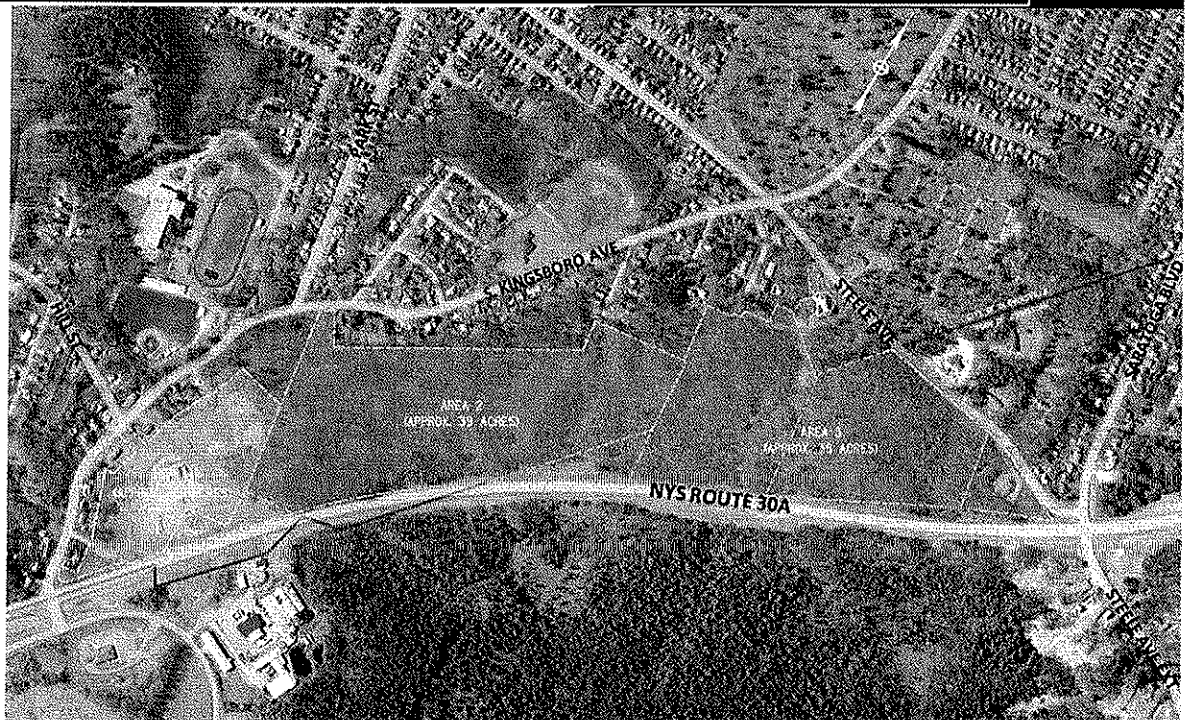


NY Route 30A Break In Right-of-Way Access Traffic Study

February 2013

DRAFT REPORT



Prepared for:
City of Gloversville



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1. Introduction

In an effort to encourage economic development the City of Gloversville, located in Fulton County, New York, has retained Greenman-Pedersen, Inc. (GPI) to examine how the development of a 90 acre parcel of land, north of NY Route 30A and bordering South Kingsboro Avenue and Steele Avenue, would affect the surrounding transportation network. NY Route 30A through this area was constructed on right-of-way that was acquired by "Fee without Access", which means the abutting parcels are denied direct access to the highway. The Gloversville community feels this restriction has reduced the attractiveness of this site for development. The purpose of this study is to determine the impacts of developing this land without direct access to NY Route 30A, as currently designated, and to ascertain if there would be a public benefit to reclassifying the right-of-way to allow access and permit a connection from NY Route 30A to a future City-owned frontage road that would run through the developable lands adjacent to the highway between South Kingsboro Avenue and Steele Avenue.

1.1. Study Methodology

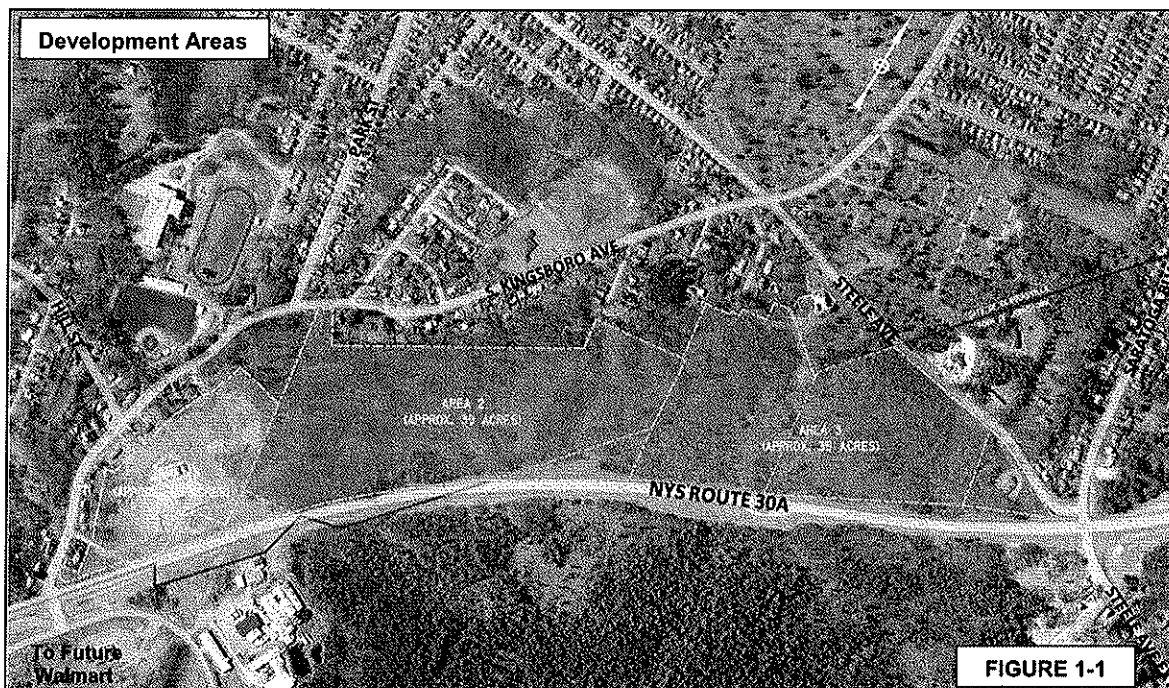
To accomplish the goals of this study, a traditional traffic impact study that determines the improvements necessary to mitigate a specific development's impacts would be inadequate. In the case of this planning study, the exact land use mix and development size is unknown, so the improvements suggested would only be speculative at this point. Instead, to identify the public benefit of allowing a break in right-of-way access, the comparative difference in network Measures of Effectiveness between the "with" and "without" Route 30A access alternatives was analyzed. Using this approach, the specific improvements recommended to be provided are not the primary focus of this study. However it is important that the improvements included for each Development Alternative are consistent between the compared analyses.

For this study, three assumed development scenarios were selected to identify various levels of development that may occur. These scenarios represent (1) minimal development with some non-participating land owners; (2) mid-level development; and (3) assumed maximum development expected to occur within 20-years. As part of this process, it is assumed that the City will first annex the Town of Johnstown parcels into the City, convert the zoning of all site parcels to allow for commercial land uses and adopt provisions in their master plan to allow for this type development within the City.

The methodology used in this study includes analyzing future forecasted roadway network operations within the area for specific levels of development and comparing how the network would operate if (1) there is no access directly to Route 30A and (2) access directly to Route 30A is allowed. A review of network Measures of Effectiveness (MOEs) experiences under each development scenario for both these conditions is the focus of this study. The network MOEs being considered include safety, average speed, vehicle hours of delay, vehicle miles traveled, and fuel consumed. In addition vehicular delay and level of service at each intersection were reviewed. An assessment of the changes (improvement) in forecasted network operations between access scenarios will quantify the transportation benefits of allowing direct access to Route 30A.

1.2. Site of Future Development

The development site being considered as part of the analysis consists of eight different parcels controlled by four separate owners. In total, the site is approximately 90 acres and is located predominantly in the City of Gloversville. However, there is a small section located in the town of Johnstown as well. As development moves forward, it is anticipated that this land will be annexed into the City to promote consistency in zoning and vision for the area. For analysis purposes, three separate development areas have been defined. They are shown in Figure 1-1 below and in Figure E-1 in Appendix E.

