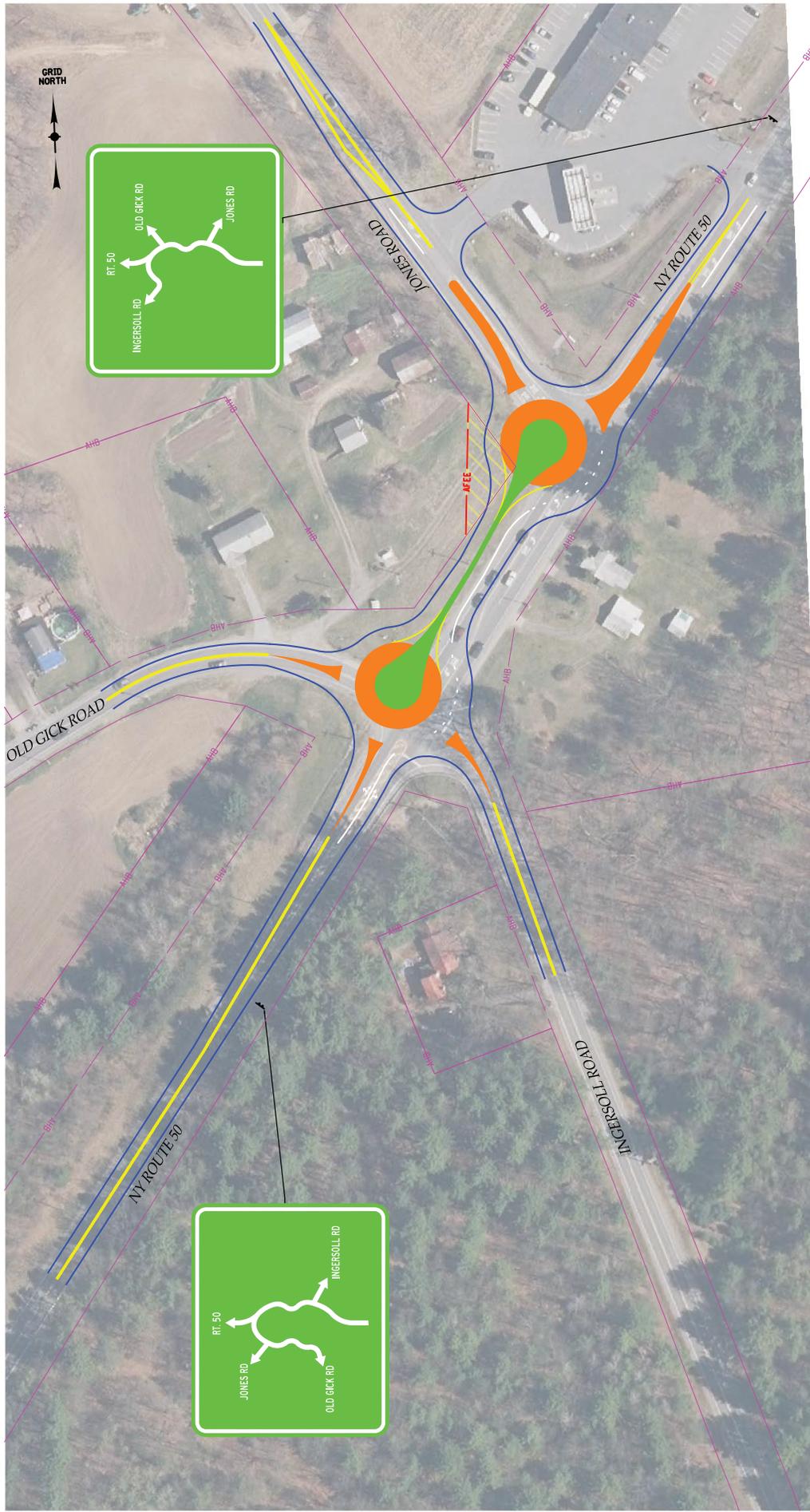


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FOREST GROVE/BISS SHAW SUBDIVISION
2017 TRAFFIC IMPACT STUDY
TOWN OF WILTON
SARATOGA COUNTY, NEW YORK

IMPROVEMENT ALTERNATIVE 50-E1
SINGLE ELONGATED ROUNDABOUT
5-LEG "LONGABOUT"

JOB NO. 20170729.00
SCALE: AS SHOWN
DATE: JULY 2017
FIGURE NO. 6



Geosaurus-Pedersen CONSULTING ENGINEERS GPI 80 Wolf Road Saratoga Springs, NY 12155	IMPROVEMENT ALTERNATIVE 50-E2		
	HOURGLASS "LONGABOUT"		
FOREST GROVE/BISS SHAW SUBDIVISION 2017 TRAFFIC IMPACT STUDY TOWN OF WILTON SARATOGA COUNTY, NEW YORK	JOB NO. 20170729.00	SCALE: AS SHOWN	DATE: JULY 2017
			FIGURE NO. 7



