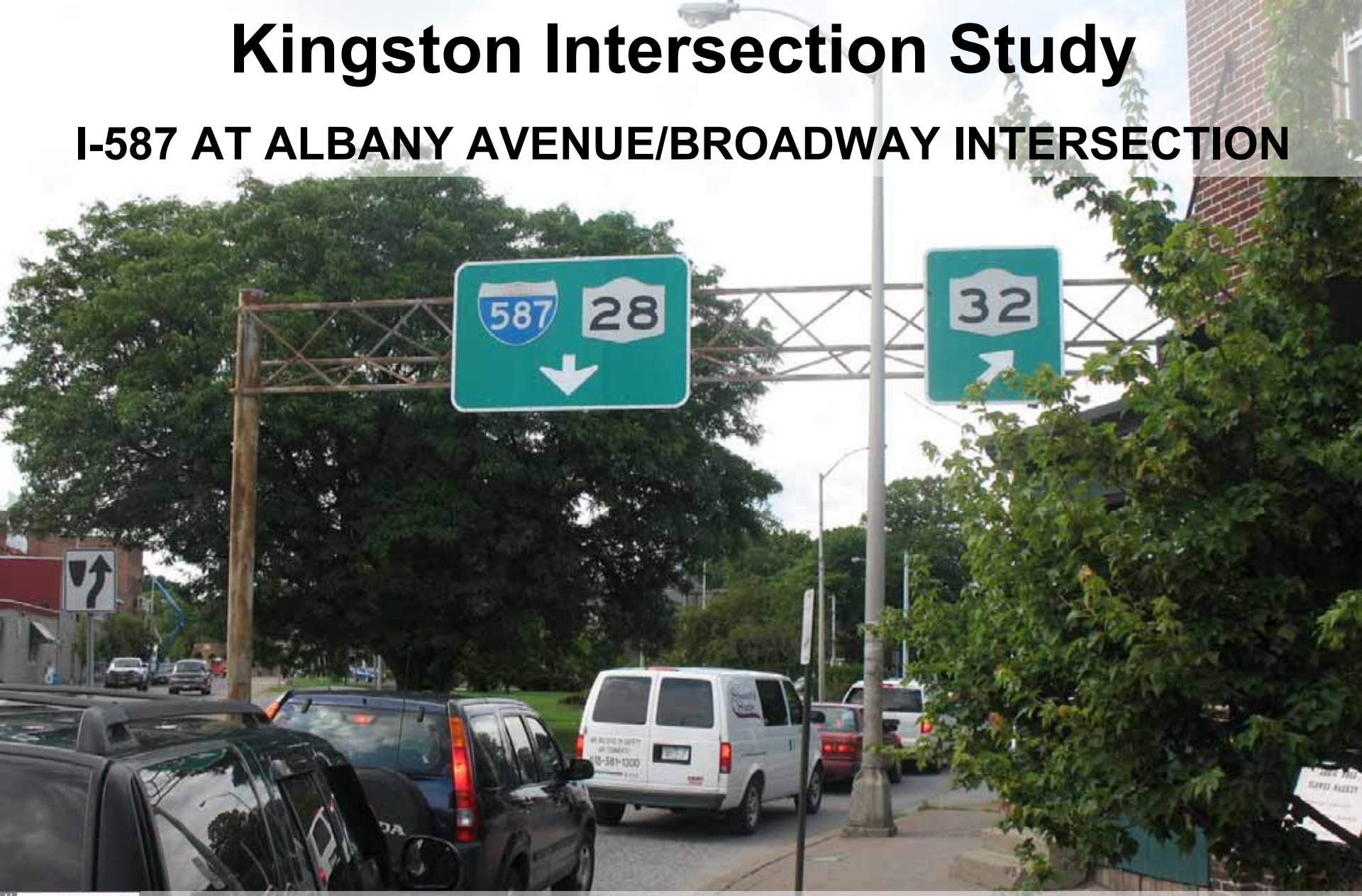
Kingston Intersection Study

I-587 AT ALBANY AVENUE/BROADWAY INTERSECTION



Conceptual Design Report - Appendices

Technical Memorandum

ULSTER COUNTY TRANSPORTATION COUNCIL

City of Kingston I-587/Albany/Broadway Intersection Study
Conceptual Design Report - Appendices

Prepared for the Ulster County Transportation Council

Prepared by:

Fitzgerald & Halliday, Inc.

