Broadway Corridor Study

Steering Committee Meeting

March 26, 2015

Agenda

- Welcome/Introductions – 5 minutes
- Alternatives Evaluated – 5 minutes
- Alternative Analysis Results – 60 minutes
- Public Meeting Preparation/Planning – 5 minutes
- Project Schedule / Next Steps - 5 minutes

Alternatives Evaluated

Improvement Strategy	Implementation
Upgrade traffic signal equipment	Short/Mid
Reconfigure Husson Avenue intersection	Mid
Restrict Movements at Falvey Drive Intersection	Mid/Long
Provide new connection (ped and/or vehicle) between Husson Avenue and Neighborhood	Mid
Provide new connection to Husson via Grandview Avenue or other location	Long
Add sidewalks to eliminate gaps in system	Short/Mid
Upgrade existing sidewalks due to width constraints and general condition	Short
Provide formalized parallel road in Broadway Shopping Center (multimodal)	Long
Add/enhance existing crosswalks	Short
Improve capacity at Grandview Avenue	Mid
Improve alignment at Hillside Drive/High School/Grandview Avenue	Long
Meet City Complete Streets Policy	Short/Mid/Long
Revise site plan review standards to include consideration of inter parcel connections, shared parking and minimum of one curb cut fronting Broadway	Short/Mid/Long
Streetscape Improvement Opportunities within Broadway Cross-section	Short/Mid/Long

Alternatives Evaluated

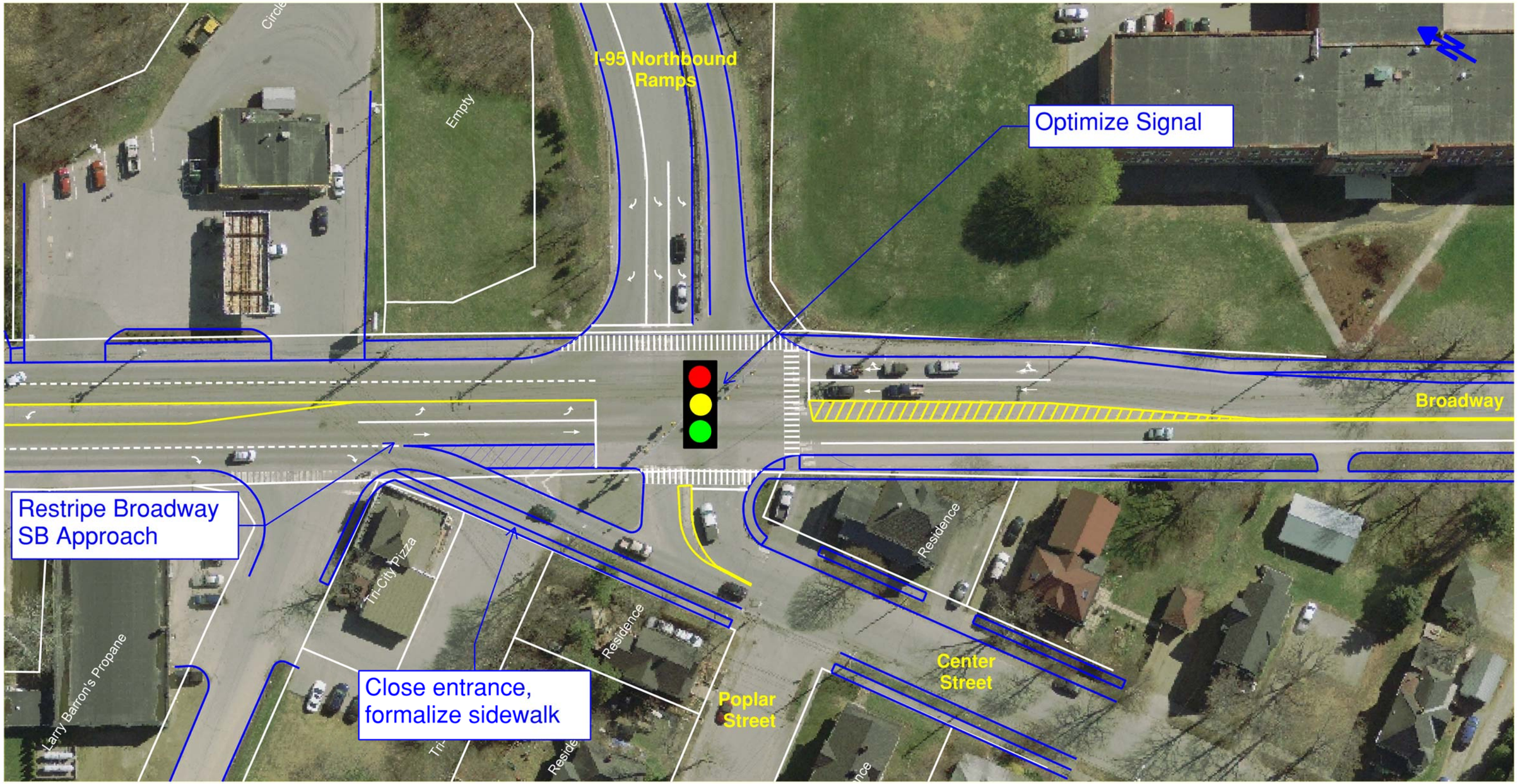
Improvement Strategy	Implementation
Install Roundabout at I95/Center Street	Long
Install Roundabout at I95 SB Ramps	Long
Retime/Coordination Traffic Signals	Short
Close Alden Street at Broadway	Mid
Restrict Movements at Alden Street to Right in/out	Mid
Combine Alden Street and I95SB Off-ramp	Mid
Change Broadway EB Lane Assignment at Center Street to one left, one through, one right lane	Short
Reconfigure I95 SB on-ramp for improve alignment	Mid
Provide two left turn lanes onto I95 NB	Mid/Long
Restripe Broadway for wider curb lane for better bicycle conditions	Short
Corridor-wide ADA Improvements	Short/Mid
Provide pedestrian connection (Dairy Queen) to Neighborhood	Short/Mid
Reconfigure McDonald's and Shopping Center Entrances	Mid
Driveway improvements on Broadway (we will be specific)	Short/Mid/Long
New inter-parcel connections	Short/Mid/Long

Table 1
Summary of Results of Improvements at Broadway/Center Street/I-95 NB Ramps

Year	Timing	Approach Modified	Geometry Modified	AM Peak		PM Peak	
				Delay	LOS	Delay	LOS
2014	Existing	None	None	16.6	B	28.3	C
2035	Existing	None	None	17	B	32.4	C
2035	Optimized	None	None	12.8	B	30.1	C
2035	Optimized	Broadway Southbound	Separate Left/Through/Right	12	B	21.1	C
2035	Optimized	Broadway Southbound	Left/Left/Shared Through-Right	23	C	42.7	D
2035	Optimized	Broadway Southbound	Left/Left/Through/Right	16.8	B	27.8	C
2035	Optimized	All	One Lane Roundabout	**134.8**	**F**	**141.3**	**F**
2035	Optimized	All	Two Lane Roundabout	16.0	B	18.3	B

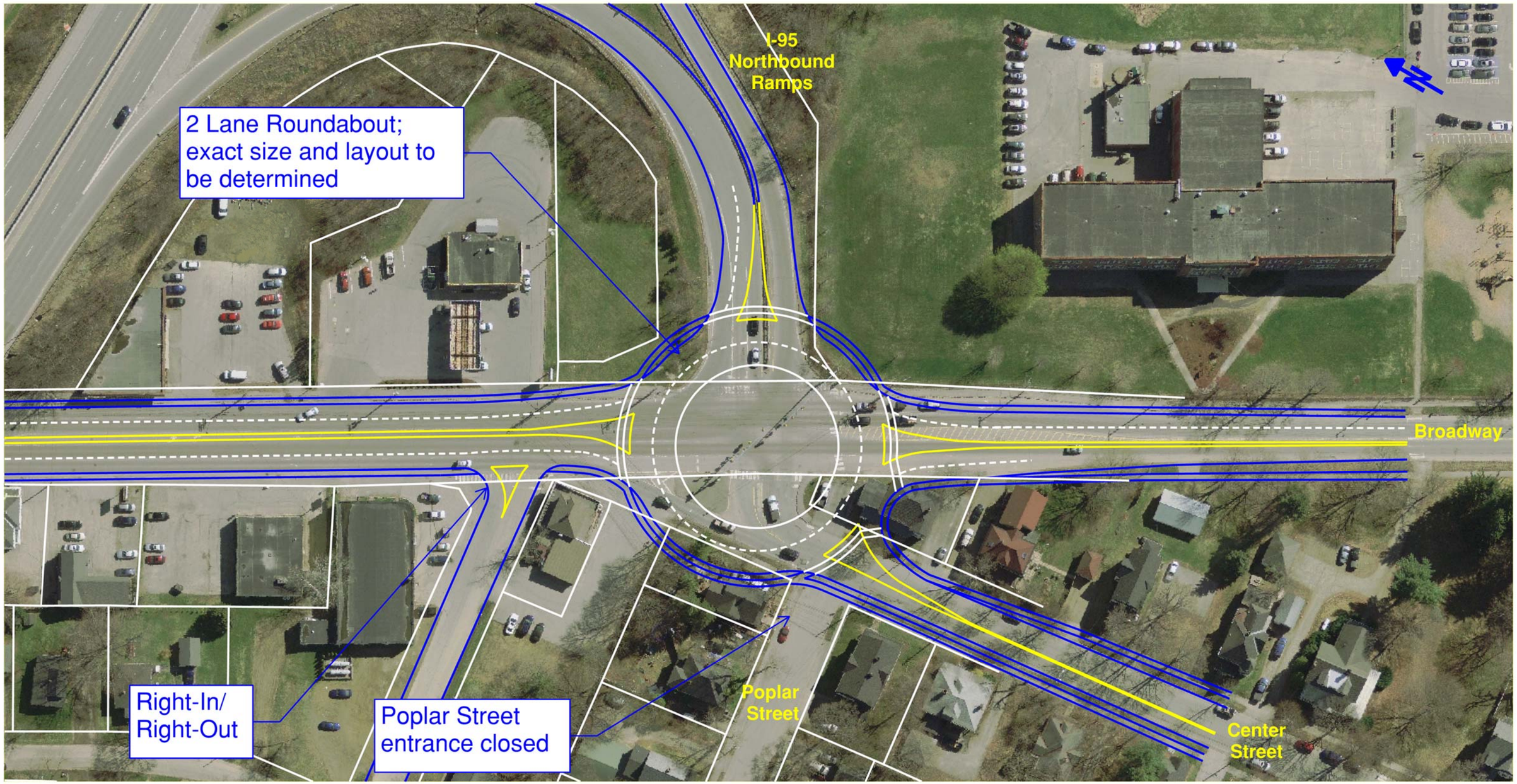
I-95 Northbound/Center Street Intersection Improvements