INTERSECTION TRAFFIC CONTROL
 ALTERNATIVE 6 - STOP SIGN CONTROL



FOREST GROVE/BISS SHAW SUBDIVISION 2017 TRAFFIC IMPACT STUDY TOWN OF WILTON SARATOGA COUNTY, NEW YORK		IMPROVEMENT ALTERNATIVE 50-F/G SINGLE 4-LEG ROUNDABOUT W/ INGERSOLL RD SEPARATED	
JOB NO. 20170729.00	SCALE AS SHOWN	DATE JULY 2017	FIGURE NO. 8

Geosaurus-Pedersen
 CONSULTING ENGINEERS
GPI
 80 Wolf Road
 Saratoga Springs, NY 12155



Geosaurus Pedersen CONSULTING ENGINEERS GPI 80 Wolf Road Suite 200 Albany, NY 12205	FOREST GROVE/BISS SHAW SUBDIVISION 2017 TRAFFIC IMPACT STUDY TOWN OF WILTON SARATOGA COUNTY, NEW YORK	IMPROVEMENT ALTERNATIVE 50-H RELOCATED OLD GICK AND MOVE TRAFFIC SIGNAL	
	JOB NO. 20170729.00	SCALE: AS SHOWN	DATE: JULY 2017

Appendix B
VHB Memorandum



Memorandum

To: Ryan Riper, PE
Town of Wilton

Date: June 27, 2019

Project #: 26374.00

From: Wendy Holsberger, PE, PTOE
Alanna Moran

Re: NY Route 50 at Jones Road and Old Gick Road/Ingersoll Road
Intersections

Project History

I-87 (Northway) generally bisects the Town of Wilton into a northwestern triangle and a southeastern triangle. The higher density residential land uses in the Town are primarily located on the west side of the Northway while the commercial center is located on the east side of the Northway. Jones Road is the only road in this section of Town that crosses the Northway between the higher density residential and the commercial center.

Following good planning practices, the Town of Wilton has completed several community and corridor studies that have identified the NY Route 50/Jones Road area as an important connection to goods, services, and residents within the Town and to nearby communities. The Town of Wilton Comprehensive Plan and Generic Environmental Impact Statement (GEIS) adopted by the Town on November 5, 2015 specifies "Review Jones Road, Ingersoll Road, Old Gick Road, and Route 50 intersection and coordinate with NYSDOT to identify alternative intersection treatments such as roundabouts." Additionally, the 2015 Town adopted Traffic Planning Study recommended under the policy/planning initiatives that the NY Route 50 corridor be studied for long term options for improving traffic operations.

The Old Gick Road/Ingersoll Road and Jones Road intersections with NY Route 50 are located approximately 330 feet apart (when measured centerline to centerline). Since Jones Road is one of the few roadways in the town that spans the Northway, travel between NY Route 50 south and Jones Road is a primary travel route in the study area. Based on the existing zoning, there is potential for additional commercial development on NY Route 50 from Perry Road to Edie Road. Additional traffic associated with this potential growth would primarily travel south on NY Route 50. Improving safety and reducing overall delays as traffic volumes increase at this key area in the town is important to the Town of Wilton and northern Saratoga County. Growth is expected to continue in the area as Saratoga County has seen the largest growth in population in New York since the 2010 Census. Several large tracts of undeveloped land remain along the NY Route 50 corridor where additional growth could occur.

As a community, the Town has determined that where feasible, roundabouts are the preferred intersection treatment due to the safety, operational, traffic calming, and gateway enhancement benefits associated with roundabouts. Two roundabouts are planned for construction on Jones Road in the next few years.

Study Area and Project Summary

A recent development application for Forest Grove, a 304-unit single-family residential subdivision in the Town, prompted a private/public partnership between the Town and the developer to complete an evaluation of NY Route 50 and the Jones Road and Old Gick Road/Ingersoll Road intersections in the Traffic Operations Study; Jones Road/Route 50 Area Town of Wilton, New York (Operations Study) dated March 2018. The Operations Study documented existing operational and safety concerns in the area. A preliminary crash evaluation showed that the crash rate at the two intersections is approximately 3.75 times higher than the statewide average for similar type facilities. In addition, the NYSDOT has identified this segment of NY Route 50 as a High Accident Location (HAL).

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VHB has reviewed the 2018 Operations Study prepared by GPI. The Operations Study evaluated ten intersection alternatives to address operational and safety concerns associated with these closely spaced intersections which will be exacerbated through planned growth occurring in the Town. Figure 1 illustrates the existing geometry and traffic control at the two subject studied intersections. It is noted that NY Route 50 travels in a northeast/southwest orientation; however, in this evaluation it is referred to as an east/west roadway.