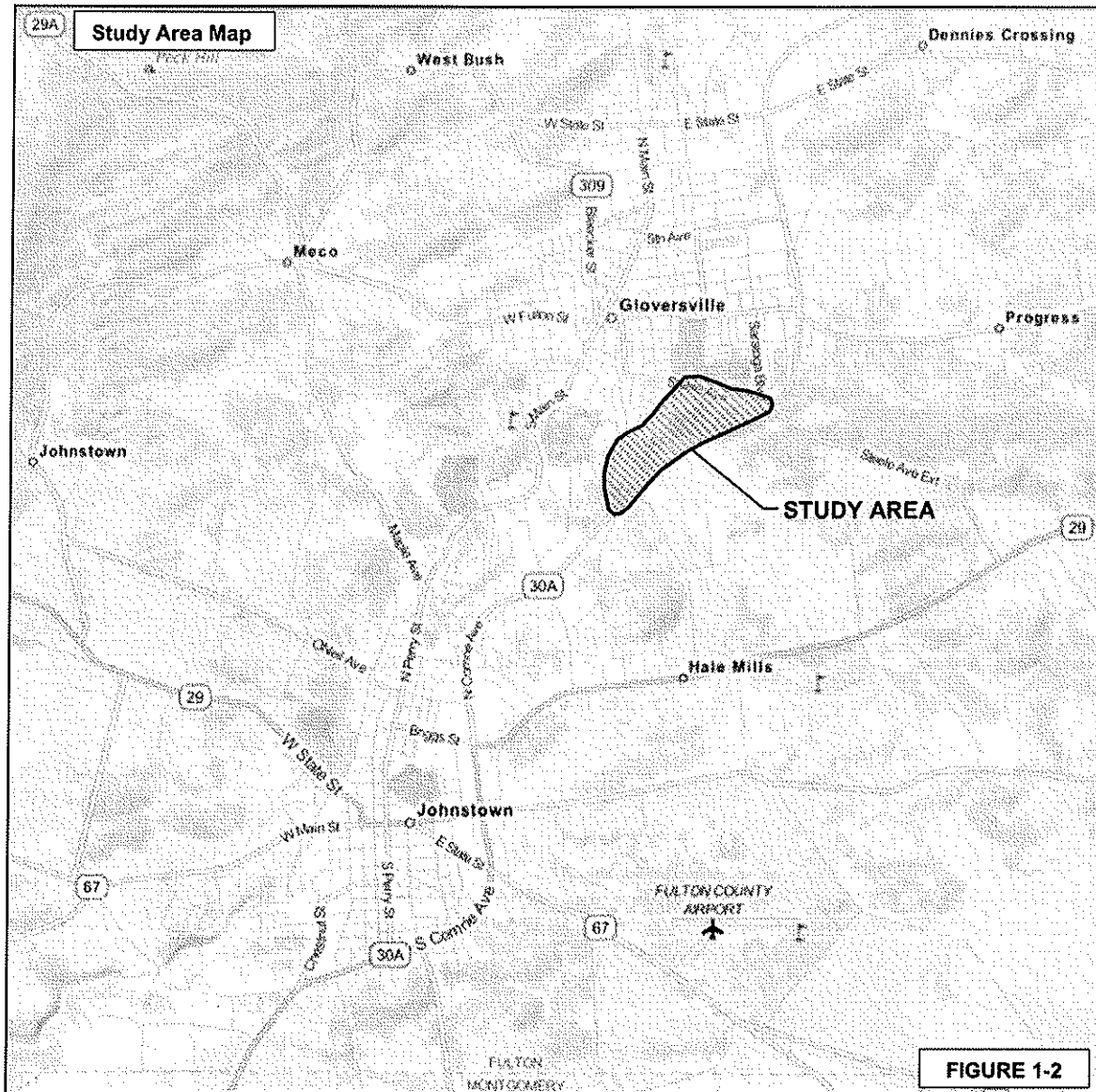


1.3. Study Area

The study area is located on the southeast side of the City of Gloversville and includes roadway segments along both NY Route 30A and S. Kingsboro Ave that are approximately one mile long and a roadway segment along Steele Ave that is approximately one half mile long. The primary intersections of focus for analysis include the following, and all potential access points to the site.

- NY Route 30A and S. Kingsboro Avenue
- NY Route 30A and Saratoga Blvd/Steele Avenue Extension
- S. Kingsboro Avenue and Hill Street
- S. Kingsboro Avenue and Park Street
- S. Kingsboro Avenue and Steele Avenue

A map showing the study area is provided on Figure 1-2.



2. Existing Roadway & Traffic Conditions

2.1. Data Collection

The existing traffic conditions for the roadway system within the Study Area were documented through a review of available traffic studies/data and a field assessment conducted in September 2012. The purpose of this review and assessment was to identify features that affect roadway capacity, including identification of existing traffic control, pavement widths, signage, etc. In addition, manual turn movement traffic counts were conducted to determine AM and PM peak hour traffic volumes at the study intersections, and automatic traffic recorders (ATR's) were placed at NY Route 30A and S. Kingsboro Avenue to collect hourly traffic volume and speed data. Available data that was compiled for this study included:

- Historic Traffic Data for Travel Speed and Traffic Volume.
- Traffic Accident History for Last Three Available Years.
- NY Route 30A Record Plans and Traffic Signal Timing Charts.
- Proposed Walmart Development Traffic Impact Study and Design Plans.
- Layout Plans for the Proposed Burger King Development.
- Concept Plans for the Proposed Foothills United Methodist Church.
- Zoning Maps for the City of Gloversville and Town of Johnstown.
- Lot and Building Requirements for the City of Gloversville.
- Aerial Photography of the Study Area.

2.2. Roadway Network

The studied roadways, which are shown surrounding the Development Areas in Figure 1-1, consist of segments of NY Route 30A, South Kingsboro Avenue and Steele Avenue. These roadways and their intersections are described below:

2.2.1. Roadway Description

2.2.1.1. NY Route 30A

NY Route 30A within the study area is a 2-lane undivided principal arterial with 55 mph posted speed limit. It consists of one 12' wide travel lane in each direction with 10' shoulders on either side. NY Route 30A was constructed and is maintained by NYS Department of Transportation (NYSDOT), and the pavement depth, allowable curvature and other standards used in the design of this roadway were selected to handle much more traffic than the local roads within the area. The project limits along Route 30A for this study terminate at signalized intersections with South Kingsboro Avenue and Steele Avenue Extension/Saratoga Blvd, which are located approximately one mile apart.

2.2.1.2. South Kingsboro Avenue

S. Kingsboro Ave is a minor arterial owned and maintained by the City of Gloversville. It is a two-lane undivided roadway with a 30 mph posted speed limit. Pavement width ranges from 22 feet to 28 feet with no pavement markings to delineate lanes or shoulders. There are significant horizontal and vertical curvature throughout the one mile study area road segment between NY Route 30A and Steele Avenue,

and it is evident that the roadway is designed for a much lower design speed and anticipated vehicle loading than the State Highway.

2.2.1.3. Steele Avenue

Steel Avenue is a two-lane local road that extends approximately one half mile between S. Kingsboro Ave and Saratoga Blvd within the study area. Approximate one half of the road segment is owned by the City of Gloversville and the other half is owned by the Town of Johnstown. The Gloversville portion of the road has a 20' pavement width with no pavement marking to delineate the lanes or shoulders. The Johnstown portion of the road has centerline and edgeline pavement markings that delineate one 10 feet wide lane in each direction and shoulder widths ranging between 0 - 3 feet. Steele Ave intersects Saratoga Blvd less than 50' from the NY Route 30A and Steele Ave Ext/Saratoga Blvd intersection. With such a small segment of Saratoga Blvd being in the study area, it was not considered as a studied road segment and was only considered within the context of the signalized intersection and its relationship with Steele Ave.

2.2.2. Intersection Description

2.2.2.1. NY Route 30A and S. Kingsboro Avenue

NY Route 30A intersects S. Kingsboro Ave at the southern end of the study area and is a focal point of most traffic traveling between Gloversville and Johnstown. It is also the new primary access point for the proposed Walmart development, which is currently under construction. Walmart will access this intersection through an extension of the southeast leg of this intersection. The intersection currently has left turn lanes in both directions along NY Route 30A and on the southeast approach, and has a right turn lane on the north side approach. Improvements being constructed and are soon to be in place to support the additional traffic from the Walmart include lengthening both NY Route 30A left turn lanes, and the addition of right turn lanes on both the southwest NY Route 30A approach and the southeast approach from Walmart.

Traffic control at the intersection is performed through the use of signalization, which designates vehicular right-of-way through the use of 3-color (red, yellow, green) indications. In addition to through movements and allowing permissive left turns during the through movement green times, protected left turn phases also exist for all three approaches that have left turn lanes. The traffic signal is owned and maintained by NYSDOT.

2.2.2.2. NY Route 30A and Steele Avenue Extension/Saratoga Boulevard

This intersection has left turn lanes in both directions along NY Route 30A, but only single lanes on the side streets. The approach to the southeast is Steele Avenue Extension that connects to NY Route 29 to the east. The north side approach is Saratoga Blvd, which travels into the City of Gloversville and which intersections Steele Ave less than 50 feet from the intersection. The location and configuration of Steele Ave in relation to this intersection could cause confusion and potential queuing problems and is not conducive to accommodating heavy traffic volumes to and from Steele Ave.

The intersection is traffic signal controlled with permissive only turn movements. There are currently no protected left turn phases at the intersection.

2.2.2.3. S. Kingsboro Avenue and Hill Street

This local road T-intersection has single lane on all three approaches. S. Kingsboro approaches from the north and south while Hill Street approaches from the west. The intersection is stop controlled with a flashing beacon that flashes yellow on S. Kingsboro and red on Hill Street. There is a stop sign located on the Hill Street Approach as well.

2.2.2.4. S. Kingsboro Avenue and Park Street

Another local road T-intersection with single lane on all three approaches. S. Kingsboro approaches from the northeast and southwest while Park Street approaches from the north. The Park Street approach is stop sign controlled, while S. Kingsboro is uncontrolled at this location. There are no pavement marking to delineate lanes at the intersection.

2.2.2.5. S. Kingsboro Avenue and Steele Avenue

S. Kingsboro Ave travels northeast and southwest at its intersection with Steele Ave, which travels east and west through this area. Traffic control at the intersection consist of a flashing beacon, flashing yellow for S. Kingsboro and red for Steele, and stop signs on both Steele Ave approaches. All approaches are single lane with no pavement markings to delineate lanes.

2.2.2.6. Steele Avenue and Saratoga Boulevard

This T- intersection has three single lane approaches. Steele Ave is stop sign controlled, while Saratoga Blvd in uncontrolled. The intersection is located less than 50 feet north of the NY Rote 30A and Steele Ave Ext/Saratoga Blvd traffic signal which can be problematic for northbound traffic on Saratoga Blvd, who could queue back through the signal to block the State highway if a vehicle is delayed turning left onto Steele Ave. The location is also problematic for Steele Ave traffic entering Saratoga Blvd, who will be blocked from movement whenever more than one southbound car is queued at the signal.

2.3. Existing Traffic Volumes

Existing traffic volumes were documented by conducting manual turn movement counts between 7:00 - 9:00 AM and between 4:00 - 6:00 PM at each the studied intersections. In addition, an Automatic Traffic Counter (ATR) was placed along NY Route 30A and two were placed on S. Kingsboro Ave for a 5-day period, between September 24-28, 2012, to identify hourly traffic volume and speed data.

Turn movement counts were conducted at the following intersection on Wednesday September 26 and Thursday September 27, 2012.

- NY Route 30A and S. Kingsboro Avenue
- NY Route 30A and Saratoga Blvd/Steele Avenue Extension
- S. Kingsboro Avenue and Hill Street
- S. Kingsboro Avenue and Park Street
- S. Kingsboro Avenue and Steele Avenue

The count information indicated that the AM peak hour for commuter travel is 7:45-8:45 AM and the PM peak hour is 4:00 - 5:00 PM. These were the periods selected for traffic analysis, as they would be “worst case” traffic conditions within a typical day and all other hours would see equal to better operations.

The collected ATR data revealed that the 85th percentile speed along NY Route 30A is 59 mph and the 85th percentile speed on S. Kingsboro Ave is 36 mph near Steele Ave increasing to 38 mph near Hill Street. The 85th percentile speed, which is the speed that only 15% of the traveling vehicles exceed on a given road segment, is considered the speed that reasonable people would tend to travel based the road environment. Within the context of a traffic analysis, it is called the “operating speed”.

2.4. Walmart Traffic Adjustment

Though the traffic counts conducted reflect the current traffic conditions, the soon to open Walmart store, which will access NY Route 30A at the S. Kingsboro Ave intersection, will yield additional traffic within the study area that was also considered as part of the existing traffic. To adjust for this, PM peak hour trip generation information for Walmart was taken from the Traffic Impact Study (TIS) prepared by SRF Associates in 2007 and added to the counted volumes to produce the 2012 Existing PM Peak Hour Traffic Volumes for analysis.