In association with:

AECOM
Alternate Street Design
URS

February 2011

Appendix A: Design Workshop – Stakeholder Interview Comments

Major Themes – What We Heard

1. Traffic congestion and safety
    a. Prefer constrained environment that does not sacrifice qualities of place to maximize volume and speed of traffic
    b. Its OK if traffic moves slowly – as long as it moves smoothly
    c. Fix hazardous conditions for pedestrians and turning movements for cars; especially Clinton at Albany
    d. Fix double-left turn from Broadway onto Albany
    e. Fix unsafe merges; Maiden lane at Albany; East St James at Albany
    f. Eliminate need for unsafe U-turns to turn east to get to I-587 from Albany Ave west of the intersection; to turn west to get to I-587 from Albany Ave east of the intersection
    g. Eliminate unsafe left turns
    h. Roundabout is good solution – if it works for all vehicles and travelers whether on foot, in car or on a bus
    i. Create access to Mall from I-587
    j. Don't think roundabout would work; Concern roundabout would not accommodate large buses
    k. Local street network is not being used due to Broadway configuration today
    l. Some drivers and fire trucks/ambulances avoid the intersection and Albany Avenue to go Uptown – use local streets instead
    m. Employ traffic calming; can park be used to encourage traffic to slow down?; traffic calming especially needed on Broadway
    n. Traffic calming should not include speed humps – they are a problem for fire trucks, buses, and snowplows
    o. Driveways poorly located – hazardous to get into and out of; driveway at Albany and Clinton; driveway at Broadway and St James
    p. Downgrade I-587 to local street (two lanes) before it reaches the intersection
    q. Cut-through traffic on Albany Avenue through properties fronting on the street are a problem – need alternate internal connections formalized
    r. Access to/from St James too difficult – it functions as a one-way street
    s. Parking not well located – is more of an issue in Stockade and Uptown

2. Signage
    a. Fix signage
    b. There is too much or too little too late
    c. Some signage is incorrect
    d. Some signage is in the wrong places; it can be confusing
    e. Mass of signage is ugly – blocks views

3. Community character/Revitalization
    a. Make this a destination – a neighborhood place; the intersection is like the handle in the middle of a barbell …..it is the connector between neighborhoods – but the handle/connection is broken
    b. Make this an aesthetic gateway with cohesive theme (branding)– Gateway is critical
    c. The intersection creates a barrier between neighborhoods
    d. Sense of a place here is critical
    e. Restore village green at the intersection
    f. Intersection should be a gateway not a highway
    g. Huge redevelopment opportunity on the area – particularly Broadway at St James