Figure 1: Study Area Geometry and Traffic Control

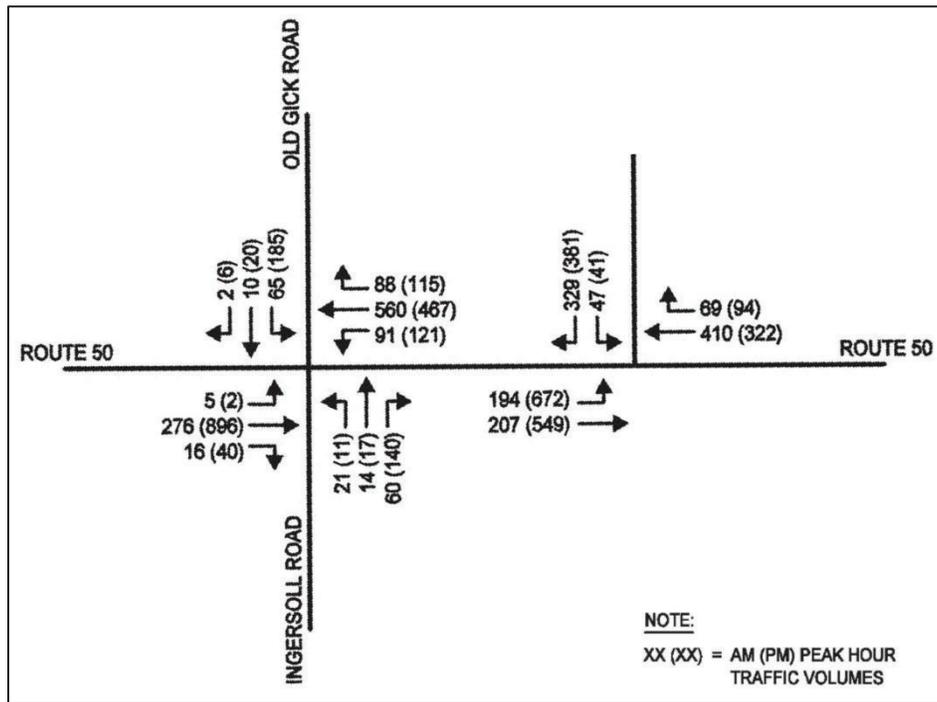


Review of traffic volume information contained in the Operations Study and field observations indicate that the primary travel movements are southbound on Jones Road to NY Route 50 westbound and westbound on Route 50 during the morning peak period as commuters travel south towards Interstate 87 and the City of Saratoga Springs. During the afternoon peak period, the primary travel movements are eastbound on NY Route 50 and from eastbound NY Route 50 to northbound Jones Road as commuters return home after work.

The Saratoga Springs City School District's largest elementary school (Dorothy Nolan) has direct access to Jones Road. In addition, the Town's emergency services, ambulance (located on Jones Road) and fire departments utilize this roadway primarily and is crucial to their operations. Intersection efficiency would provide enhanced response time.

Gavin Park, the Town's community park, has access from Jones Road. During large community events or other activities hosted at Gavin Park, the Jones Road/NY Route 50 area experiences additional delays. The Operations Study projected future traffic volumes through 2027 reflective of traffic conditions with continued development in the Town. The traffic volumes, illustrated below in Figure 2, show that under future conditions these primary travel patterns will continue.

Figure 2: 2027 Build Condition Peak Hour Traffic Volumes



Operationally, the long vehicle delays experienced at these intersections during peak hours are primarily a result of vehicles waiting to turn left from NY Route 50 to Jones Road. The following characteristics are noted regarding existing and future operations at the intersections:

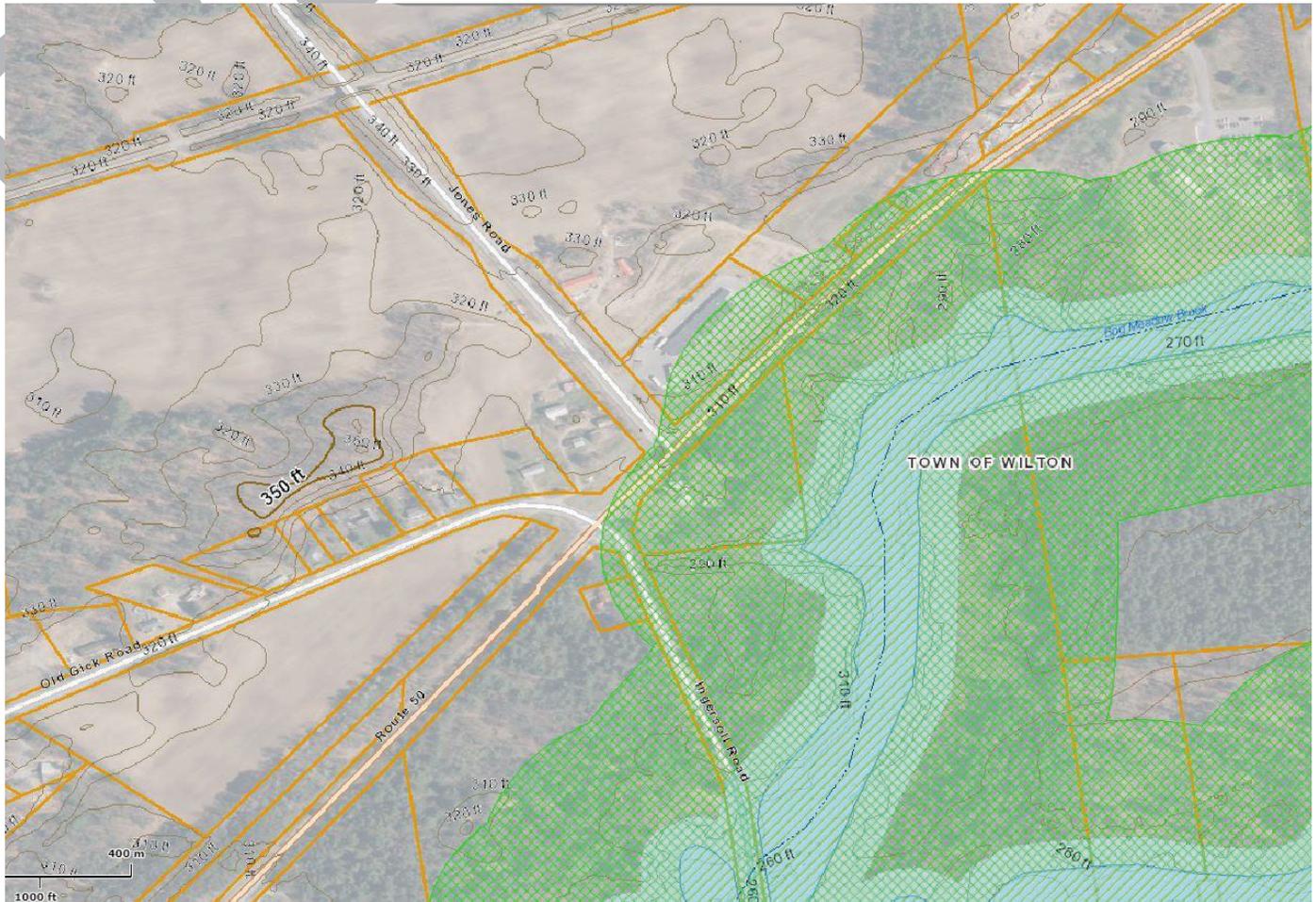
- The queue for the eastbound left-turn movement from NY Route 50 to Jones Road extends past the available left-turn lane storage on NY Route 50 during the PM peak hour and interferes with operations at the adjacent traffic signal at Ingersoll Road/Old Gick Road.
- The eastbound left-turn queue on NY Route 50 at Jones Road extends beyond the available storage length resulting in vehicles extending into the Ingersoll Road/Old Gick Road intersection.
- The westbound queue on NY Route 50 at the Ingersoll Road/Old Gick Road intersection extends beyond Jones Road interfering with turning movements at the Jones Road intersection.