As the Walmart (TIS) did not analyze the AM peak period, information for hourly trip variations at shopping centers was taken from the *Trip Generation Manual*, 9th Edition to forecast AM peak hour traffic volumes from the projected Walmart Trip Generation in the PM peak hour. These volumes were also added to counted volumes to produce the 2012 Existing AM Peak Hour Traffic Volumes used in this study. Diagrams showing these volumes can be found in Appendix B. Figure B-1 depicts the counted and balanced peak hour traffic volumes, Figure B-2 reflects the Walmart Added Peak Hour Traffic and Figure B-3 reflect the 2012 Peak Hour Traffic Volumes (with Walmart Traffic) used in the analysis.

2.5. Accident History

The accident history for the study area highway system was obtained from NYSDOT, from their Accident Location Information System (ALIS), for the 3-year period between January 1, 2009 and December 31, 2011. Police Accident Reports for that period were also obtained from the Department of Motor Vehicles. This data was reviewed to identify accident locations, types and severity. Table 2-1 provides a summary of crash severity for the study intersections and roadway links.

The State’s Accident Location Information System categorizes accidents into four basic groups: fatality, personal injury, property damage only and non-reportable. Non-reportable crashes are minor incidents with estimated property damage of less than \$1,000 in repair costs. The accident data for the study area revealed that no fatalities occurred within the reviewed period. Forty-six (46) total accidents occurred within the study area during the study period, and over 75% of them involved property damage only. Of the 11 total personal injury accidents almost half of them occurred on the local roads, even though traffic volumes and speeds are much less than on the State Highway. This is indicative of the lower design standards required for the local roads and the allowable horizontal and vertical curvatures being much greater than on State Highways.

**TABLE 2-1
ACCIDENT SEVERITY SUMMARY**

Location	Total Accidents	Fatalities	Personal Injury	Property Damage Only	Non- Reportable
Intersections:					
Route 30A/S. Kingsboro	14	0	4	10	0
Route 30A/Steele Ave/Saratoga	7	0	2	3	2
S. Kingsboro/ Hill St	1	0	1	0	0
S. Kingsboro/Park St	2	0	0	2	0
S. Kingsboro/Steele Ave	2	0	0	2	0
Roadway Links:					
Route 30A - S. Kingsboro to Steele	13	0	0	11	2
S. Kingsboro - Route 30A to Steele	10	0	4	6	0
Steele - S. Kingsboro to Saratoga Blvd	2	0	1	1	0

Notes: Route 30A and Steele Ave have no reportable intersection junctures within the reported links.

Accidents reported for the S. Kingsboro link does include reported intersection accidents between the two termini, including those at Hill St, Park St and Steele Ave.

Using the accident data and Annual Average Daily Traffic (AADT) volume information from NYSDOT count station reports and daily data obtained from Automatic Traffic Recorders, accident rates were calculated for each of the studied intersections and roadway links. These rates were then compared to statewide average accident rates. Table 2-2 provides the calculated accident rates for the studied intersections and roadways, as well as information about the statewide average rates for each facility type.

The statewide average rates are derived from historical crash data collected on state highways and aggregated to facilities with similar geometric and traffic control characteristics. These rate comparisons provide a general indication of the relative safety of specific study locations within the State highway system. Because these statistics are derived from only State-maintained roadways, the rates are not directly applicable to the local roads within the study area (S. Kingsboro Ave and Steele Ave), but making the comparison for these roadways may still provide some insight into the general safety of the facility.

**TABLE 2-2
ACCIDENT RATE SUMMARY**

Location	Total Accidents	Total Traffic	Accident Rate	Statewide Avg. Rate
Intersections:				
Route 30A/S. Kingsboro	14	19.5 MEV	0.72	0.14
Route 30A/Steele Ave/Saratoga	7	15.3 MEV	0.46	0.14
S. Kingsboro/ Hill St	1	8.2 MEV	0.12	0.11
S. Kingsboro/Park St	2	7.9 MEV	0.25	0.11
S. Kingsboro/Steele Ave	2	6.9 MEV	0.29	0.09
Roadway Links:				
Route 30A - S. Kingsboro to Steele	13	12.6 MVM	1.03	2.11
S. Kingsboro - Route 30A to Steele	10	6.8 MVM	1.47	2.99
Steele - S. Kingsboro to Saratoga Blvd	2	0.45 MVM	4.44	2.11

Note: MEV = Million Entering Vehicles, MVM = Million Vehicle Miles

As can be seen in Table 2-2, accident rates at the intersections and along Steele Ave are above state-wide averages, but the roadway link rates along S. Kingsboro Ave and NY Route 30A are below average, with the NY Route 30A road link between the two signalized intersections providing the lowest accident rate of the Study Area.

To further assess safety conditions, accident types were also reviewed for each of the location to determine if a pattern could be identified that would indicate a significant geometric or operational deficiency. A summary of the Accident Types found within the study area is shown in Table 2-3.

**TABLE 2-3
ACCIDENT TYPE SUMMARY**

Location	Animal Hits	Fixed Object	Left Turn	Right Angle	Out of Control	Rear End	Side swipe	U-Turn	Bicycle	Backing	Overtake
Intersections:											
Route 30A/S. Kingsboro	1	1	-	1	1	5	4	1	-	-	-
Route 30A/Steele Ave/Saratoga	1	-	-	1	-	5	-	-	-	-	-
S. Kingsboro/ Hill St	-	1	-	-	-	-	-	-	-	-	-
S. Kingsboro/Park St	-	1	-	-	-	1	-	-	-	-	-
S. Kingsboro/Steele Ave	-	-	-	-	-	1	-	-	-	-	-
Roadway Links:											
Route 30A - S. Kingsboro to Steele	12	-	-	-	-	-	-	-	-	-	1
S. Kingsboro - Route 30A to Steele	-	4	-	1	-	4	-	-	1	-	-
Steele - S. Kingsboro to Saratoga Blvd	-	1	-	-	-	-	-	-	-	1	-

Of the accident types found at the intersections, rear end accidents at the two signalized intersections are the most prevalent. However, no more than three (3) rear ends occurred on any one approach over the 3-year period, which would not indicate a pattern of significant concern. The most striking of the numbers found when reviewing the accident types was that 12 of the 13 accidents occurring on the Route 30A roadway link between the two signalized intersections were animal hits. This indicates that reducing the deer population throughout this part of the study area could significantly improve driver safety along this roadway link.

A list of the accident reports reviewed for the accident analysis can be found in Appendix C of this report.

3. Projected Traffic Conditions

To identify any operational benefits of providing direct access to NY Route 30A, future traffic conditions were forecasted and analyzed. For this project, a 20-year planning horizon was selected for study. As such, the 2012 existing traffic volumes were adjusted to account for the expected regional growth over that 20-year period, and then trip generation from the potential development of vacant land within the study area was identified to develop 2032 future peak hour traffic volumes for use in the analysis.

3.1. Background Growth

Future No-Build traffic conditions resulting from area wide traffic growth that is not associated with the proposed development site were estimated based on a review of traffic trends from historical traffic volume data obtained from NYSDOT. It was determined from this data that the area surrounding the project site has experienced growth in traffic of less than one half percent per year. Therefore, a growth rate one half percent per year was applied to the 2012 existing traffic volumes to represent background conditions for the 2032 planning horizon. It should be noted that traffic from the soon-to-opened Walmart development was already accounted in the existing traffic volumes, so no additional adjustment for this local development was necessary to account for its traffic in the future. The 2032 No-Build Peak hour Traffic Volumes can be seen on Figure B-4 in Appendix B.

3.2. Future Anticipated Development

There are significant vacant lands within the study area adjacent to NY Route 30A. The City of Gloversville anticipates these lands will be developed, which will generate traffic that may affect operations of the surrounding roadway network. To determine the most credible assumptions concerning potential development on some of these vacant lands, input from several of the land owners was used in the preparation of this study. The three main development areas that were examined for their potential land uses and trip generation potential included:

Area 1: The westernmost land mass, fronting both Route 30A and S. Kingsboro Ave, consisting of about 16 acres, which includes included proposed development sites of a fast food restaurant and a new Foothills United Methodist Church.

Area 2: The center parcel that fronts Route 30A and has access to S. Kingsboro Ave. This parcel consists of about 39 acres. Currently, the owner of this land is non-participating, but it is anticipated that development will occur on this site within the 20 year planning horizon.

Area 3: The easternmost land mass (3 parcels), fronting both Route 30A and Steele Ave, consisting of about 35 acres.

A diagram of these areas can be found in Section 1.2 and on Figure E-1 in Appendix E.

Based on the assumptions and information above, three development scenarios were created. These scenarios were transmitted to and accepted as reasonable by the City of Gloversville Department of Public Works in October 2012. Table 3-1 summarizes the assumed development scenarios used for analysis.

**TABLE 3-1
DEVELOPMENT SCENARIO SUMMARY**

Development Area	DEVELOPMENT SCENARIOS		
	A	B	C
Area 1 (16 acres)	50,000 SF - Commercial/Retail 3,000 SF - Fast Food 27,000 SF - Church	100,000 SF - Commercial/Retail 3,000 SF - Fast Food 27,000 SF - Church	100,000 SF - Commercial/Retail 3,000 SF - Fast Food 27,000 SF - Church
Area 2 (39 acres)	None	50,000 SF - Hotel (90 Rooms)	50,000 SF - Hotel (90 Rooms) 200,000 SF - Commercial/Retail 90,000 SF - Office
Area 3 (35 acres)	50,000 SF - Supermarket 100,000 SF - Commercial/Retail 5,000 SF - Gas w/Convenience 45,000 SF - Office	50,000 SF - Supermarket 150,000 SF - Commercial/Retail 5,000 SF - Gas w/Convenience 100,000 SF - Office	50,000 SF - Supermarket 150,000 SF - Commercial/Retail 5,000 SF - Gas w/Convenience 100,000 SF - Office
Total Development	280,000 SF	485,000 SF	775,000 SF

Assuming a commercial zoning, land uses were selected for the future development of the site that provided a typical mix of development types for the area. This mixture consists of predominantly retail and office space, but also includes the possibilities of a gas station, fast food restaurant, church, supermarket and hotel. Assumptions made when deciding the amount of development possible within the site included:

- Retail/Commercial land uses will be developed at a density of 10,000 SF per developable acre.
- 20 - 25% of the total land will be required for infrastructure or will be undevelopable.
- Office buildings are not expected to exceed two stories in most cases (20,000 SF per acre)
- A 90-room hotel will generally occupy 5 - 6 acres, and require approximately 550 SF per room.
- Development square footage and acreage for currently proposed fast food and church developments will remain as planned.