Figure 1: Restripe Broadway Southbound Approach



I-95 Northbound/Center Street Intersection Improvements

Figure 2: Create a Roundabout



I-95 Northbound/Center Street Pros/Cons:

- **Optimized traffic signal phasing and timing improves efficiency in the short-term horizon.**

- **Conversion of the Broadway southbound approach to separate left, through, and right turn lanes does indicate improvement in delay.**

- **The implementation of dual left turn lanes with separate through and right lanes on southbound Broadway yields less efficient results.**

- **Analysis of implementing a roundabout at this intersection shows that a multi-lane roundabout is will provide significant capacity and safety benefits.**

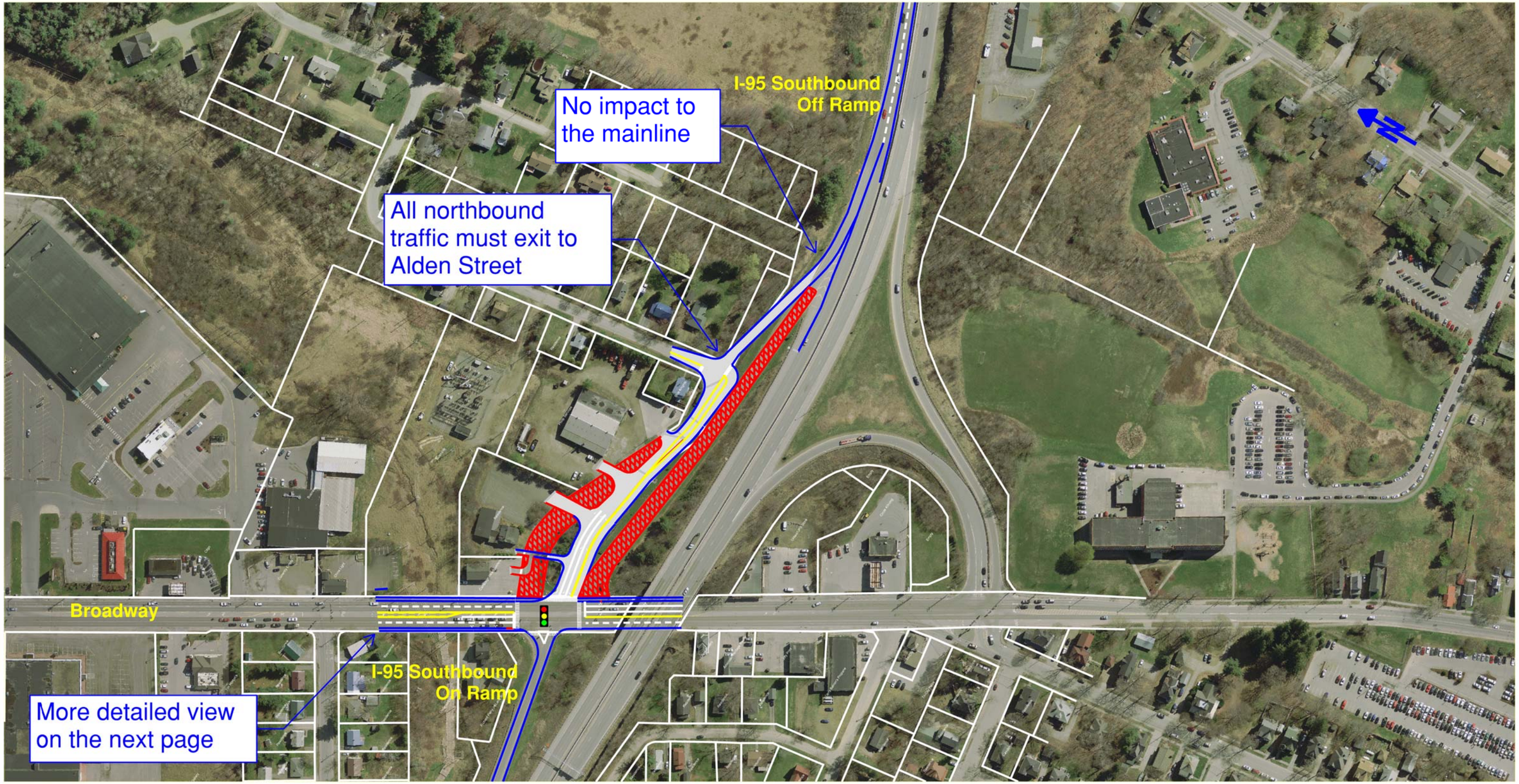
Table 2
Summary of Results for Improvements at Broadway/Alden Street/I-95 SB Ramps

Year	Timing	Approach Modified	Geometry Modified	AM Peak		PM Peak	
				Delay	LOS	Delay	LOS
2014	Existing	None	None	29.1	C	32.2	C
2035	Existing	None	None	35	D	44.0	D
2035	Optimized	None	None	22.8	C	37.9	D
2035	Optimized	Alden Street	Combine Alden and I-95 SB Off Ramps	10.6	B	18.8	B
2035	Optimized	Alden Street	Close Alden Street	8.5	A	18.2	B
2035	Optimized	Alden Street	Create a right in/right out on Alden Street	9.0/1.3	A/A	11.1/3.7	B/A
2035	Optimized	All	One Lane Roundabout	**234.8**	**F**	**278.6**	**F**
2035	Optimized	All	Two Lane Roundabout	12.5	B	14.8	B

Note: The right in/right out proposed option has two values in the table: XX/XX. This represents the improvement to the existing intersection and the level of service at the new proposed right-in/right-out location: Previous/New.