- The eastbound left-turn queue on NY Route 50 at Jones Road limits the sight lines for drivers turning left onto NY Route 50 from Jones Road and the Stewart's Shop driveway. Drivers have been observed cutting through the Stewart's Shop parcel to avoid the NY Route 50/Jones Road intersection.
- The southbound queue on Jones Road for vehicles turning right onto NY Route 50 extends past the left-turn lane so left-turning vehicles have difficulty accessing the turn lane.

While the above conditions typically occur during the weekday PM peak hour, similar operational conditions are also experienced on Saturdays, especially when activities are occurring at nearby Gavin Park. The operational difficulties at these two closely spaced intersections has resulted in crash rates at the two intersections that are 3.75 times higher than the statewide average. It is noted that the crashes are of lower severity (property damage and non-reportable) and the current funding emphasis for crash reduction is primarily focused on reducing the number of fatal and serious injury crashes.

Although the Operational Study evaluated many alternatives, it did not include an analysis that combined the two intersections into a single intersection. Based on discussions with the Town and with CDTC, it was determined that this option should be explored. The following analysis explores this option through an assessment of two alternatives not included in the Operational Study were reviewed; 1) Realign Jones Road opposite Ingersoll Road, and 2) Realign Ingersoll Road opposite Jones Road. It is acknowledged that progression of either of these alternatives would require detailed engineering and design to identify potential project impacts. After an initial review of the existing conditions it was determined that the realignment of Ingersoll Road option is not feasible due to extensive design constraints associated with the topography on the south side of NY Route 50 from a ravine that is part of Bog Meadow Brook, as shown in Figure 3 which is an image from the Saratoga County Parcel Viewer illustrating parcel boundaries, land contours, National Hydrography Flowlines (Bog Meadow Brook), New York State Department of Environmental Conservation (NYSDEC) Wetlands, and NYSDEC Wetland Buffers.

Figure 3: Saratoga County Parcel Viewer Map



Analysis for Realignment of Jones Road

To ensure that the intersection capacity evaluations include all potential growth that could impact the study intersections, growth projections were identified throughout the Town with specific focus on parcels with access to NY Route 50. Conversations with the Town identified the potential for approximately 500 additional residential units in the Town that could affect traffic volumes at the study area intersections. Traffic associated with the additional residential units was applied to the study area intersections and added to the 2027 No-Build traffic volumes contained in the Operational Study. Intersection capacity analyses were completed for the weekday AM and PM peak hours at the new intersection with traffic signal control and with the intersection design as a roundabout. The table below summarizes the results of the intersection evaluations. Analyses were completed using Synchro 10 and SIDRA Intersection 7.0.