The following was considered when estimating the development potential for this area:

- Current zoning for this area will be revised to allow for typical "highway-commercial" uses.
- The portion of study area land currently in the Town of Johnstown will be annexed into the City of Gloversville.
- The vacant lands in this area will be rezoned and developed as "commercial" land uses even if no additional access to NY Route 30A is provided.

It should be noted that the exact mix of development isn't critical to assessing the operational benefit of different scenarios, it is the comparative aspect of analyzing the same level of development, with and without NY Route 30A direct access that will reflect the operational differences.

3.3. Site Generated Traffic

The traffic added to the roadway network within the study area, as a result of site development, is dependent on both the level of development and the access options available. The following sections discuss the trip generation potential for each of the three previously discussed development scenarios and the various access alternatives available under each scenario to determine the 2032 Future Build Peak Hour Traffic Volumes used for analysis.

3.3.1. Trip Generation

The number of trips generated by each of the proposed development scenarios was estimated for the peak hour conditions using the data contained in the *Trip Generation Manual*, 9th Edition, published by the Institute of Transportation Engineers (ITE). *Trip Generation* contains data from various case studies on many different types of land uses and is typically used when more specific trip generation data cannot be obtained. For this project, data for the following Land Use Codes (LUC) were used to estimate site trips.

- LUC 310 – Hotel
- LUC 560 – Church
- LUC 710 – General Office Building
- LUC 820 – Shopping Center
- LUC 850 – Supermarket
- LUC 853 – Convenience Market with Gas Pumps
- LUC 934 – Fast Food Restaurant with Drive Thru Window

Applying the data for these land uses to the projected level of development for each scenario, and assuming a 10% reduction to account for potential internal capture trips (trips already on site to visit another land use) and pass-by trips (trips already on the road that may visit the site en-route) where applicable, the assumed trips generated by each development scenario was estimated. See Appendix D for the Trip Generation Worksheets that breakdown the estimated trips by development area. A summary of the trips generated under each scenario is shown in Table 3-2.

TABLE 3-2
TRIP GENERATION SUMMARY

Scenario	AM Peak Hour			PM Peak Hour		
	Entering	Exiting	Total	Entering	Exiting	Total
Development Scenario A	480	317	797	795	949	1,744
Development Scenario B	637	377	1,014	1,000	1,221	2,221
Development Scenario C	911	471	1,382	1,413	1,822	3,235

3.3.2. Site Access Alternatives

Three separate access alternatives are being considered in conjunction with the development scenarios listed above. These alternatives are shown in Figures 3-1 thru 3-3 on the next page and are summarized below. Larger scale concept sketches of these access alternatives can be found in Appendix E.

Access Alternative #1 (Figures 3-1 & E-2)

- Area 1 site access along S. Kingsboro Ave only.
- If and when developed, Area 2 site access along S. Kingsboro Ave. only, both directly and via Wells St.
- Area 3 site access along local roads only, both to Steele Ave directly and to S. Kingsboro Ave via Edgewood Dr.

Access Alternative #2 (Figures 3-2 & E-3)

- Area 1 site access along S. Kingsboro Ave only.
- No development within Area 2, or intra-site connection through Area 2.
- Area 3 site access along Steele Ave and directly to NYS Route 30A via a new access point.

Access Alternative #3 (Figures 3-3 & E-4)

- Frontage road connections to S. Kingsboro Ave and Steele Ave. Frontage Road will be a continuous route through all three Areas of the site and will be used for direct business access.
- Direct access to NYS Route 30A from the frontage road. Access point to be located along the western border of Area 3, or in Area 2, if possible.

3.3.3. Build Condition Alternatives

Considering the three development scenarios and the possible access alternatives available for each, site generated traffic volumes can be produced for six separate Build Condition Alternatives. These alternatives, which will all be analyzed as part of this study, are summarized in Table 3-3.

TABLE 3-3
SUMMARY OF BUILD CONDITION ALTERNATIVES

Build Condition Analysis Number	Development Scenario	Access Alternative	Description
I	A	1	No Route 30A Access – No Area 2 Development
II	A	2	With Route 30A Access – No Area 2 Development
III	B	1	No Route 30A Access – Mid-Level Development
IV	B	3	With Route 30A Access – Mid-Level Development
V	C	1	No Route 30A Access – Full Buildout
VI	C	3	With Route 30A Access – Full Buildout

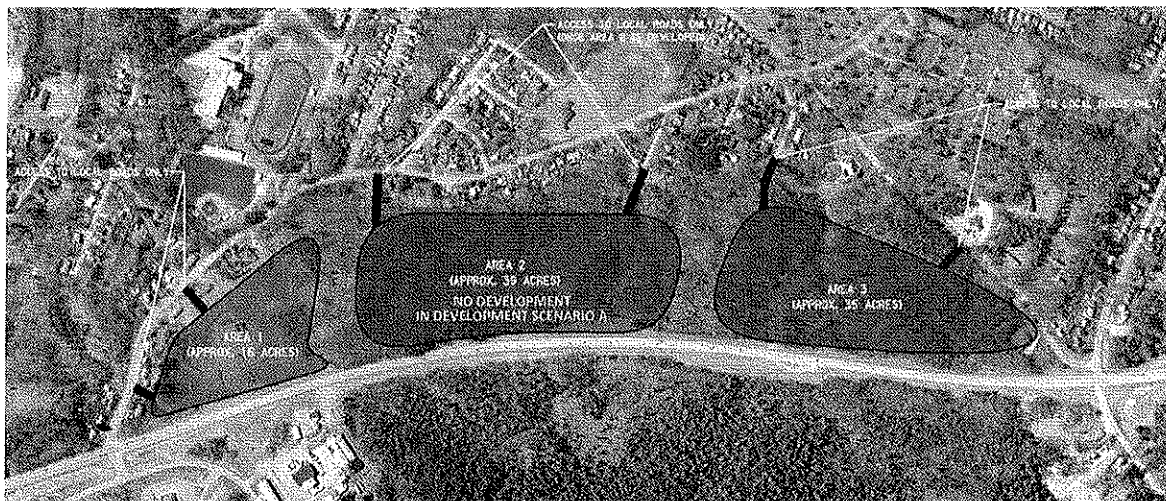


FIGURE 3-1: Access Alternative 1

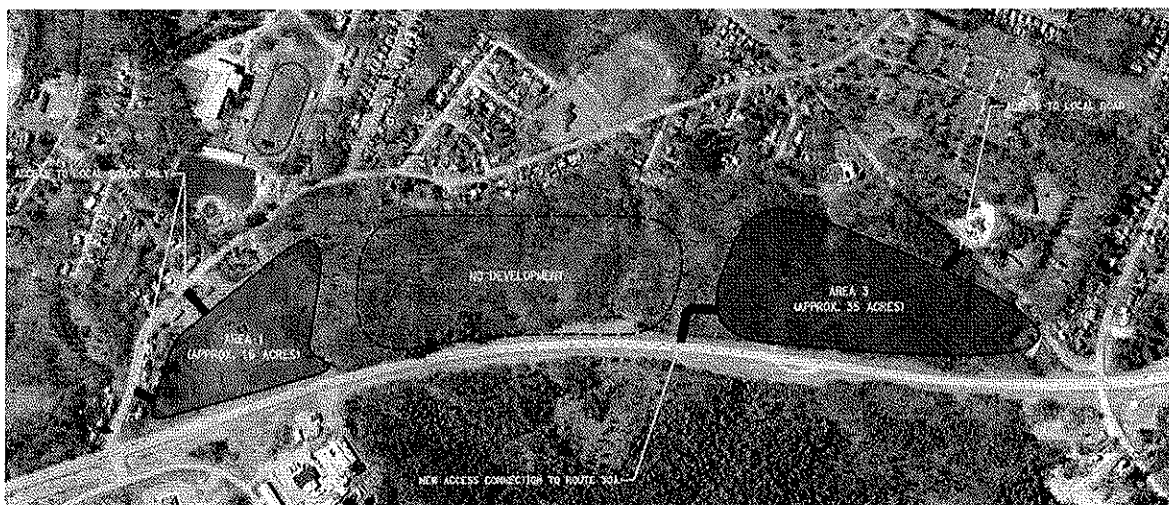


FIGURE 3-2: Access Alternative 2

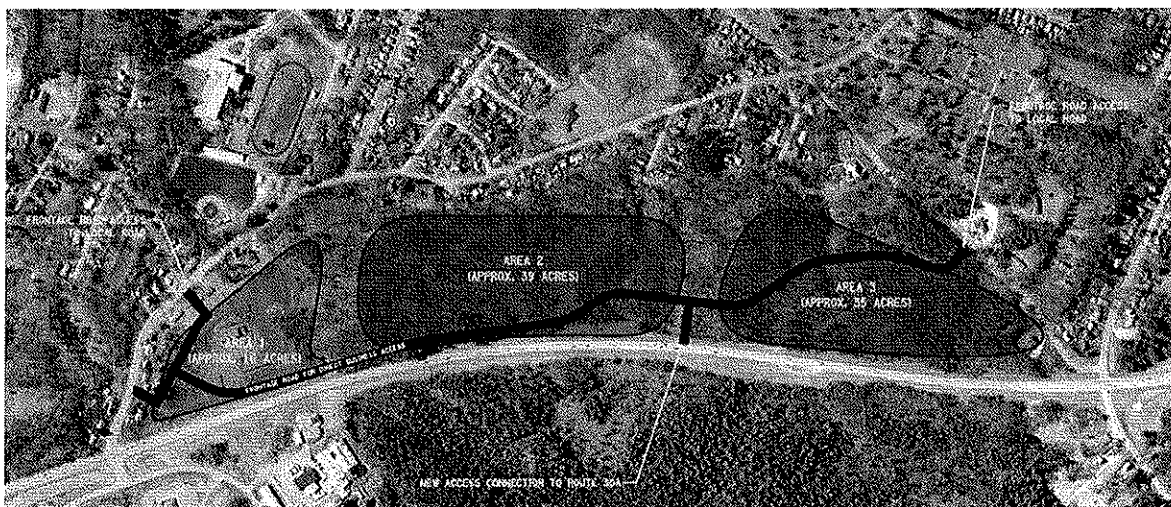


FIGURE 3-3: Access Alternative 3

3.3.4. Trip Distribution and Assignment

Site trips were assigned to the roadway network based on an assumed directional distribution and the positioning of site access points. Directional distribution was determined through a review of directional distributions from previously developed traffic studies within the area and on the likely location of site users based on population distribution. The Directional Distribution of Site Trips is diagrammed on Figure B-5 in Appendix B and generally conforms to the following:

- 35% travel to/from the southwest via NY Route 30A
- 10% travel to/from the northeast via NY Route 30A
- 20% travel to/from the east via Steele Avenue Extension
- 5% travel to/from the east via Hales Mills Road
- 15% travel to/from the north via S. Kingsboro Avenue
- 2% travel to/from the north or west via Steele Avenue
- 6% travel to/from the north via Park Street
- 6% travel to/from the west via Hill Street

Applying this direction distribution to the site generated trips, AM and PM peak hour trip assignments for each of the six build condition alternatives were developed. These trip assignments, which detail where trips generated by the site were added at each of the studied intersections, are graphically depicted in figures found in Appendix B. See Figure B-6 thru B-11 for Build I thru Build VI trip assignments.