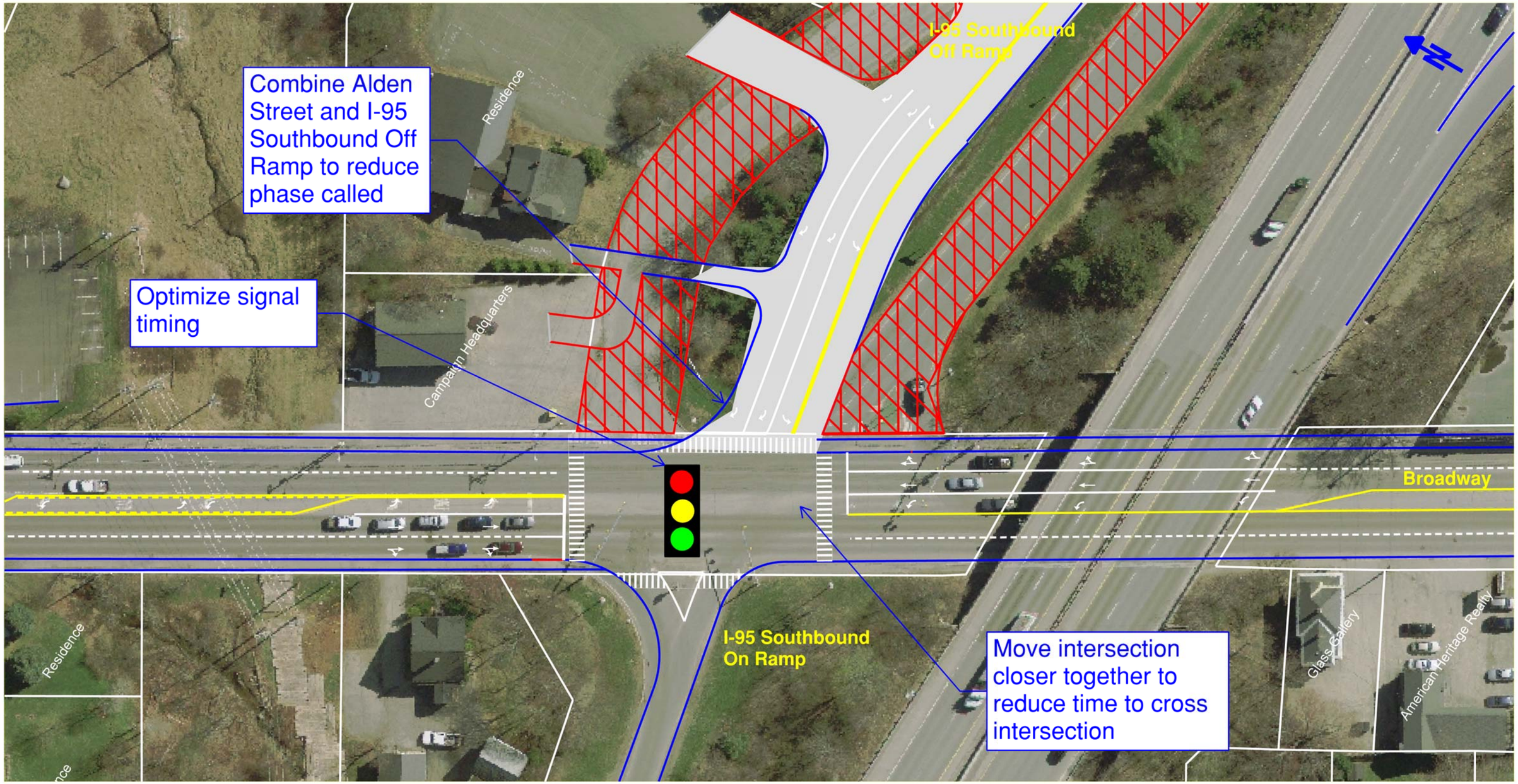
I-95 Southbound and Alden Street Improvements

Figure 3: Overall View of Possible Combined Alden Street and I-95 Southbound Option



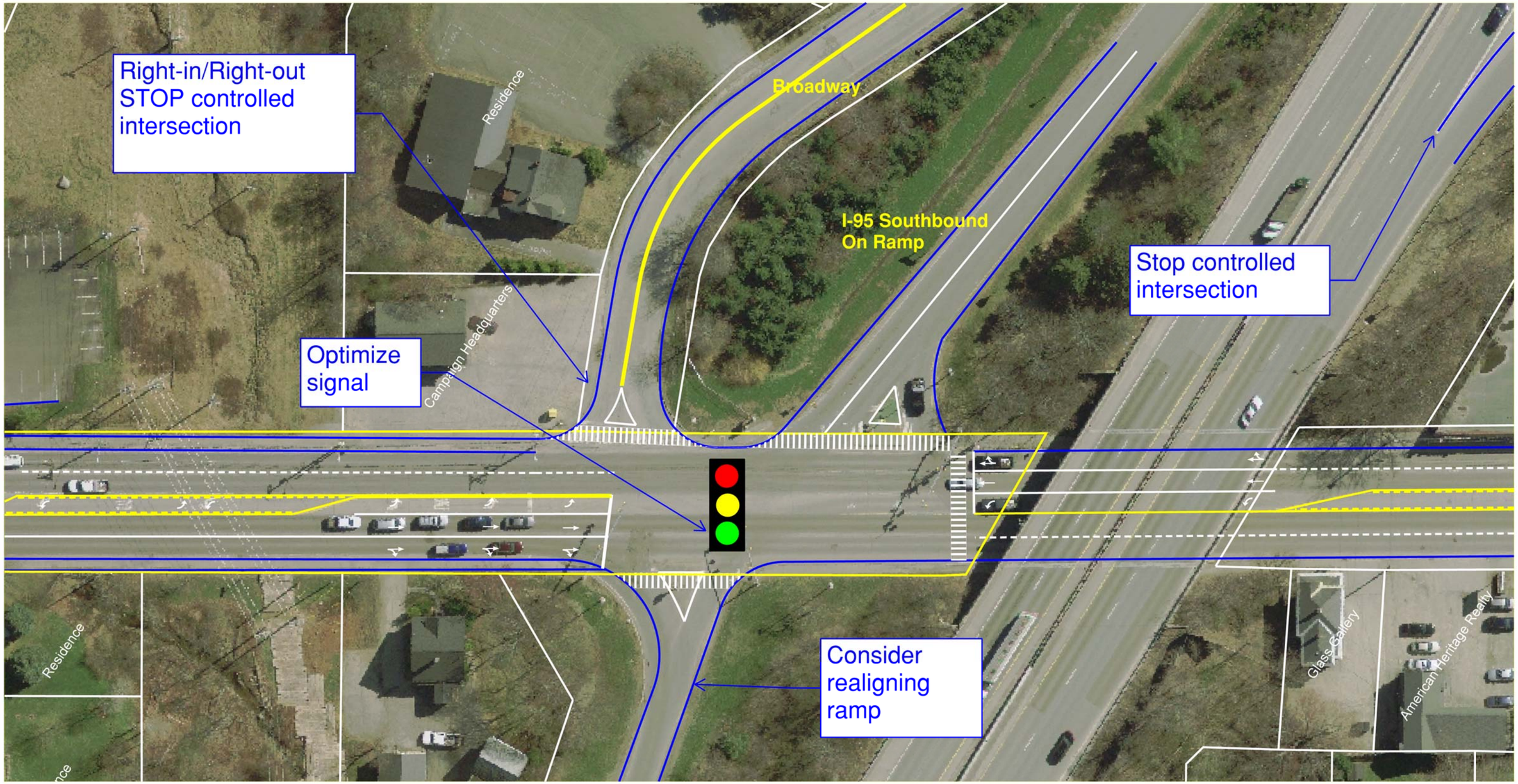
I-95 Southbound and Alden Street Improvements

Figure 4: Close-up of Combined Alden Street and I-95 Southbound Off Ramp



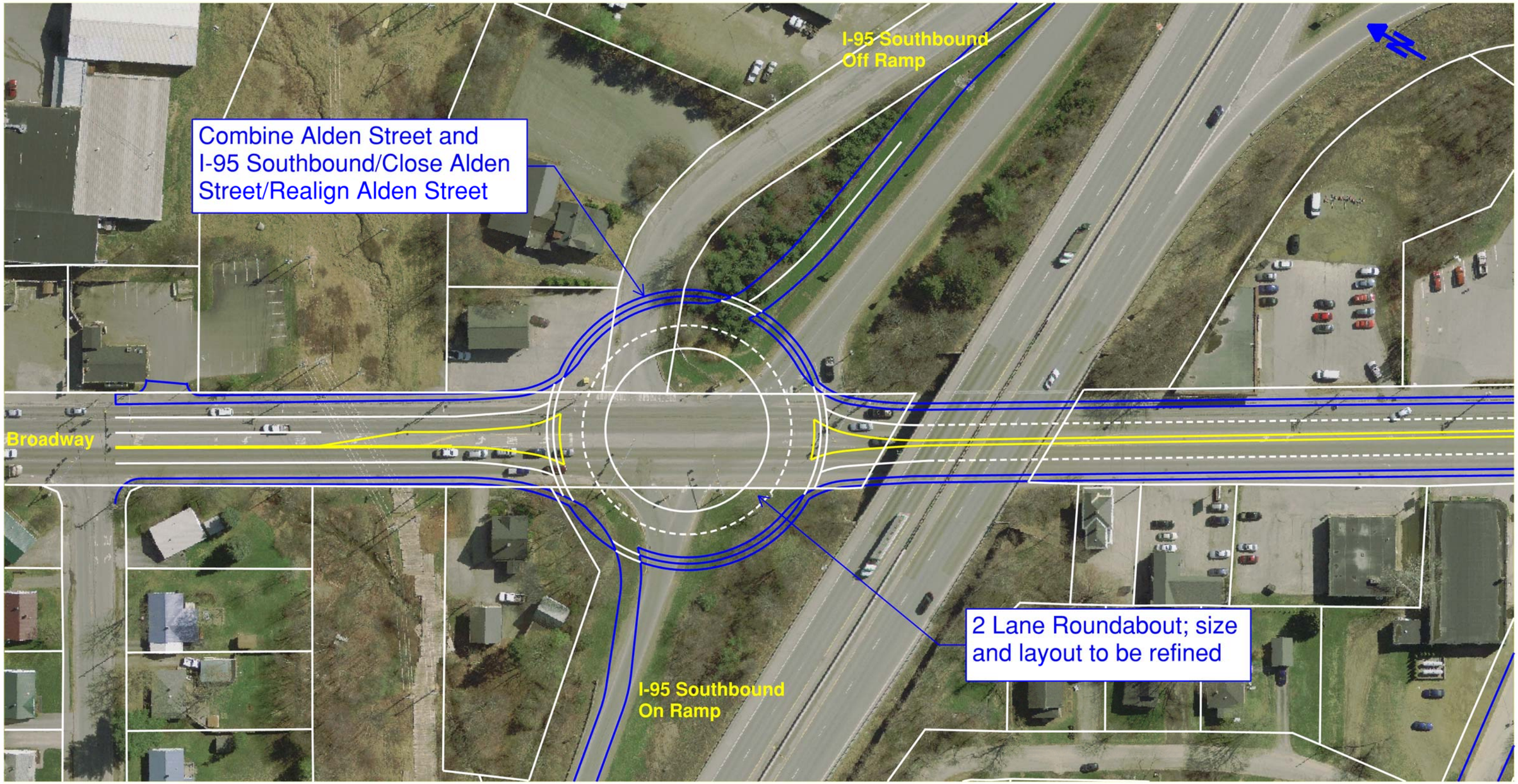
I-95 Southbound Improvements

Figure 5: Create a Right-in/Right-Out at Alden Street



I-95 Southbound Ramps and Alden Street

Figure 6: Roundabout



I-95 Southbound/Alden Street Pros/Cons:

- **Traffic signal phasing and timing optimization yields little long term benefit.**

- **Some key issues regarding the options include:**
  - **Changes to the I-95 Ramps need FHWA approval.**
  - **A full closure of Alden Street will impact businesses/residential uses and it is suggested that a connection via the Broadway Shopping Center be considered.**
  - **A right-in/out option also impacts access to properties, although some movements are preserved.**

- **Analysis of implementing a roundabout at this intersection shows that a multi-lane roundabout is will provide significant capacity and safety benefits.**

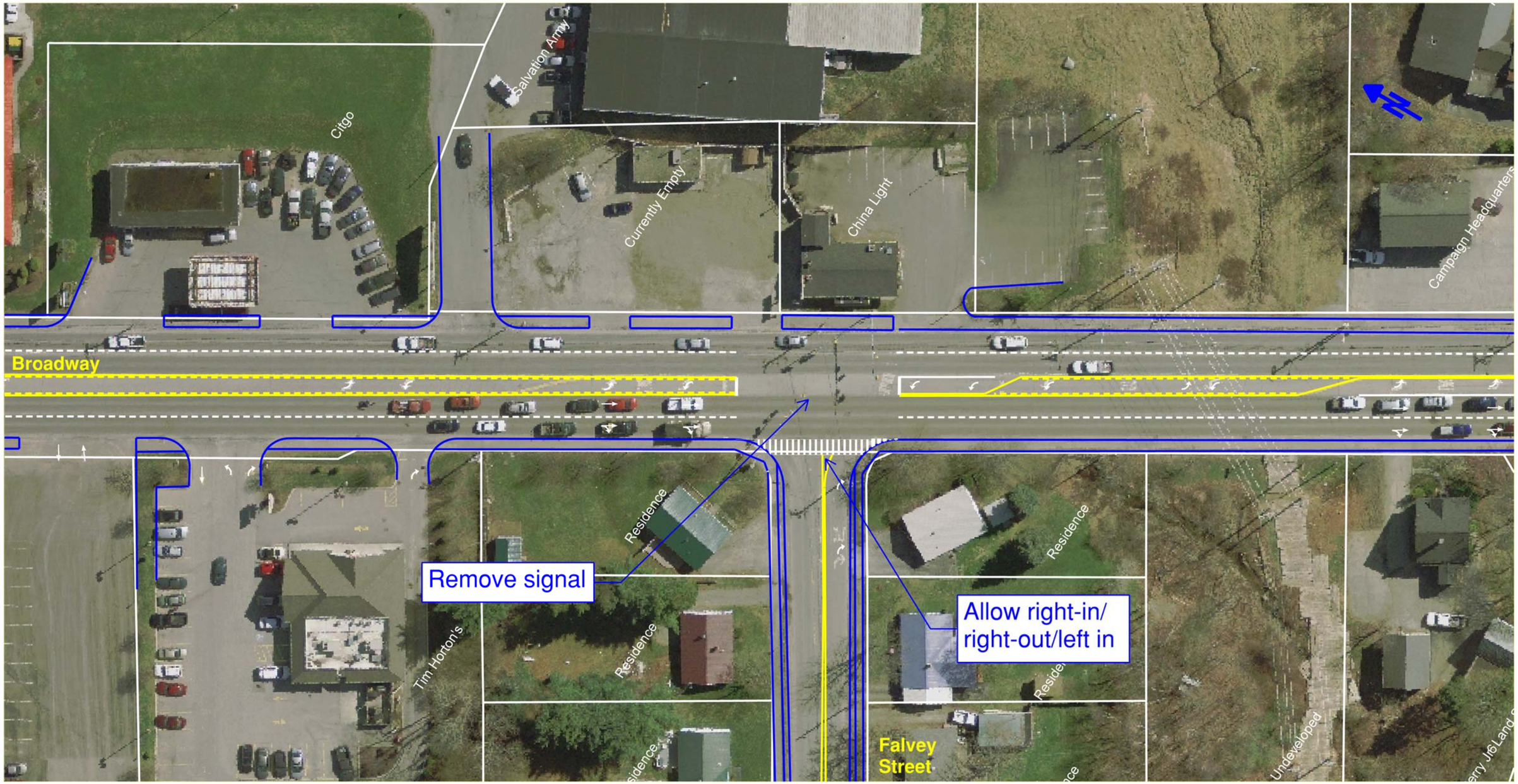
Table 3
Summary of Results for Falvey Street/Broadway Shopping Center

Year	Timing	Approach Modified	Geometry Modified	AM Peak		PM Peak	
				Delay	LOS	Delay	LOS
2014	Existing	None	None	1.5	A	3.8	A
2035	Existing	None	None	1.7	A	9.2	A
2035	Optimized	None	None	1.3	A	14.5*	B*
2035	Optimized	Falvey Street	Do not allow lefts from Falvey Street; remove signal from intersection	0.4	A	3.9	A

* spill back extends to the next signalized intersection

Falvey Street Intersection Improvements

Figure 7: Falvey Street



Falvey Street Pros/Cons:

- **Removing traffic signal improves corridor flow.**
- **Vehicles turning left from Falvey Street must find an alternative outlet (most likely from an inter-parcel connection).**
- **Improvements do not degrade the overall intersection.**

Table 4
Summary of Results for Broadway/McDonald's/Broadway Shopping Center

Year	Timing	Approach Modified	Geometry Modified	AM Peak		PM Peak	
				Delay	LOS	Delay	LOS
2014	Existing	None	None	4.1	A	19.3	B
2035	Existing	None	None	7.8	A	20.1	C
2035	Optimized	None	None	5.8	A	29.7	C
2035	Optimized	McDonald's/ Shopping Center	Move the signal location to the next shopping center entrance and make McDonald's stop-controlled	1.5	A	8.2*	A*
2035	Optimized	McDonald's/ Shopping Center	Move signal location/ McDonald's Right Out	0.7/4.6	A/A	2.2/10.9	A/B

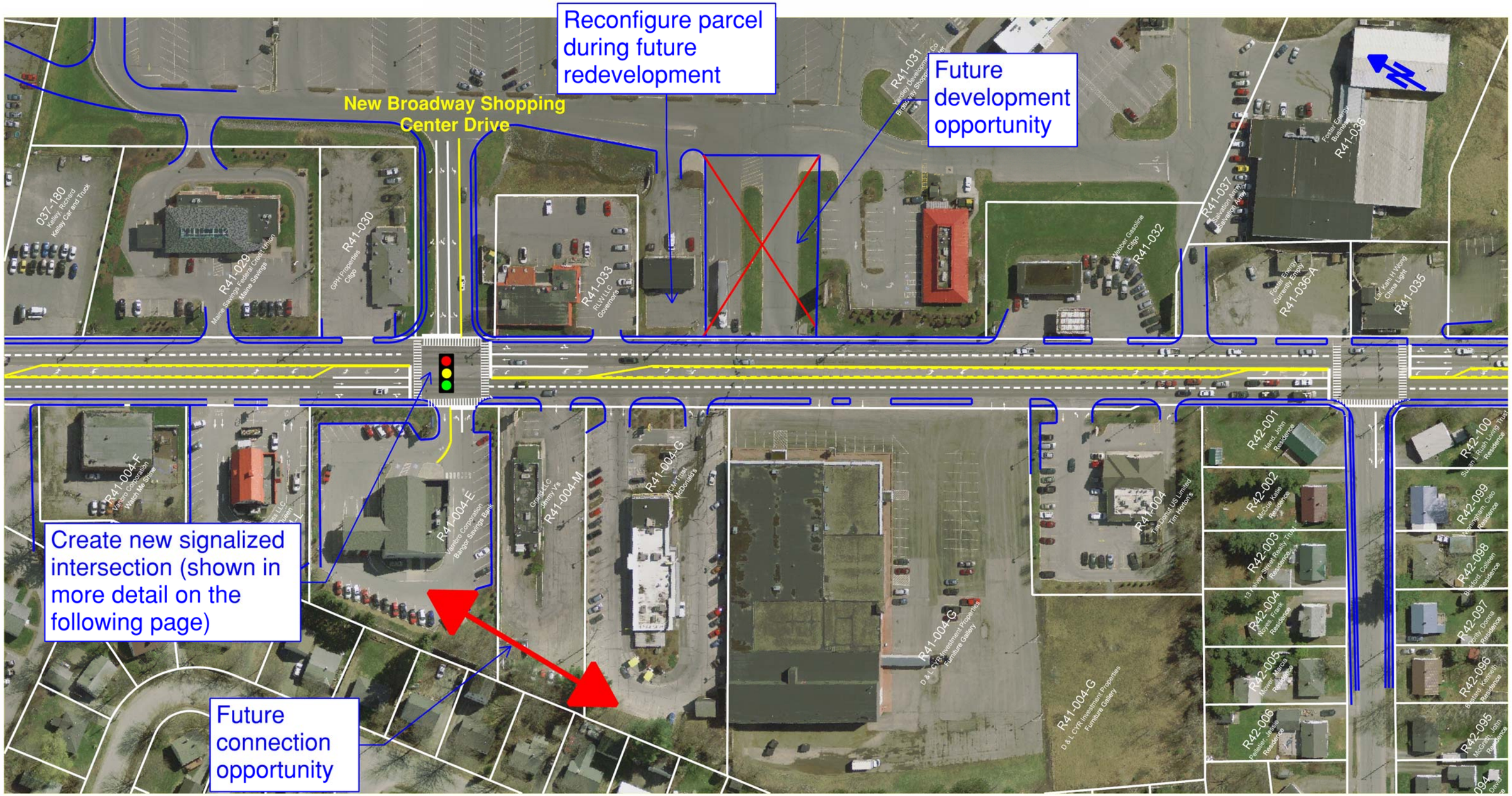
Summary of Results for Relocated Signalized Intersection