Table 1 2027 Intersection Capacity Analysis for Jones Road Realignment

NY Rt 50/Jones Rd/Ingersoll Rd	AM Peak Hour		PM Peak Hour	
	LOS ^a	Delay ^b	LOS	Delay
<i>Traffic Signal Control</i>				
NY Rt 50 EB L	A	9	B	19
TR	B	10	B	15
NY Rt 50 WB L	A	9	B	16
T	B	17	C	23
R	B	12	C	22
Ingersoll Rd NB L	B	12	B	17
TR	B	12	B	17
Jones Rd SB L	B	14	C	22
T	B	12	B	16
R	B	12	A	8
Overall	B	13	B	17
<i>Roundabout Control</i>				
NY Rt 50 EB L	A	8	A	9
TR	A	3	A	5
NY Rt 50 WB LTR	A	5	C	22
Ingersoll Rd NB LTR	A	5	A	8
Jones Rd SB LTR	B	11	A	9
Overall	A	7	B	11

a. Level of service

b. Average total delay, in seconds per vehicle

The analyses show that with either traffic signal or roundabout control, a single intersection created with the realignment of Jones Road can operate with good levels of service under future conditions with consideration of known and potential developments in the Town.

The following images illustrates a potential realignment of Jones Road opposite Ingersoll Road. The realignment of Jones Road would also include construction of a new connection to Old Gick Road, a new driveway to the Stewart's Shop plaza, and removal of the existing NY Route 50/Jones Road intersection.

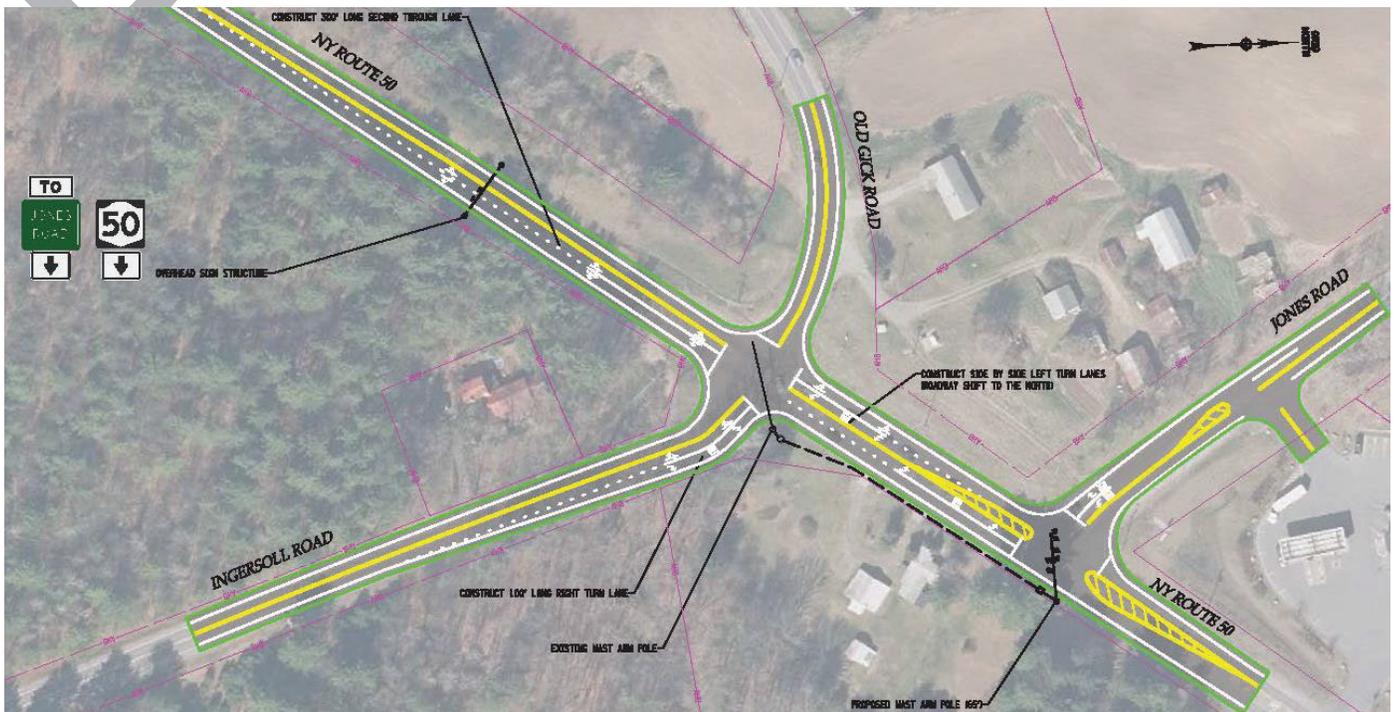


Review of the conceptual roadway alignment shows that the realignment of Jones Road would impact several buildings on the existing farm site located in the southwest quadrant of the existing NY Route 50/Jones Road intersection. Further, a portion of these lands are part of a conservation easement identified as "Forever Agricultural." Although the intersection would operate with acceptable levels of service, the land use and zoning constraints would be a difficult undertaking if this alternative is progressed.