3.3.5. Build Condition Traffic Volumes

Adding the traffic volumes shown in the Peak Hour Trip Assignments to the 2032 No-Build Traffic Volumes results in the 2032 Peak Hour Traffic Volumes for each of the six Build Condition Alternatives, which are detailed on Figures B-12 thru B-17 in Appendix B.

Comparing PM peak hour traffic roadway volumes for the Full Buildout Conditions, which is the period that will experience the largest increase in traffic, it is clear to see that significantly more traffic will be added to the local roadways, instead of the State highway, if a break in NY Route 30A access is not granted. Table 3-4 shows a comparison of these full buildout traffic increases as they relate to the No-Build Conditions.

TABLE 3-4
PM PEAK HOUR TRAFFIC VOLUME COMPARISON
(FULL BUILDOUT)

Roadway Link	Build V Conditions No Route 30A Direct Access		Build VI Conditions With Route 30A Direct Access	
	Increase in Traffic over No-Build	Percent Increase	Increase in Traffic over No-Build	Percent Increase
S. Kingsboro Ave	+2,184	+260%	+886	+105%
Steele Ave	+1,547	+1,800%	+802	+933%
NY Route 30A	+657	+57%	+1,615	+139%

As can be seen above for full buildout conditions, allowing a NY Route 30A break in access will reduce the amount of site traffic on S. Kingsboro Ave by 60% and on Steele Ave by almost 50% in the PM peak hour. NY Route 30A traffic will increase by almost 145% if break in access were allowed.

4. Existing and Future Operating Conditions

4.1. Analysis Method

To identify any potential benefits of allowing a new access connection to NY Route 30A, traffic operations were analyzed for each of the build condition alternatives presented in Table 3-3.

To compare the performance of the overall roadway network within the study area, the traffic model SYNCHRO was used. This model is a Network-Based Macroscopic Model that will provide the network level Measures of Effectiveness (MOEs) necessary for comparison. In addition to the traditional intersection level of service and vehicular delay results, the use of the SYNCHRO model will allow a comparison of the following MOEs:

- Stops & Queues
- Average Speed & Travel Times
- Vehicle Hours of Delay (VHD)
- Vehicle Miles Traveled
- Fuel Consumption & Emissions

The outputs from SYNCHRO will not only report the MOE's described above to assess the effectiveness of each scenario, but it also outputs a Performance Index value for each analysis. The Performance Index is calculated through a combination of delays and stops and is a very good indicator of comparative performance between alternatives.

In addition to the operational analyses and MOE's, a review of the accident history for the roads in the study area was conducted to compare the relative accident potential on the roadway network for each access scenario.

4.2. Results of Analysis

4.2.1. Existing and Future No-Build (No New Development) Operations

AM and PM peak hour analyses were performed for both the 2012 Existing and 2032 Future No-Build conditions at each of the studied intersections. Overall based on the analyses, all intersections are expected to operate at LOS B or better in both the AM and PM peak hour for both the existing condition and in the future if no new development occurs in the area.

The results of the analyses, including the reported network MOE's are shown in Table 4-1. Worksheets detailing the capacity analysis for each location can be found in Appendix F.

**TABLE 4-1
EXISTING AND FUTURE NO-BUILD
NO DEVELOPMENT CONDITIONS
SUMMARY OF TRAFFIC ANALYSIS**

Intersection	Approach	2012 Existing Conditions		2032 Future No-Build Conditions	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
NY Route 30A at S. Kingsboro Ave (signalized)	Northeast (30A)	B (13.6)	C (20.6)	B (14.1)	C (22.6)
	Southwest (30A)	B (19.1)	C (22.3)	C (20.5)	C (24.0)
	Northwest	B (14.9)	B (14.4)	B (15.8)	B (15.6)
	Southeast	C (21.7)	C (23.8)	C (23.2)	C (25.7)
	Overall	B (17.5)	B (19.7)	B (18.6)	C (21.3)
NY Route 30A at Steele Ave Ext /Saratoga Blvd (signalized)	Eastbound (30A)	A (3.9)	A (6.3)	A (3.9)	A (6.8)
	Westbound (30A)	A (4.4)	A (5.2)	A (4.6)	A (5.4)
	Northbound	B (14.3)	B (14.3)	B (15.0)	B (15.5)
	Southbound	B (14.9)	B (14.0)	B (15.8)	B (15.1)
	Overall	A (5.8)	A (7.2)	A (6.1)	A (7.7)
S. Kingsboro Ave at Hill St (stop sign controlled)	Northbound	A (1.5)	A (1.3)	A (1.6)	A (1.4)
	Southbound	A (0.0)	A (0.0)	A (0.0)	A (0.0)
	Eastbound (Hill)	B (11.1)	B (14.7)	B (11.6)	C (16.4)
S. Kingsboro Ave at Park St (stop sign controlled)	Northeast	A (2.3)	A (2.3)	A (2.4)	A (2.4)
	Southwest	A (0.0)	A (0.0)	A (0.0)	A (0.0)
	Southbound (Park)	B (10.5)	B (11.2)	B (10.9)	B (11.8)
S. Kingsboro Ave at Steele Ave Ext (stop sign controlled)	Northeast	A (0.2)	A (0.0)	A (0.3)	A (0.1)
	Southwest	A (0.3)	A (0.5)	A (0.3)	A (0.5)
	Westbound (Steele)	B (11.3)	B (14.0)	B (11.9)	C (15.2)
	Eastbound (Steele)	B (11.8)	B (13.4)	B (12.3)	B (14.1)
Steele Ave at Saratoga Blvd (stop sign controlled)	Northbound	A (5.1)	A (2.6)	A (5.1)	A (2.7)
	Southbound	A (0.0)	A (0.0)	A (0.0)	A (0.0)
	Eastbound (Steele)	A (8.8)	A (8.8)	A (8.9)	A (8.9)
Network Measures of Effectiveness					
Average Speed Overall		36 mph	34 mph	35 mph	33 mph
Total Vehicle Hours of Delay (VHD)		9 hrs.	16 hrs.	10 hrs.	19 hrs.
Total Vehicle Miles Traveled		1,694	2,434	1,875	2,690
Fuel Consumed		mi.	mi.	mi.	mi.
Performance Index		87 gal.	130 gal.	97 gal.	145 gal.
		13.1	22.9	15.1	27.0

Note: B (13.6) = Level of Service (Average Delay in Seconds per Vehicle)

4.2.2. Future Operations with Development

Capacity analyses were performed on the various future Build Alternatives as outlined in Table 3-3. For these analyses, traffic operations were first examined assuming no roadway improvements outside of the site access points, which was adequate to compare operations for the AM peak hour of all alternatives and for the PM peak hour for alternatives with less than full buildout. However, the full buildout PM peak hour generates traffic beyond the capacity of the existing roadway network, and a relevant comparison of alternatives could not be made without assuming some level of improvement. As such, the future full buildout PM peak hour conditions, both “with” and “without” direct access to NY Route 30A, were also reanalyzed assuming the following traffic improvements to the roadway network:

1. The addition of a traffic signal at the S. Kingsboro Ave and Hill St intersection
2. The addition of a right turn lane on Steele Ave at the S. Kingsboro intersection
(a traffic signal would also provide adequate operations, but would increase overall delay)
3. The addition of a right turn lane from Route 30A to Steele Ave Ext
4. The addition of turn lanes and signal modifications at Route 30A and S. Kingsboro Ave

Including these improvements for the full buildout PM peak hour access scenarios provided a consistent “base” condition for comparative purposes of Build Conditions V and VI.

The results of the analyses are summarized in the tables that follow. They include:

- Table 4-2a for the AM peak hour of Alternatives “without” direct NY Route 30A Access.
- Table 4-2b for the PM peak hour of Alternatives “without” direct NY Route 30A Access.
- Table 4-3a for the AM peak hour of Alternatives “with” direct NY Route 30A Access.
- Table 4-3b for the PM peak hour of Alternatives “with” direct NY Route 30A Access.
- Table 4-4 for the full buildout PM peak hour Alternatives with Roadway Improvements.

A review of the analysis results indicates the following:

- There are no significant operational problems in the AM peak hour for any of the analyzed scenarios, even at full buildout.
- Traffic operations get progressively worse in the PM Peak Hour as development increases, with or without direct access to NY Route 30A,
- Roadway improvements will be necessary to provide additional capacity for site generated traffic in the PM peak hour for Full Buildout.
- With roadway improvements being made, traffic operations for both “with” and “without” direct Route 30A access alternatives significantly improve. However, the improvement is much greater if a break in right-of-way access were allowed. See Table 4-4, which is the most relevant of the results to compare when determining the benefits of one alternative over the other.