Year	Timing	Approach Modified	Geometry Modified	AM Peak		PM Peak	
				Delay	LOS	Delay	LOS
2035	Optimized	McDonald's/ Shopping Center	Move the signal location to the next shopping center entrance and make McDonald's stop-controlled	4.5	A	10.7	B
2035	Optimized	McDonald's/ Shopping Center	Move signal location/ McDonald's Right Out	4.6	A	10.9	B

The * indicates the left turn from McDonald's experiences long delay.

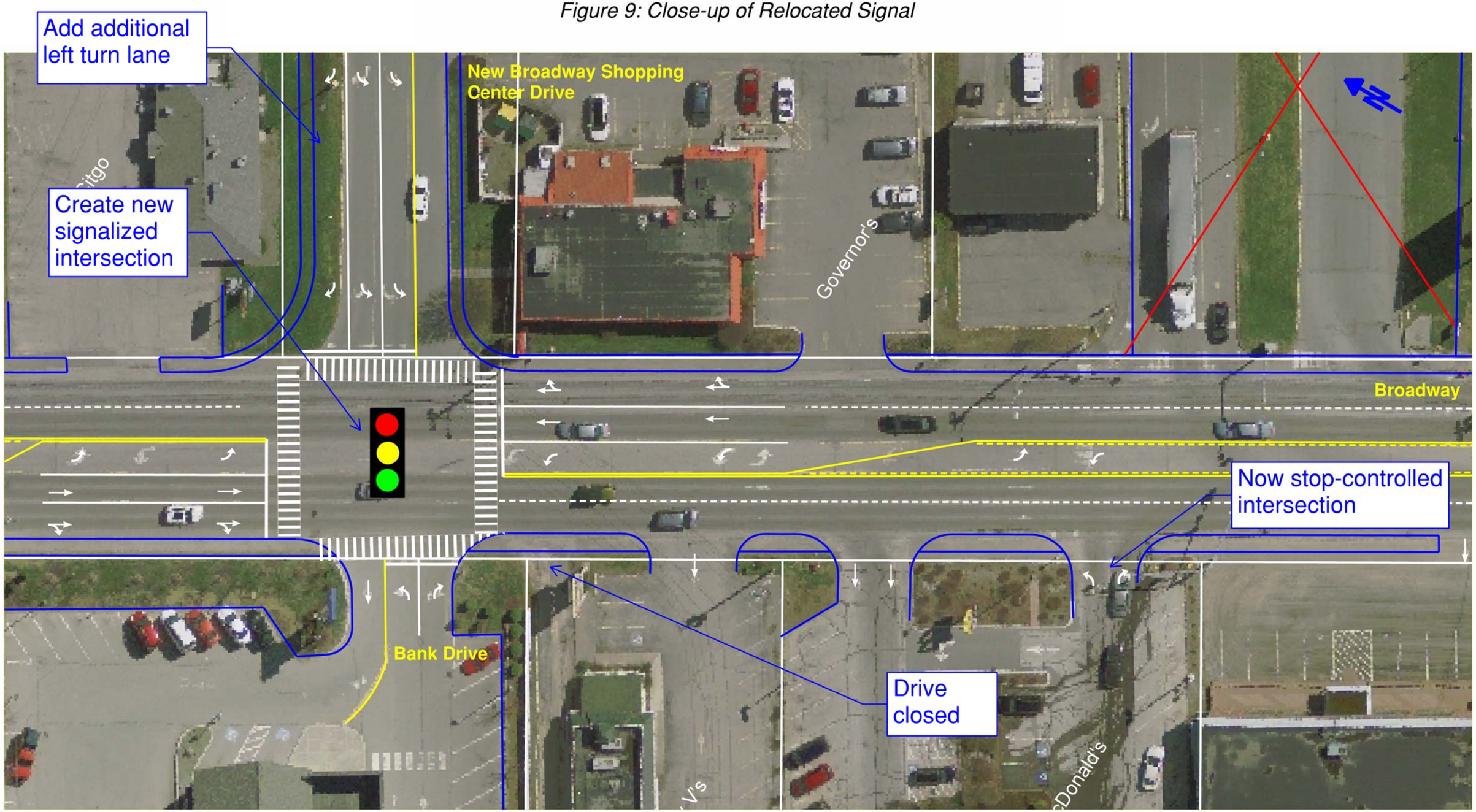
Improvements for McDonald's - Shopping Center Entrance

Figure 8: Overall View of Relocating Intersection



Improvements for McDonald's - Shopping Center Entrance

Figure 9: Close-up of Relocated Signal



I-95 McDonald's/Broadway Shopping Center Pros/Cons:

•Traffic signal phasing and timing optimization has some benefit, but is not expected to significantly improve mobility conditions.

•Both existing and relocated Broadway Shopping Center Entrance intersections would operate at excellent levels of service.

•If left-turns from McDonald's are permitted, long delays can be expected. Left-turns could be prohibited or an inter-parcel connection provided to the new traffic signal.

•Full closure of the existing Broadway Shopping Center driveway could be used for a new development out-parcel or a unsignalized driveway could also be retained.

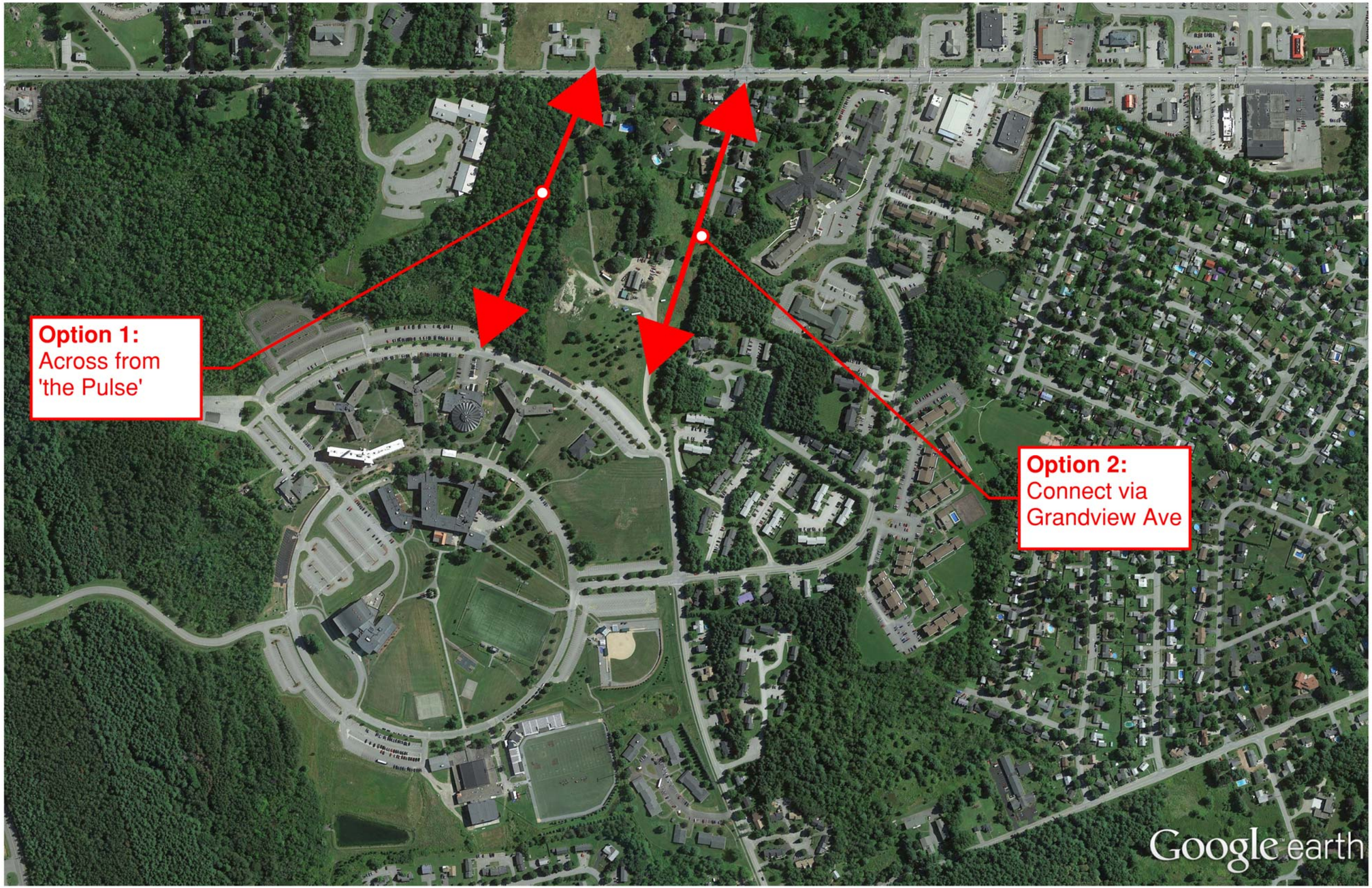
•Access management improvements and traffic signal upgrades could provide safety benefits.