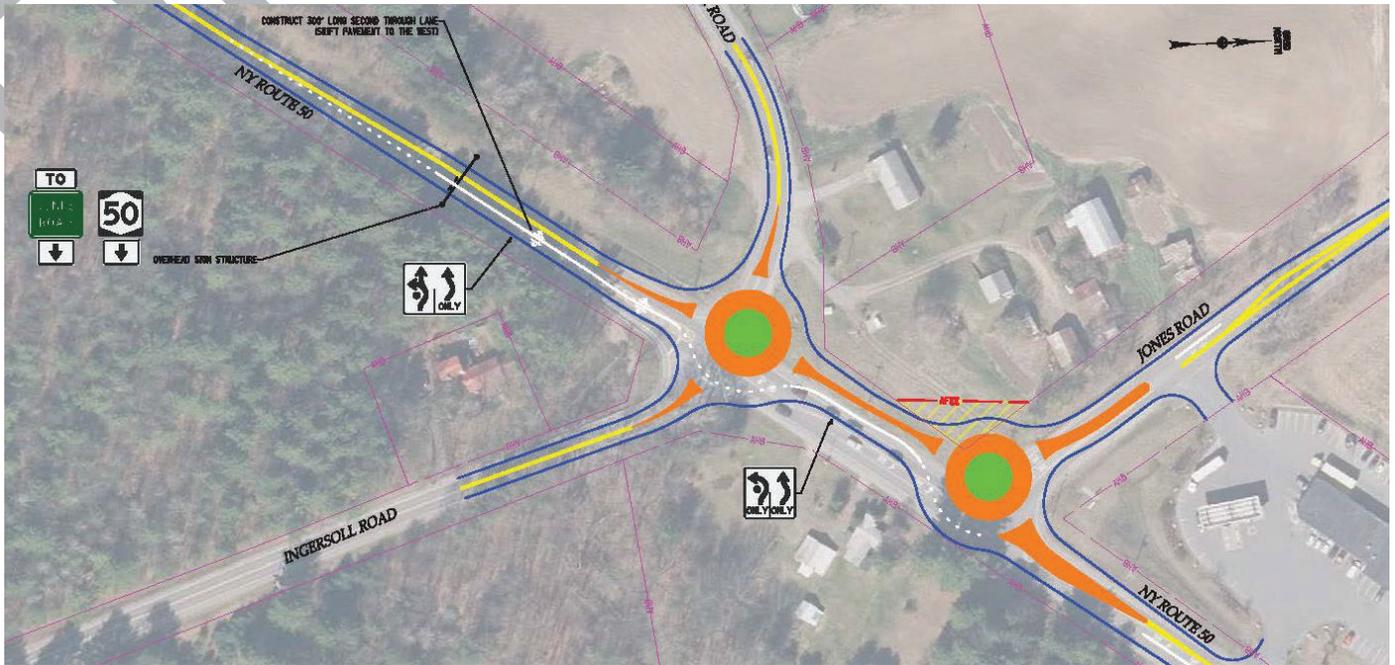
Alternatives Comparison

Through detailed level of service evaluations of ten intersection alternatives, the Operations Study identified two alternatives for additional consideration:

- 1) Traffic signals at the Jones Road and Ingersoll Road/Old Gick Road intersections with NY Route 50 and an additional eastbound through lane between the two traffic signals (Dual Traffic Signals)



- 2) Roundabouts at the Jones Road and Ingersoll Road/Old Gick Road intersections with NY Route 50 and an additional eastbound through lane between the two roundabouts (Dual Roundabouts)



The planning level cost estimate information contained in the Operations Study indicated the construction cost for the traffic signal option would range from \$1.5 million to \$2.3 million and the roundabout option would range from \$1.4 million to \$2.0 million. Further review indicates that the cost for the traffic signal option is accurate, but the roundabout option is likely closer to \$3.6 million. A planning level cost estimate prepared for the Jones Road realignment option identified a cost between \$3.7 million and \$4.2 million depending on the construction of a traffic signal or a roundabout. The upper level planning level cost estimates and future estimated costs are summarized in Table 2.

Table 2 Planning Level Cost Estimate

Alternative	Preliminary Cost Estimate (in million dollars)					
	2019	2021	2023	2025	2027	2029
Two Signals	\$2.3	\$2.5	\$2.6	\$2.7	\$2.9	\$3.1
Two Roundabouts	\$3.6	\$3.8	\$4.1	\$4.3	\$4.6	\$4.8
Realign Jones	\$4.2	\$4.5	\$4.7	\$5.0	\$5.3	\$5.6

Based on construction cost increase of 3% per year

The following is noted regarding the alternatives:

- The Jones Road Realignment creates a single intersection resulting in reduced conflicts and safety benefit, especially with roundabout control at the new intersection, but this alternative would require extensive property acquisition and is the most expensive.
- The Dual Traffic Signals and Dual Roundabouts alternatives have little to no right-of-way impacts.
- The Dual Traffic Signals alternative is the least expensive of the three alternatives. However, the Dual Roundabouts alternative provides a greater safety and operational benefit with increased intersection capacity, shorter vehicle queues, and reduced potential for vehicle conflicts.
- Each alternative will include pedestrian and bicyclist accommodations

Conclusions

This area of the Town is a transition between the commercial center near the Wilton Mall and the more rural and residential areas of the Town. In addition, Jones Road provides an important connection across I-87 to the residential and recreational center of the Town. The Town has identified this area as a priority and should continue to pursue funding for capacity and safety improvements. Funding opportunities for capacity improvements are limited; therefore, implementation of some capacity improvement will likely take many years. While working to obtain funding, the Town should continue to narrow the potential alternatives and identify a preferred alternative based on safety, Town vision, operations, and potential environmental impacts. Roundabouts are the ultimate preferred choice from the Town based on studies, analysis, and the Town's planning vision for the Jones Road and NY Route 50 corridor.