TABLE 4-2a
AM PEAK HOUR - SUMMARY OF TRAFFIC ANALYSIS
FUTURE BUILD CONDITIONS "WITHOUT" ROUTE 30A BREAK IN ACCESS

Intersection	Approach	2032 Build I Conditions <i>minimal</i> development	2032 Build III Conditions <i>mid-range</i> development	2032 Build V Conditions <i>full buildout</i> development
NY Route 30A at S. Kingsboro Ave (signalized)	Northeast (30A) Southwest (30A) Northwest Southeast Overall	B (14.6) C (25.1) B (17.9) C (26.8) C (21.3)	B (16.9) C (29.6) B (19.0) C (27.3) C (23.7)	D (18.2) D (35.2) C (23.6) C (29.4) C (26.4)
NY Route 30A at Steele Ave Ext /Saratoga Blvd (signalized)	Eastbound (30A) Westbound (30A) Northbound Southbound Overall	A (7.9) B (10.0) B (11.4) B (12.0) A (9.8)	A (9.3) B (10.7) B (12.8) B (13.4) B (10.9)	B (11.3) B (12.6) B (15.8) B (16.4) B (13.3)
S. Kingsboro Ave at Hill St (stop sign controlled)	Northbound Southbound Eastbound (Hill) Westbound (Area 1)	A (1.2) A (0.7) C (15.4) C (16.4)	A (1.1) A (0.8) C (17.5) C (17.9)	A (0.9) A (0.8) D (25.5) C (22.9)
S. Kingsboro Ave at Park St (stop sign controlled)	Northeast Southwest Southbound (Park)	A (1.9) A (0.0) B (12.7)	A (1.8) A (0.0) B (13.7)	A (1.4) A (0.0) C (17.6)
S. Kingsboro Ave at Steele Ave Ext (stop sign controlled)	Northeast Southwest Westbound (Steele) Eastbound (Steele)	A (0.4) A (0.8) B (13.5) B (13.7)	A (0.4) A (0.9) C (15.0) B (14.3)	A (0.4) A (0.9) D (26.2) C (15.3)
Steele Ave at Saratoga Blvd (stop sign controlled)	Northbound Southbound Eastbound (Steele)	A (7.4) A (0.0) A (9.7)	A (7.7) A (0.0) A (9.9)	A (8.1) A (0.0) B (10.5)
S. Kingsboro Ave at Area 1 Access (stop sign controlled)	Northbound Southbound Westbound (Area 1)	A (0.0) A (0.3) B (14.4)	A (0.0) A (0.3) C (15.6)	A (0.0) A (0.3) C (19.1)
S. Kingsboro Ave at Area 2 West Access (stop sign controlled)	Northeast Southwest Northbound (Area 2)	N/A	A (0.0) A (0.0) B (13.1)	A (0.0) A (0.5) C (16.2)
S. Kingsboro Ave at Area 2 East Access (stop sign controlled)	Northeast Southwest Northbound (Area 2)	N/A	A (0.0) A (0.4) B (10.1)	A (0.0) A (3.1) B (11.1)
S. Kingsboro Ave at Area 3 Access (stop sign controlled)	Northeast Southwest Northbound (Area 3)	A (0.0) A (1.0) B (12.8)	A (0.0) A (1.5) B (12.8)	A (0.0) A (1.3) B (15.0)
Steele Ave at Area 3 Access (stop sign controlled)	Eastbound Westbound Northbound (Area 3)	A (0.0) A (6.8) B (10.2)	A (0.0) A (7.1) B (11.0)	A (0.0) A (6.1) B (11.7)
Network Measures of Effectiveness				
Average Speed Overall		32 mph	31 mph	29 mph
Total Vehicle Hours of Delay (VHD)		19 hrs.	23 hrs.	30 hrs.
Total Vehicle Miles Traveled		2,572 mi.	2,748 mi.	3,015 mi.
Fuel Consumed		144 gal.	156 gal.	177 gal.
Performance Index		28.4	33.3	42.8

Notes: B (13.6) = Level of Service (Average Delay in Seconds per Vehicle)

RED TEXT signifies deficient traffic operations (LOS E or worse at signals, LOS F at stop controlled intersections)

ERR indicates that the delay exceeds calculable values because of oversaturated traffic conditions.

TABLE 4-2b
PM PEAK HOUR - SUMMARY OF TRAFFIC ANALYSIS
FUTURE BUILD CONDITIONS "WITHOUT" ROUTE 30A BREAK IN ACCESS

Intersection	Approach	2032 Build I Conditions minimal development	2032 Build III Conditions mid-range development	2032 Build V Conditions full buildout development
NY Route 30A at S. Kingsboro Ave (signalized)	Northeast (30A)	C (33.7)	D (50.9)	E (79.8)
	Southwest (30A)	D (50.1)	E (74.3)	F (106.1)
	Northwest	C (34.0)	D (49.4)	E (79.6)
	Southeast	D (50.9)	E (62.7)	E (70.7)
	Overall	D (41.0)	E (58.9)	F (83.7)
NY Route 30A at Steele Ave Ext /Saratoga Blvd (signalized)	Eastbound (30A)	D (36.3)	D (52.9)	F (106.3)
	Westbound (30A)	B (15.4)	B (17.5)	C (26.4)
	Northbound	C (21.6)	D (35.6)	D (47.9)
	Southbound	E (61.4)	F (151.3)	F (342.0)
	Overall	C (34.8)	E (66.2)	F (145.9)
S. Kingsboro Ave at Hill St (stop sign controlled)	Northbound	A (1.5)	A (1.6)	A (2.1)
	Southbound	A (1.2)	A (1.8)	A (2.3)
	Eastbound (Hill)	F (96.9)	F (305.7)	F (ERR)
	Westbound (Area 1)	F (73.7)	F (438.9)	F (ERR)
S. Kingsboro Ave at Park St (stop sign controlled)	Northeast	A (2.6)	A (2.8)	A (3.9)
	Southwest	A (0.0)	A (0.0)	A (0.0)
	Southbound (Park)	C (22.7)	D (31.3)	F (320.9)
S. Kingsboro Ave at Steele Ave Ext (stop sign controlled)	Northeast	A (0.4)	A (0.5)	A (0.8)
	Southwest	A (1.4)	A (1.5)	A (1.8)
	Westbound (Steele)	E (35.6)	F (69.8)	F (900.9)
	Eastbound (Steele)	C (19.3)	C (21.6)	E (35.0)
Steele Ave at Saratoga Blvd (stop sign controlled)	Northbound	A (7.1)	A (7.5)	A (8.3)
	Southbound	A (0.0)	A (0.0)	A (0.0)
	Eastbound (Steele)	B (14.3)	C (19.2)	F (102.8)
S. Kingsboro Ave at Area 1 Access (stop sign controlled)	Northbound	A (0.0)	A (0.0)	A (0.0)
	Southbound	A (0.6)	A (0.8)	A (1.2)
	Westbound (Area 1)	E (42.0)	F (173.9)	F (ERR)
S. Kingsboro Ave at Area 2 West Access (stop sign controlled)	Northeast		A (0.0)	A (0.0)
	Southwest	N/A	A (0.0)	A (0.8)
	Northbound (Area 2)		C (20.1)	F (483.5)
S. Kingsboro Ave at Area 2 East Access (stop sign controlled)	Northeast		A (0.0)	A (0.0)
	Southwest	N/A	A (0.4)	A (5.0)
	Northbound (Area 2)		B (12.6)	D (26.0)
S. Kingsboro Ave at Area 3 Access (stop sign controlled)	Northeast	A (0.0)	A (0.0)	A (0.0)
	Southwest	A (2.1)	A (2.3)	A (2.7)
	Northbound (Area 3)	C (21.4)	D (30.6)	F (307.2)
Steele Ave at Area 3 Access (stop sign controlled)	Eastbound	A (0.0)	A (0.0)	A (0.0)
	Westbound	A (7.7)	A (8.0)	A (8.1)
	Northbound (Area 3)	C (16.8)	D (25.1)	F (257.6)
Network Measures of Effectiveness				
Average Speed Overall		24 mph	17 mph	3 mph
Total Vehicle Hours of Delay (VHD)		76 hrs.	159 hrs.	1,853 hrs.
Total Vehicle Miles Traveled		4,144 mi.	4,525 mi.	5,179 mi.
Fuel Consumed		276 gal.	360 gal.	1,651 gal.
Performance Index		95.4	181.6	1,886.3

Notes: B (13.6) = Level of Service (Average Delay in Seconds per Vehicle)

RED TEXT signifies deficient traffic operations (LOS E or worse at signals, LOS F at stop controlled intersections)

ERR indicates that the delay exceeds calculable values because of oversaturated traffic conditions.

TABLE 4-3a
AM PEAK HOUR - SUMMARY OF TRAFFIC ANALYSIS
FUTURE BUILD CONDITIONS "WITH" ROUTE 30A BREAK IN ACCESS

Intersection	Approach	2032 Build II Conditions <i>minimal</i> development	2032 Build IV Conditions <i>mid-range</i> development	2032 Build VI Conditions <i>full buildout</i> development
NY Route 30A at S. Kingsboro Ave (signalized)	Northeast (30A)	B (18.1)	B (15.8)	B (19.0)
	Southwest (30A)	C (26.7)	C (23.8)	C (27.2)
	Northwest	B (18.0)	B (18.1)	B (18.8)
	Southeast	C (29.2)	C (27.2)	C (27.2)
	Overall	C (23.7)	C (21.2)	C (23.4)
NY Route 30A at Steele Ave Ext /Saratoga Blvd (signalized)	Eastbound (30A)	A (5.9)	A (6.3)	B (10.1)
	Westbound (30A)	A (6.8)	A (7.4)	B (12.5)
	Northbound	B (15.4)	B (17.2)	B (16.3)
	Southbound	B (13.8)	B (13.9)	B (13.1)
	Overall	A (8.4)	A (9.2)	B (12.5)
S. Kingsboro Ave at Hill St (stop sign controlled)	Northbound	A (1.8)	A (1.3)	A (1.1)
	Southbound	A (0.7)	A (1.3)	A (1.8)
	Eastbound (Hill)	B (13.0)	C (16.2)	C (19.6)
	Westbound (Area 1)	C (16.3)	C (16.3)	C (20.8)
S. Kingsboro Ave at Park St (stop sign controlled)	Northeast	A (2.4)	A (2.8)	A (3.1)
	Southwest	A (0.0)	A (0.0)	A (0.0)
	Southbound (Park)	B (11.9)	B (11.6)	B (11.8)
S. Kingsboro Ave at Steele Ave Ext (stop sign controlled)	Northeast	A (0.3)	A (0.4)	A (0.4)
	Southwest	A (1.8)	A (2.3)	A (3.1)
	Westbound (Steele)	B (12.7)	B (12.3)	B (13.1)
	Eastbound (Steele)	B (14.6)	C (15.6)	C (18.1)
Steele Ave at Saratoga Blvd (stop sign controlled)	Northbound	A (6.4)	A (6.5)	A (6.5)
	Southbound	A (0.0)	A (0.0)	A (0.0)
	Eastbound (Steele)	A (9.1)	A (9.1)	A (9.1)
S. Kingsboro Ave at Area 1 Access (stop sign controlled)	Northbound	A (0.0)	A (0.0)	A (0.0)
	Southbound	A (0.3)	A (0.3)	A (0.3)
Steele Ave at Area 3 Access (stop sign controlled)	Westbound (Area 1)	B (14.0)	B (13.8)	B (14.8)
	Eastbound	A (0.0)	A (0.0)	A (0.0)
	Westbound	A (4.6)	A (5.1)	A (5.2)
NY Route 30A at Site Access Point (signalized)	Northbound (Area 3)	A (9.9)	B (10.0)	B (10.5)
	Eastbound (30A)	A (7.2)	A (7.1)	A (9.3)
	Westbound (30A)	B (19.9)	C (20.9)	B (19.0)
	Southbound	B (16.8)	B (17.9)	B (18.6)
	Overall	B (14.2)	B (14.8)	B (15.1)
Network Measures of Effectiveness				
Average Speed Overall		31 mph	31 mph	30 mph
Total Vehicle Hours of Delay (VHD)		24 hrs.	24 hrs.	30 hrs.
Total Vehicle Miles Traveled		2,462 mi.	2,551 mi.	2,784 mi.
Fuel Consumed		151 gal.	157 gal.	175 gal.
Performance Index		33.2	34.4	41.7

Notes: B (13.6) = Level of Service (Average Delay in Seconds per Vehicle)

RED TEXT signifies deficient traffic operations (LOS E or worse at signals, LOS F at stop controlled intersections)

ERR indicates that the delay exceeds calculable values because of oversaturated traffic conditions.