Table 5
Summary of Results for Improvements at Broadway/Husson Avenue/Commercial Driveway

Year	Timing	Approach Modified	Geometry Modified	AM Peak		PM Peak	
				Delay	LOS	Delay	LOS
2014	Existing	None	None	18.7	B	20.1	C
2035	Existing	None	None	26.1	C	20.9	C
2035	Optimized	None	None	26.1	C	21.7	C
2035	Optimized	Side Streets	Realign	8.7	A	14.1	B
2035	Optimized	Husson Ave	Add second Husson entrance off Grandview Ave	9.2	B	19.2	B
2035	Optimized	Husson Ave	Add second Husson entrance across from the "Pulse"	9.3	A	9.8	A

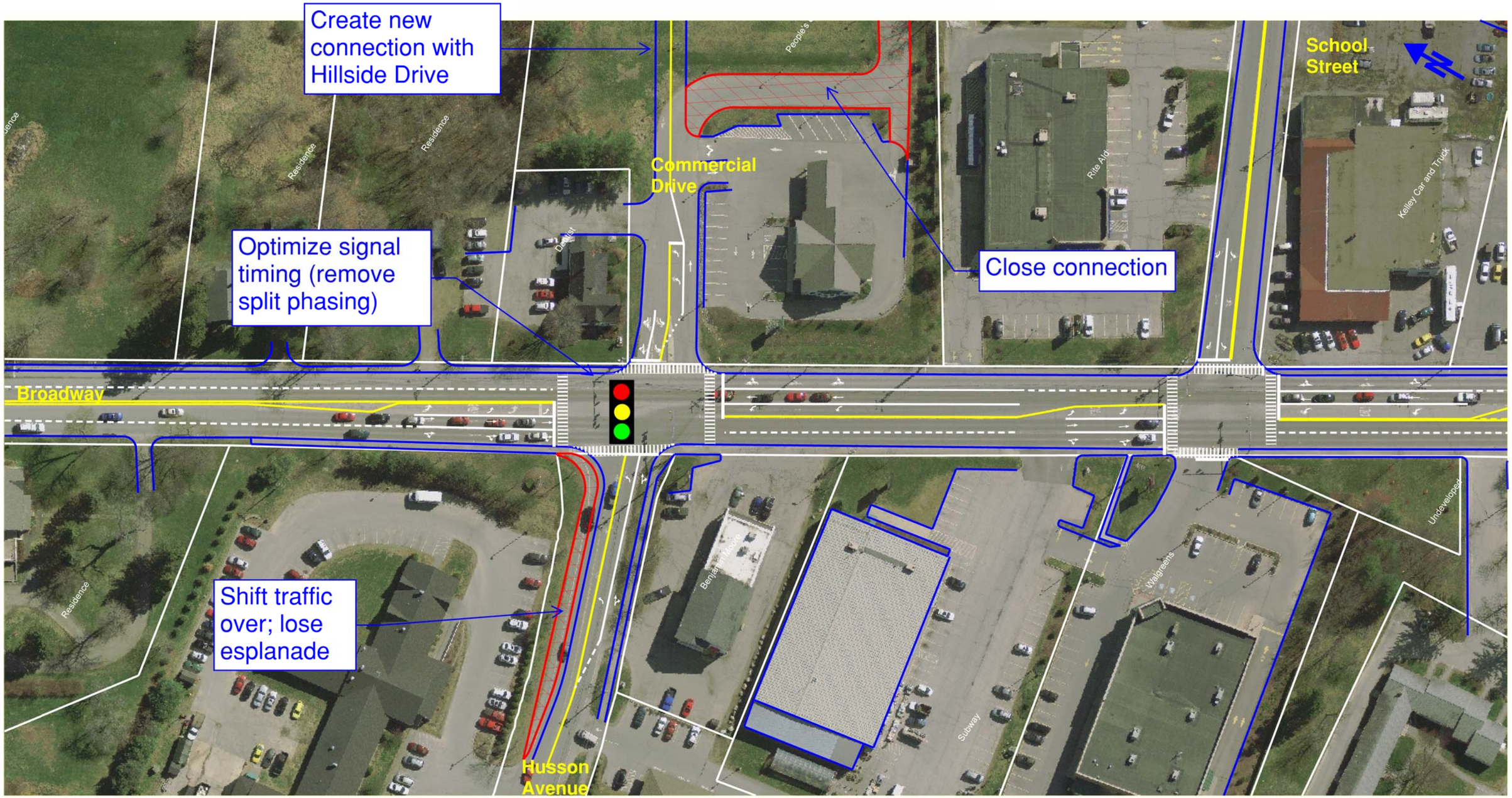
New Husson Connections

Figure 11: Alternatives for Husson Connectors



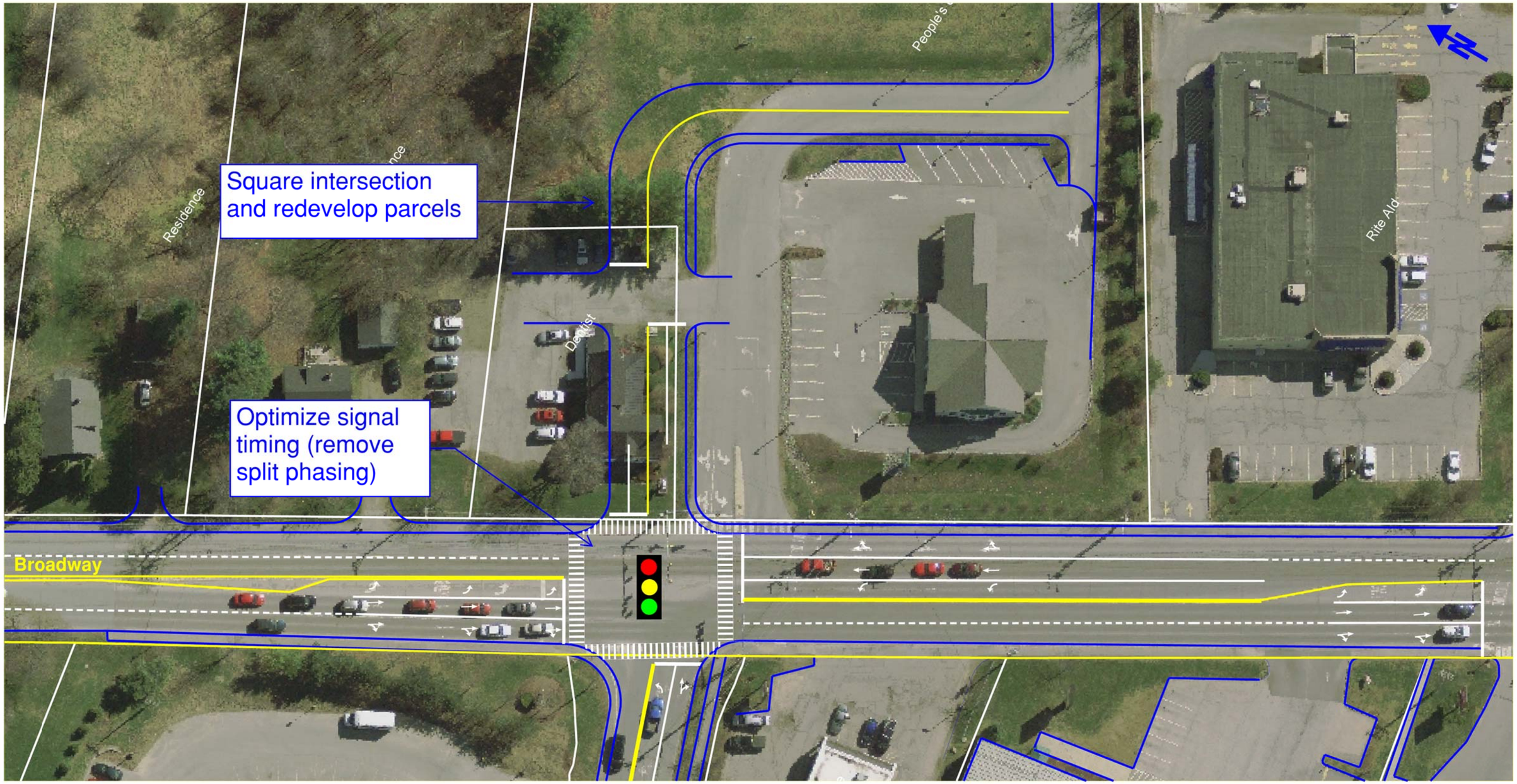
Husson Avenue Improvements

Figure 12: Husson Avenue Reconfiguration



Husson Avenue Improvements

Figure 13: Second Intersection Reconfiguration Option



Husson Pros/Cons:

- **Traffic signal phasing and timing optimization has some benefit, but is not expected to improve mobility conditions.**

- **Realigning the side streets using either option shows significant improvements.**

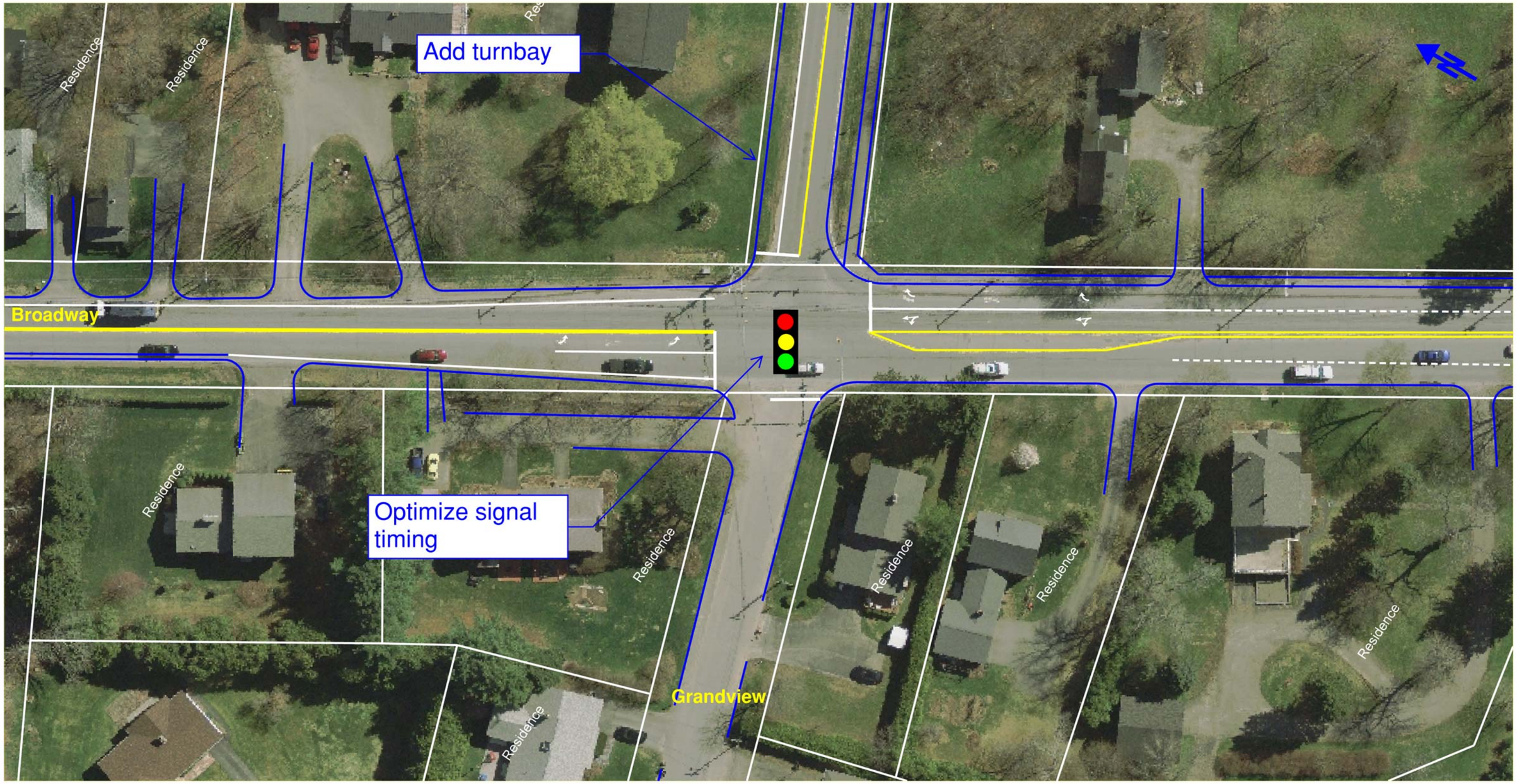
- **A new Husson University Connection has significant benefits.**

Table 6
Summary of Results for Improvements at Broadway/Grandview Avenue

Year	Timing	Approach Modified	Geometry Modified	AM Peak		PM Peak	
				Delay	LOS	Delay	LOS
2014	Existing	None	None	16.7	B	8.7	A
2035	Existing	None	None	11.3	B	8.7	A
2035	Optimized	None	None	9.3	A	9.0	A
2035	Optimized	Grandview from Bangor HS	Separate left turn lane	9.4	A	6.7	A
2035	Optimized	New Access to Husson University	None	40.2	D	36.5	D

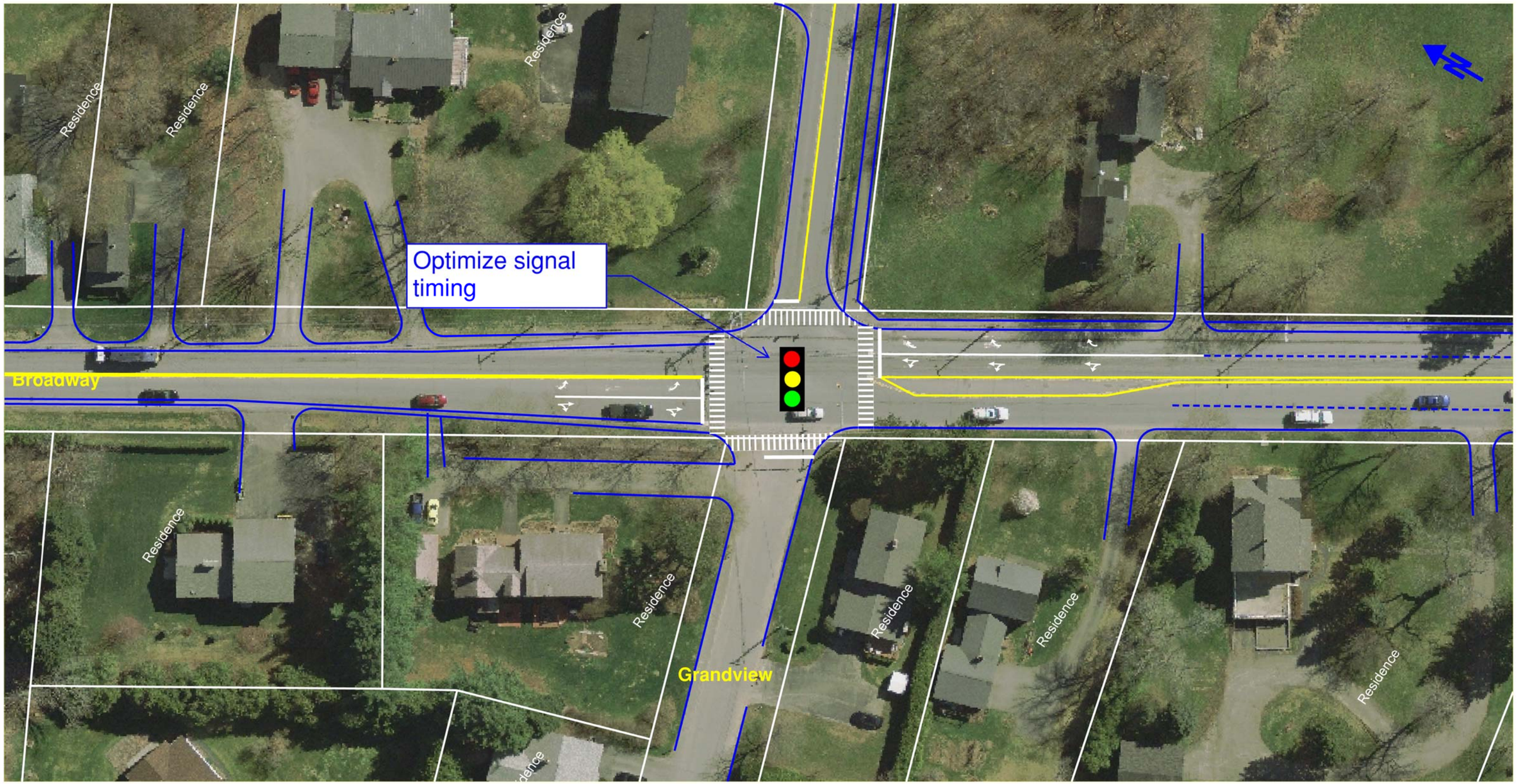
Grandview Avenue Improvements

Figure 14: Additional Turnbay at Grandview



Grandview Avenue Improvements

Figure 15: New Connection at Grandview



Grandview Avenue Pros/Cons:

- **Traffic signal phasing and timing optimization has some benefit, but is not expected to significantly improve mobility conditions.**

- **There is little improvement with the addition of a left turn bay coming from the high school.**

- **A new Husson University Connection causes an overall reduction in service at the intersection**

New Connections

Figure 16: Overall New Connections

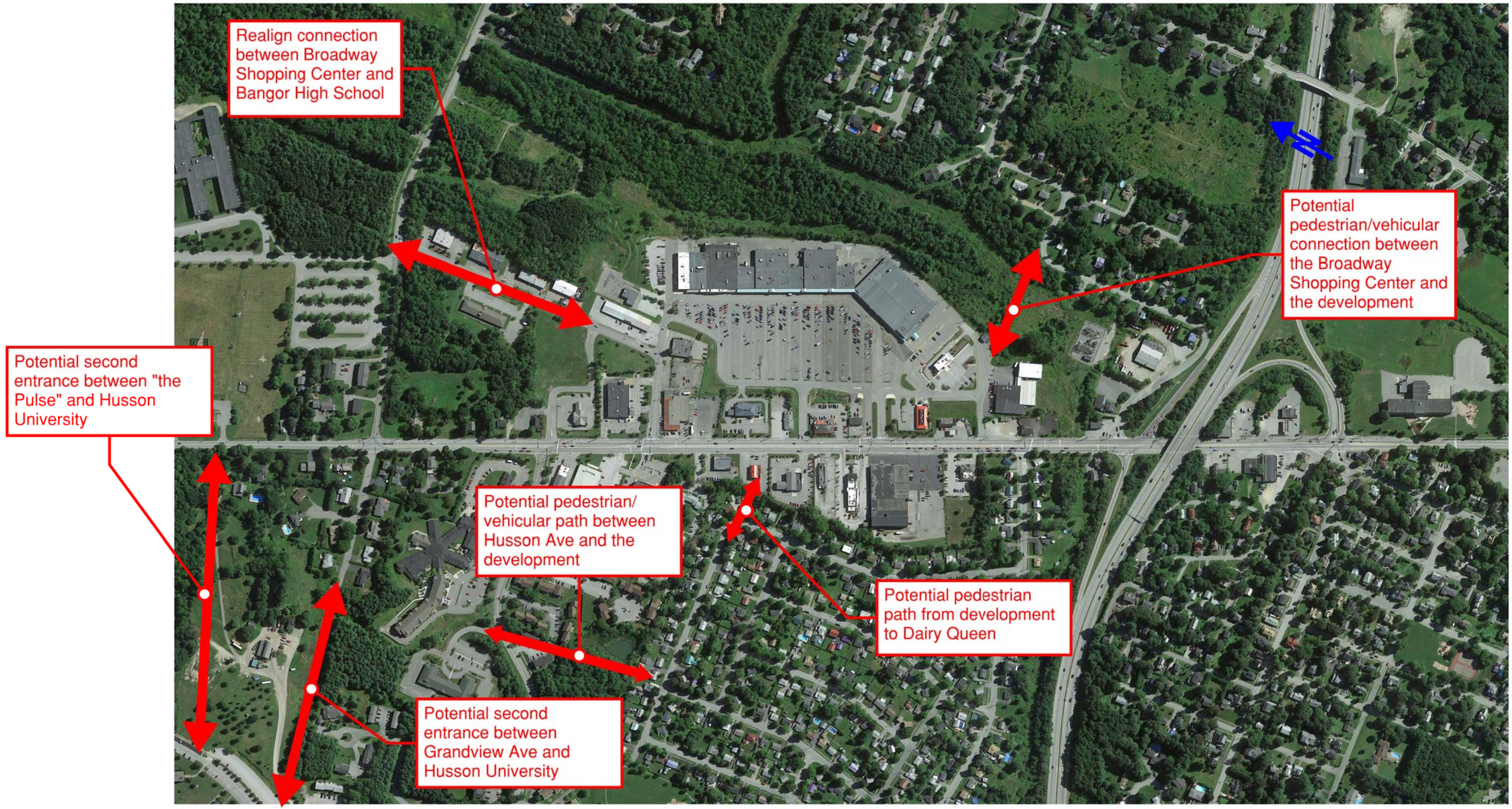
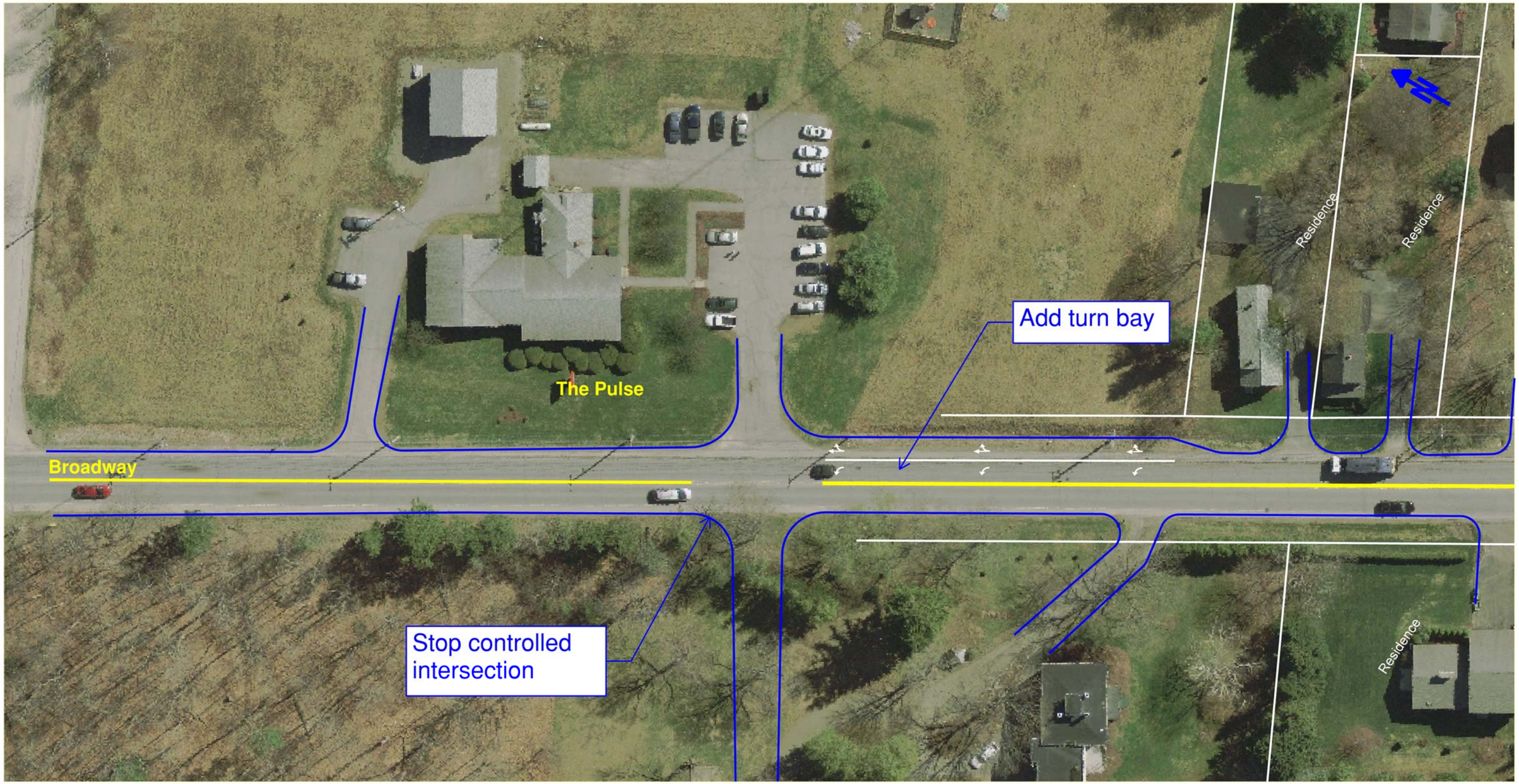


Table 7
Summary of Results for Improvements at 'the Pulse'

Year	Timing	Approach Modified	Geometry Modified	AM Peak		PM Peak	
				Delay	LOS	Delay	LOS
2035	Optimized	Grandview from Bangor HS	Separate left turn lane	3.5	A	4.5	A

Husson Avenue Improvements

Figure 17: New Intersection at the Pulse for New Connection



'the Pulse' Connection Pros/Cons:

- **A new Husson University Connection has significant benefits to Husson Avenue Intersection.**
- **An additional left turn bay is required into Husson University.**
- **This does not degrade the overall flow of the location.**