Appendix C
Mitigation Cost Example

MEMORANDUM

To: Joe LaCavita, Director
Town of Colonie
Planning & Economic Development Department
347 Old Niskayuna Road
Latham, NY 12110

From: David P Jukins, Deputy Director
Capital District Transportation Committee

Subject: Airport Area FGEIS Project Review
Proposed Mixed Use Development: Summit at Forts Ferry
33/45 Forts Ferry Road
PL-17- 00012

Date: March 12, 2018

We are in receipt of a letter dated February 2, 2018 which transmitted the project application and site plan for the proposed mixed use development at 33 Forts Ferry Road. Our understanding is that the project calls for constructing a 84,587 square foot senior living facility and a 30,000 square foot office building. Office building tenants have not be named. In response to your request, the CDTC staff has reviewed the traffic impact of the proposed project from the perspective of the *Albany County Airport Area FGEIS/Statement of Findings*.

Although not within the GEIS boundary, the development will have an impact on GEIS intersections, especially at NY 7/Wade Road Extension. The GEIS process does provide a simple, economical way of measuring impact and fair-share mitigation for those developments located near the boundary.

The attached table shows that the preliminary mitigation cost for this project calculates to \$61,193, or \$1,003 per new peak hour trip. The mitigation cost assumes that the development would generate 61 new vehicle and transit trips. Only new trips are used in the calculation of mitigation cost. We agree with the trip generation assumptions outlined in the project narrative and traffic impact studies prepared by VHB. **It should be noted, however, that if medical offices occupy the office building, trip generation and associated mitigation cost would calculate to a higher value.**

The senior living center will create a demand for safe walking facilities to nearby medical, restaurant, and shopping destinations. According to the site plan, a sidewalk will be constructed along the frontage

of the site. Although a positive feature, the sidewalk by itself does not do enough to create a safe walking environment for future residents. In our judgment, fair-share participation in some additional work would be desirable, including: (1) walkway from the senior living center to the street; (2) extension of the sidewalk to a logical endpoint at Wade Road Extension; (3) installation of crosswalks and ped signals at the Forts Ferry/Wade intersection; and (4) provision of a mid-block crossing linking the development to the medical facility across the street.

Let me know if you have any questions about our review.

JB/DPJ

CDTC FGEIS Project Review
Proposed Senior Living and Office Space
33 & 45 Forts Ferry Road
Roadway and Transit Capacity Consumed by PM Peak Hour Traffic
Attendent to 55 new vehicle trips and 6 new transit trips
3/12/2018

Corridor/ Location of Improvement	Development Traffic (vph)	Total Available Capacity (vph)	% Capacity Consumed	Estimated Total Cost	Development Cost
Albany Shaker Road / Watervliet Shaker Corridor					
New Albany Shaker Road					
NY 7 - British American Blvd.	0	1,770	0.00%	\$ 7,400,000	\$ -
British American Blvd. - Airport Park Blvd.	0	1,770	0.00%	\$ 4,400,000	\$ -
Airport Park Blvd. - Watervliet Shaker Rd.	0	1,770	0.00%	\$ 9,200,000	\$ -
Watervliet Shaker Rd. - Old Albany Shaker Rd.	0	1,770	0.00%	\$ 3,000,000	\$ -
Watervliet Shaker Road Widening					
New Albany Shaker Rd. - Airline Dr.	0	1,710	0.00%	\$ 5,600,000	\$ -
Airline Dr. - Sand Creek Rd.	0	1,710	0.00%	\$ 6,900,000	\$ -
Sand Creek Rd. - New Karner Rd.	0	1,710	0.00%	\$ 8,300,000	\$ -
Watervliet Shaker / Sand Creek Road					
Intersection Improvements	0	2,190	0.00%	\$ 1,500,000	\$ -
British American Blvd. Extension					
British American Blvd. Extension	0	1,000	0.00%	\$ 2,000,000	\$ -
New Karner Road Corridor					
New Karner Road Operational Improvements					
NY 5 - Consaul Rd.	0	1,660	0.00%	\$ 2,500,000	\$ -
Consaul Rd. - Watervliet Shaker Rd.	0	1,660	0.00%	\$ 10,100,000	\$ -
NY 5 / New Karner Road					
Intersection Improvements	0	2,940	0.00%	\$ 3,900,000	\$ -
New Karner Road / Watervliet Shaker Road					
Intersection Improvements	0	2,735	0.00%	\$ 3,200,000	\$ -
Route 7 Corridor					
Route 7 Arterial Management (South Side)					
Vly Rd. - British American Blvd.	0	3,600	0.00%	\$ 1,600,000	\$ -
British American Blvd. - Albany Shaker Rd.	0	3,600	0.00%	\$ 1,700,000	\$ -
Albany Shaker Rd. - Pinegrove Rd. Area	0	3,600	0.00%	\$ 900,000	\$ -
Pinegrove Rd. Area - Mill Rd.	0	3,600	0.00%	\$ 500,000	\$ -
Wade Rd. Area	1	3,600	0.03%	\$ 4,300,000	\$ 1,194
Route 7 Arterial Management (North Side)					
Rosendale Rd. - Ronald Drive Area	3	3,600	0.08%	\$ 1,200,000	\$ 1,000
Keeler Motor Car - Mill Rd.	4	3,600	0.11%	\$ 3,700,000	\$ 4,111
Route 7 / Wade Road					
Intersection Improvements	17	1,035	1.64%	\$ 1,500,000	\$ 24,638
Wade Rd. Extension					
Wade Rd. Extension	9	1,200	0.75%	\$ 3,000,000	\$ 22,500
Sparrowbush Road					
Operational Improvements	0	1,200	0.00%	\$ 4,100,000	\$ -
Wolf Road Corridor					
Wolf Road East Side Service Road (Extensnion of Aviation Rd)					
Sand Creek Rd. - Computer Drive East	0	2,480	0.00%	\$ 2,300,000	\$ -
Metro Park Rd. - Albany Shaker Rd.	0	2,480	0.00%	\$ 5,600,000	\$ -
Wolf Road West Side Service Road					
50 Wolf Rd. - Sand Creek Rd.	0	2,480	0.00%	\$ 2,100,000	\$ -
Cerone Dr. - Exit 4 Ram ASR	0	2,480	0.00%	\$ 4,100,000	\$ -
Old Wolf / Watervliet Shaker Road					
Intersection Improvements	0	1,810	0.00%	\$ 2,100,000	\$ -
Sand Creek Road Roundabout					
Sand Creek Road Roundabout	0	370	0.00%	\$ 1,000,000	\$ -
New Maxwell Road					
New Maxwell Road	0	865	0.00%	\$ 3,000,000	\$ -
Maxwell Road / Albany Shaker Road					
Roundabout	0	1,815	0.00%	\$ 4,200,000	\$ -
Travel Demand Management (TDM)					
CDTA Route 117 Service Support	6	12,000	0.05%	\$ 15,500,000	\$ 7,750
Total Development Cost					\$ 61,193