TABLE 4-3b
PM PEAK HOUR - SUMMARY OF TRAFFIC ANALYSIS
FUTURE BUILD CONDITIONS "WITH" ROUTE 30A BREAK IN ACCESS

Intersection	Approach	2032 Build II Conditions <i>minimal</i> development	2032 Build IV Conditions <i>mid-range</i> development	2032 Build VI Conditions <i>full buildout</i> development
NY Route 30A at S. Kingsboro Ave (signalized)	Northeast (30A)	D (45.5)	D (48.7)	E (64.6)
	Southwest (30A)	E (55.4)	E (61.4)	E (78.2)
	Northwest	D (47.5)	D (43.0)	F (92.6)
	Southeast	E (70.9)	E (57.6)	F (93.5)
	Overall	D (52.8)	D (52.6)	E (78.6)
NY Route 30A at Steele Ave Ext /Saratoga Blvd (signalized)	Eastbound (30A)	C (20.3)	C (28.1)	F (80.0)
	Westbound (30A)	B (10.2)	B (11.7)	B (16.5)
	Northbound	C (26.3)	D (43.3)	F (133.1)
	Southbound	B (17.3)	C (20.6)	C (27.6)
	Overall	B (17.7)	C (25.1)	E (66.5)
S. Kingsboro Ave at Hill St (stop sign controlled)	Northbound	A (2.3)	A (1.4)	A (1.4)
	Southbound	A (1.4)	A (2.7)	A (3.5)
	Eastbound (Hill)	D (34.5)	F (193.0)	F (ERR)
	Westbound (Area 1)	F (71.1)	F (325.1)	F (ERR)
S. Kingsboro Ave at Park St (stop sign controlled)	Northeast	A (2.6)	A (3.3)	A (3.9)
	Southwest	A (0.0)	A (0.0)	A (0.0)
	Southbound (Park)	C (16.4)	C (15.1)	C (16.3)
S. Kingsboro Ave at Steele Ave Ext (stop sign controlled)	Northeast	A (0.2)	A (0.3)	A (0.3)
	Southwest	A (3.1)	A (3.4)	A (4.6)
	Westbound (Steele)	E (36.5)	D (34.1)	F (106.0)
	Eastbound (Steele)	C (23.1)	D (26.1)	E (47.0)
Steele Ave at Saratoga Blvd (stop sign controlled)	Northbound	A (4.7)	A (4.9)	A (4.9)
	Southbound	A (0.0)	A (0.0)	A (0.0)
	Eastbound (Steele)	A (9.7)	A (9.9)	A (9.9)
S. Kingsboro Ave at Area 1 Access (stop sign controlled)	Northbound	A (0.0)	A (0.0)	A (0.0)
	Southbound	A (0.6)	A (0.8)	A (0.8)
	Westbound (Area 1)	D (34.7)	E (45.2)	F (119.7)
Steele Ave at Area 3 Access (stop sign controlled)	Eastbound	A (0.0)	A (0.0)	A (0.0)
	Westbound	A (5.3)	A (5.6)	A (5.6)
	Northbound (Area 3)	B (12.4)	B (12.7)	B (12.7)
NY Route 30A at Site Access Point (signalized)	Eastbound (30A)	B (12.9)	B (13.2)	B (13.2)
	Westbound (30A)	C (23.6)	C (22.0)	C (22.0)
	Southbound	C (20.7)	C (22.3)	C (22.3)
	Overall	B (17.9)	B (18.1)	B (18.1)
Network Measures of Effectiveness				
Average Speed Overall		23 mph	20 mph	2 mph
Total Vehicle Hours of Delay (VHD)		77 hrs.	114 hrs.	1,822 hrs.
Total Vehicle Miles Traveled		3,894 mi.	4,061 mi.	4,451 mi.
Fuel Consumed		279 gal.	317 gal.	1,595 gal.
Performance Index		95.9	134.4	1,845.8

Notes: B (13.6) = Level of Service (Average Delay in Seconds per Vehicle)

RED TEXT signifies deficient traffic operations (LOS E or worse at signals, LOS F at stop controlled intersections)

ERR indicates that the delay exceeds calculable values because of oversaturated traffic conditions.

TABLE 4-4
PM PEAK HOUR - SUMMARY OF TRAFFIC ANALYSIS
FULL BUILDOUT CONDITIONS WITH ROADWAY IMPROVEMENTS

		2032 Build V Conditions without Rt 30A access	2032 Build VI Conditions with Rt 30A access
Intersection	Approach		
NY Route 30A at S. Kingsboro Ave (signalized)	Northeast (30A)	C (26.2)	D (38.5)
	Southwest (30A)	D (46.4)	D (54.1)
	Northwest	D (39.8)	D (49.0)
	Southeast	D (53.8)	D (51.1)
	Overall	D (39.8)	D (47.1)
NY Route 30A at Steele Ave Ext /Saratoga Blvd (signalized)	Eastbound (30A)	F (100.7)	C (24.2)
	Westbound (30A)	C (26.2)	B (19.4)
	Northbound	D (47.9)	D (47.8)
	Southbound	F (342.0)	B (16.2)
	Overall	F (144.0)	C (26.1)
S. Kingsboro Ave at Hill St (signalized)	Northbound	B (17.4)	B (17.4)
	Southbound	B (14.9)	B (13.6)
	Eastbound (Hill)	C (25.2)	B (13.7)
	Westbound (Area 1)	C (21.2)	B (18.7)
	Overall	B (17.5)	B (16.4)
S. Kingsboro Ave at Park St (stop sign controlled)	Northeast	A (3.9)	A (3.9)
	Southwest	A (0.0)	A (0.0)
	Southbound (Park)	F (402.5)	C (16.3)
S. Kingsboro Ave at Steele Ave Ext (stop sign controlled)	Northeast	A (0.8)	A (0.3)
	Southwest	A (1.8)	A (4.6)
	Westbound (Steele)	F (896.1)	D (29.2)
	Eastbound (Steele)	D (34.4)	E (41.8)
Steele Ave at Saratoga Blvd (stop sign controlled)	Northbound	A (8.3)	A (4.9)
	Southbound	A (0.0)	A (0.0)
	Eastbound (Steele)	F (102.8)	A (9.9)
S. Kingsboro Ave at Area 1 Access (stop sign controlled)	Northbound	A (0.0)	A (0.0)
	Southbound	A (1.1)	A (0.8)
	Westbound (Area 1)	F (56.6)	F (62.8)
S. Kingsboro Ave at Area 2 West Access (stop sign controlled)	Northeast	A (0.0)	N/A
	Southwest	A (0.8)	N/A
	Northbound (Area 2)	F (483.5)	N/A
S. Kingsboro Ave at Area 2 East Access (stop sign controlled)	Northeast	A (0.0)	N/A
	Southwest	A (5.0)	N/A
	Northbound (Area 2)	D(26.0)	N/A
S. Kingsboro Ave at Area 3 Access (stop sign controlled)	Northeast	A(0.0)	N/A
	Southwest	A(2.7)	N/A
	Northbound (Area 3)	F(307.2)	N/A
Steele Ave at Area 3 Access (stop sign controlled)	Eastbound	A(0.0)	A (0.0)
	Westbound	A(8.1)	A (5.6)
	Northbound (Area 3)	F(257.6)	B (12.7)
NY Route 30A at Site Access Point (signalized)	Eastbound (30A)	N/A	B (13.2)
	Westbound (30A)		C (22.0)
	Southbound		C (22.3)
	Overall		B (18.1)
Network Measures of Effectiveness			
Average Speed Overall		10 mph	22 mph
Total Vehicle Hours of Delay (VHD)		399 hrs.	97 hrs.
Total Vehicle Miles Traveled		5,179 mi.	4,452 mi.
Fuel Consumed		585 gal.	332 gal.
Performance Index		433.3	121.7

Notes: B (13.6) = Level of Service (Average Delay in Seconds per Vehicle)

RED TEXT signifies deficient traffic operations (LOS E or worse at signals, LOS F at stop controlled intersections)

As seen in Table 4-4, the projected road improvements will alleviate deficient levels of service at all but one intersection approach if direct NY Route 30A access were allowed (since the failing approach has frontage road interconnection to the Hill Street intersection, it is recommended to make this approach right-in/right-out only to avoid this issue).

However, if the direct NY Route 30A access is not included, four of the five unsignalized access points to the site will experience failing operations, as will both the unsignalized Park Street intersection and the signalized intersection at NY Route 30A and Steele Ave Ext/Saratoga Blvd. In looking at the failing unsignalized locations, there are no improvements, short of adding traffic signals, that would bring the unsignalized intersection up to acceptable operations, and given the intersection spacing, this would be impractical and would cause significant additional delay for vehicles traveling through the study area along S. Kingsboro Ave. For the traffic signal at Steele Ave Ext, lane additions would not be enough to improve operations because of the proximity of the Steel Ave intersection with Saratoga Blvd north of the signal and the heavy traffic movements turning onto and from Steele Ave. To achieve acceptable operations at these locations, a major reconfiguration that combines the two intersections would be necessary. However, determination of the most appropriate intersection reconfiguration is beyond the scope of this analysis and should be the subject of a separate study, if and when it is needed. For purposes of this study, it is assumed that a single 5-leg roundabout would be used to improve operations to acceptable levels.

4.2.3. Operational Comparison - Without and With Access to Route 30A

The analyses show little variation between alternatives in the AM peak hour. This is understandable, as most of the projected commercial/retail development would be less active in the AM peak hour. As the AM peak hour is not the prime period for trip generation and the analysis indicates that there should be no deficient intersections in the AM peak hour of any of the alternatives, the alternative comparison focused on the PM peak hour.