Notes:

1. Development Traffic: The project proposes the construction of a new 85,000 square foot (SF), 62-unit, senior independent living apartment building and a 30,000 SF office building on the project site. The project also includes 140 parking spaces, and recreational areas for residents on the site. Trip generation for the development was calculated by CDTC staff based on information contained in the ITE 9th Edition Trip Generation Manual. Based on the rate for General Office Building (Land Use Code 710) and Senior Adult Housing –Attached (Land Use Code 252) total peak hour vehicle and transit trips would total 62 vehicles per Hour (vph). Adjusting for mode split, pass by trips, and shared travel, CDTC staff estimated that the development would generate roughly 55 new vehicle trips and 6 transit trips. Only new vehicle trips were used in the calculation of mitigation cost.
2. Trip Distribution: Of the 55 peak hour new vehicle trips generated by the development, 15 trips would enter the development (trip attractions) and 40 would exit (trip productions). Trips were assigned to the roadway network based on information generated from CDTC's STEP model. Trip distribution maps are attached.
3. Available Capacity: Total available capacity is defined as existing (1990) reserve capacity plus the additional one-way peak direction capacity of the reconstructed facilities and total approach capacity for intersections. Total Route 7 Corridor Capacity is defined as the one-way peak direction capacity of Route 7 (3,600 vph).
4. Costs: Includes construction, design, supervision, and right-of-way in 2017 dollars. These costs were developed from typical highway projects built to AASHTO standards and described in NYSDOT's *Project Cost Estimation Process for Use in Systems Planning* or from actual design study or construction costs. Aviation Road costs include the cost of a single-lane roundabout at Marcus Boulevard and the Cap Com driveway. The mitigation cost is calculated for peak direction trips for mainline roadway sections and for all entering peak hour trips for intersections.
5. Development Cost Share: The Airport Area Transportation Financing Task Force established an appropriate and equitable mechanism to finance Final Generic Environmental Impact Statement (FGEIS) recommended improvements. Development cost share is based on the amount of new highway capacity consumed by peak hour trips generated by the new development. The calculated mitigation cost includes a reduction based on implementation of TDM strategies. Final Development cost share for this project may be dependent on the verified trip generation. **If the tenants or size of the development changes, then mitigation costs would have to be recalculated.**
6. Travel Demand Modeling: The Final Generic Impact Statement (FGEIS) for the Albany County Airport Area recognized that without aggressive actions to maximize the use of transit services and other ride sharing options and/or shift in demand from peak hour, limited widening of existing highways would not be adequate to provide future acceptable levels-of-service (LOS). As a result, the study recommended the development of a comprehensive transportation demand management program for the area. The transit element of the program (cited in the table above) calls for the implementation of CDTA's Route 117 service, formerly known as Shuttlefly. With this service in place, single occupant vehicle trips generated by this development could decline by about 10% and generate about 6 transit trips. Without CDTA's Route 117 service, mitigation cost for this development would calculate to \$67,869.