A comparison of the PM peak hour for each alternative reveals as development increases, the need for a break in right-of-way access becomes increasingly important. At a mid-level development (Development Scenario B), allowing direct NY Route 30A access to the site reduces vehicle hours of delay by 45 hours each day, a 28% reduction from the alternative that doesn't allow direct access. In addition, at this level of development with inclusion of the Route 30A access, average speed is increased by 18%, the number of vehicle miles traveled is reduced by 10%, and fuel consumption is reduced by 12%. The improvement in the measures of effectiveness (MOE's) is even more significant at full buildout, which is detailed in Table 4-5 below for the Development Scenario C Alternatives with roadway improvements.

TABLE 4-5
FULL BUILDOUT PM PEAK HOUR CONDITIONS
(DEVELOPMENT SCENARIO C WITH ROADWAY IMPROVEMENTS)
MEASURES OF EFFECTIVENESS COMPARISON

PM Peak Hour Measure Of Effectiveness	Build V Alternative (no Rt. 30A Access)	Build VI Alternative (with Rt. 30A Access)	Improvement with Break In ROW Access
Number of Intersections with Failing Approaches	8 locations	1 location	Nearly 90% fewer failing locations.
Average Travel Speed Within Study Area	10 mph	22 mph	12 mph improvement (120% increase)
Vehicle Hours of Delay	399 hrs.	97 hrs.	302 VHD reduced (more than 75% reduction)
Vehicle Miles Traveled	5,179 mi.	4,452 mi.	727 fewer miles traveled (14% reduction)
Fuel Consumed	585 gal.	332 gal.	253 fewer gallons of fuel consumed (43% reduction)

Performing a simplified road user cost analysis, using a \$15.41 per hour passenger car cost and a \$35.28 per hour truck cost (values shown in the NYSDOT worksheet comparing off-site detour with on-site staging updated 3/21/11), and assuming a 2% truck percentage and an average fuel cost of \$3.80 per gallon, it can be assessed that allowing a Route 30A break in ROW access would save over \$5,700 per day in the PM peak hour alone. Multiplying that by the 260 work days found in a typical year, it is expected that the PM peak hour user cost savings would total nearly \$1.5M per year if a break in right-of-way access were allowed.

4.3. Roadway Improvement Comparison

As stated in section 4.2.2, the expected site development would require several roadway improvements to mitigate the impacts of full buildout regardless of whether NY Route 30A ROW access is broken or not. The improvements that would benefit both the “without access” Build V condition and the “with access” Build VI condition include:

- The addition of a traffic signal at the S. Kingsboro Ave and Hill St intersection
 - The cost of this improvement is estimated at \$120,000.
- The addition of a right turn lane on Steele Ave at the S. Kingsboro intersection or the addition of a traffic signal at the intersection.
 - Best overall operations would occur if the right turn lane were utilized, instead of signalizing the intersection, so that was the condition used in the analyses. However, geometric restrictions at the intersection may make signalization necessary.
 - For cost estimating purposes, it is assumed that a \$50,000 right turn lane will be constructed to mitigate impacts at this location. Costs would increase to \$120,000 if signalization were necessary.

- The addition of turn lanes and signal modifications at Route 30A and S. Kingsboro Ave
 - Turn lane improvements may vary, but for the purposes of this study it is assumed that a dual left turn lane on the southwest approach will be required and an second northbound receiving lane would be needed on S. Kingsboro Ave. This lane would drip at the first site access point to Area 1. Required lane improvements at this location are estimated at approximately \$250,000.
 - Lane additions would require reconstruction of the traffic signal at a cost of approximately \$150,000.
 - Widening for lane improvements would require the purchase of right-of-way, which is currently assumed to be three full property takings totaling 3 acres and costing approximately \$400,000.

In addition to these improvements, a significant reconfiguration of the NY Route 30A and Steele Ave Ext/Saratoga Blvd intersection that combines the Steele Ave and Saratoga Blvd intersection approaches would be necessary if a break in access were not granted. This type improvement would be a major reconstruction requiring a separate study to determine the best course of action. However, for purposes of this study, it is assumed that an improvement in the magnitude of a 5-leg roundabout could be configured to accommodate the traffic volumes. A roundabout of this size is estimated to cost approximately \$2.5M.

If a break in right-of-way access were granted, a major reconfiguration at the NY Route 30A and Steele Ave Ext/Saratoga Blvd would not be necessary. However, the intersection would require the addition of a right turn lane from Route 30A to Steele Ave Ext at an estimated cost of approximately \$75,000. In addition, if a break in ROW access were granted, the new access intersection would require left and right turn lanes into the site and a new traffic signal on NY Route 30A. It is estimated that these improvements would cost approximately \$360,000.

Overall, it is likely that improvement costs would total approximately \$3.5M if a break in right-of-way access were not allowed on NY Route 30A, and \$1.5M if access were allowed. This is a construction cost savings of \$2,000,000, which is a 57% cost reduction if a break in right-of-way access were granted.

4.4. Safety Comparison

South Kingsboro Avenue and Steele Avenue are local roads that are not build to as high a standard as NY Route 30A. Not only are these roads designed for a lower travel speed, which allows for increased road curvature, poorer sight distance and narrower lanes, but there are many more conflict points on these roads, including several side street, a school and many residential driveways. These local roads also have a higher accident rate than the state road. With regard to safety, it would be in the public benefit to minimize traffic increases on the local roads, and maximize the traffic on the state roadway that has a higher design standard and lower accident rate.

Comparing the traffic volumes for each of the alternatives, as shown in Section 3.3.5 of this report, it is clear that allowing a break in right-of-way access could reduce the traffic increase on the local roads by over 50%, which would be preferred for public safety.

5. Findings and Recommendations

The development of vacant land within the study area will have a significant impact on the area roadways. The purpose of this study was to determine if allowing a break in right-of-way access along NY Route 30A, such that a connector road between the State Highway and a City-owned frontage road on-site could be established, would have a public benefit. The following summarized the relevant facts of the report and the benefits of allowing a break in access.

1. The site of future development being considered as part of this study includes the 90 acres located between NY Route 30A, S. Kingsboro Avenue and Steele Avenue. For analysis purposes, this site was divided into three separate development areas.
2. Existing traffic volumes were collected and adjusted to account for the addition of the nearby Walmart development, currently under construction.
3. The traffic study assumes a 20-year planning horizon. As such, the future conditions were forecasted for the year 2032, using a 0.5% annual growth rate to account for regional growth. This percentage was selected based on a review of historic growth within the area.
4. The accident history for the adjacent roadways indicates that NY Route 30A has a lower accident rate than either S. Kingsboro Ave or Steele Ave. This is not unexpected, as NY Route 30A is built to a higher design standard and does not have the significant horizontal and vertical alignment changes that can be found on the local roads. In addition, the State highway is designed to accommodate more traffic than the local roads and has wider travel lanes and shoulders.
5. To analyze the effects of development, six analysis alternatives were reviewed. These included development scenarios at minimal, mid-range and full buildout levels, both with and without direct access to NY Route 30A. These development scenarios assumed 280,000 square feet (SF), 485,000 SF and 775,000 SF respectively for scenarios A, B & C. The maximum size of full buildout development was determined through reviewing development densities and types typical to the area and assumed that 20%-25% of the site would need to be reserved for infrastructure and undevelopable lands.
6. Full buildout is projected to generate 1,382 new trips in the AM peak hour and 3,235 new trips in the PM peak hour. Allowing a break in ROW access along NY Route 30A will shift a significant amount of this traffic from the local roads to the State Highway. In the PM peak hour, allowing the break in access would reduce the amount of site traffic on S. Kingsboro Ave by 60% and on Steele Ave by almost 50%, while increase NY Route 30A added traffic by almost 145%.
7. An analysis of existing and 2032 Future traffic conditions with no development on the site indicated that all studied intersections would operate acceptable and no noticeable operational deficiencies would exist.
8. An analysis of future AM peak hour traffic operations revealed that no significant difference would occur within the network by allowing a break in NY Route 30A access. This is attributed to the fact that AM trip generation is significantly less than the PM, with many retail establishments not opening until after the AM peak hour is complete. With or without a break in access, all intersections will operate at LOS C or better and no operational deficiencies will be present.

9. Allowing a break in NY Route 30A access does significantly improve traffic operations over those found in the “without access” scenarios during the future PM peak hour. These improvements for the full buildout condition include the following:
 - Nearly 90% fewer failing locations.
 - 12 mph improvement in average speed (120% increase)
 - 75% reduction in vehicle hours of delay
 - 14% reduction in vehicle miles traveled.
 - 43% reduction in the amount of fuel consumed.
10. A road user cost analysis of the benefits provided by a break in NY Route 30A right-of-way access indicates that nearly \$1.5M per year in user costs would be saved in just the PM peak hour of each weekday day alone. The accumulative user cost savings from other hours of the day would be significantly more, but were not quantified as part of this study.
11. By allowing a break in right-of-way access along NY Route 30A a significant amount of traffic will be diverted from the complex and confusing roadway geometry on Saratoga Ave at the NY Route 30A and Steele Avenue intersections. This diversion of traffic would allow these intersections to operate acceptably in the future buildout condition, where the “without access” alternative would not. If a break in access is not allowed, a major reconfiguration of this area, which may include a 5-leg roundabout, may be required.
12. It is estimated that allowing NY Route 30A access would reduce overall roadway improvements within the area by approximately \$2.0M in construction costs.
13. Overall benefit to allowing a break in right-of-way access along NY Route 30A:
 - a. The majority of site traffic will be shifted to the State highway and away from local roads that have a higher accident rate and lower design standards. This benefits both safety and maintenance costs.
 - b. Improved site operations will occur. Without the break in access four of the six site access points will experience failing traffic operations with no feasible improvements that could correct the issue.
 - c. Improved overall traffic operations within the studied network, as described above. Most notable a 75% reduction in VHD and a 90% reduction in locations with deficient operations.
 - d. Reduced user costs, which is estimated at \$1.5M per year considering only the PM peak hour.
 - e. Reduced construction costs, which could total as much as \$2.0M.

Overall, the study shows that there is a significant transportation operations public benefit to allowing a break in right-of-way access along NY Route 30A within the Study Area.

6. City Acceptance of this Study

The Findings of this study were presented to the Gloversville Common Council at a regularly scheduled Council meeting on December 11, 2012. The Council unanimously (7-0) passed a resolution on December 18, 2012 to “accept and adopt” the study findings and to submit this report to NYSDOT. A copy of the resolution is included in Appendix G.

Traffic Count Data

Appendix A

Traffic Volume Diagrams

Appendix B

Accident Data

Appendix C

Trip Generation Worksheets

Appendix D

Access Alternative Diagrams

Appendix E

Capacity Analysis Worksheets

Appendix F

Resolution of Acceptance

Appendix G