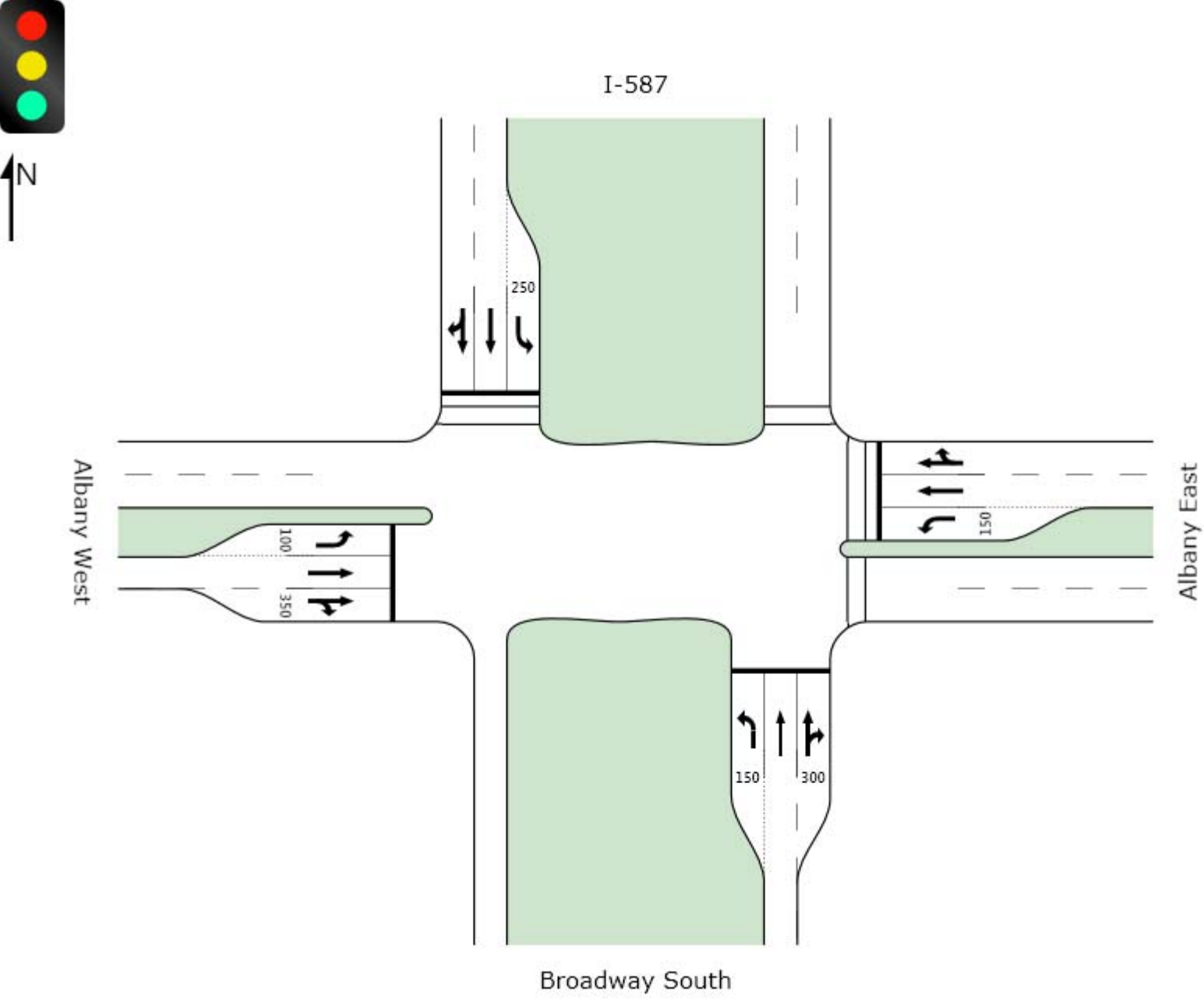
h. Need to improve aesthetics of street frontage – building facades as well as building orientation to street
i. Keep green space and Dinosaur
j. Economic development issues tied to many factors – including property tax burden for business – may inhibit incentives for new business to locate in intersection area if it becomes a more people oriented space
k. Business like 721 Media could be anchor for revitalizing area

4. Bicycles, Pedestrians, and Transit
    a. Make it easier for large vehicles to navigate the intersection
    b. Create complete streets –give some priority to bicycles and pedestrians
        i. Fix pedestrian crossings – locations, visibility, speeds of traffic, crossing signals, and pedestrian phase on traffic signal
        ii. Improve transit access points – bus stop on Academy Green needs safe pull off
        iii. Add bike lane on Broadway
    c. Make it safe to walk from one side of the intersection to the other
    d. Concern about safety of cut-through traffic in the neighborhoods – conflict with people out using the streets to walk, bike, socialize
    e. Rail bed might be better used for pedestrian system
    f. Would favor using rail bed for local/scenic rail service from Rondout to Stockade

5. Emergency services
    a. Fire trucks/ambulances avoid the intersection – use local streets instead- to avoid bottleneck and stopped traffic
    b. Fire houses on either side of intersection – forced to pass through the area to get to emergency; avoid the intersection as it slows down or stops emergency services vehicles; need pre-emption signal
    c. Police regularly use intersection (pass through) to respond to incidents – there are lots of accidents in the intersection
    d. Satellite public safety complex at/near the intersection might be nice – but ability to provide coverage constrained by size of the police force

6. Open spaces, Public spaces, and the Natural Environment
    a. Preserve rail bed for potential rail trail multi-use path connections
    b. Eventually connect rail trail multi-use path with on-street network to destinations – shopping plaza
    c. Build complete streets with public spaces/green spaces
    d. Preserve Academy green and improve access to it
    e. Preserve historic structures – protect them
    f. Be aware of flood storage character of area on either side of 587; levee used to avoid flooding there – but floodplain/some flooding persists
    g. Be aware of wetlands and floodplain along Esopus Creek

Appendix B: Analysis Summaries


I-587
N
250
Albany West
100
350
150
Albany East
150
300
Broadway South

MOVEMENT SUMMARY

Site: Kingston PM sigs existing

Albany and I-587
PM Peak SIgnals existing signals
Signals - Actuated Cycle Time = 87 seconds

Movement Performance - Vehicles

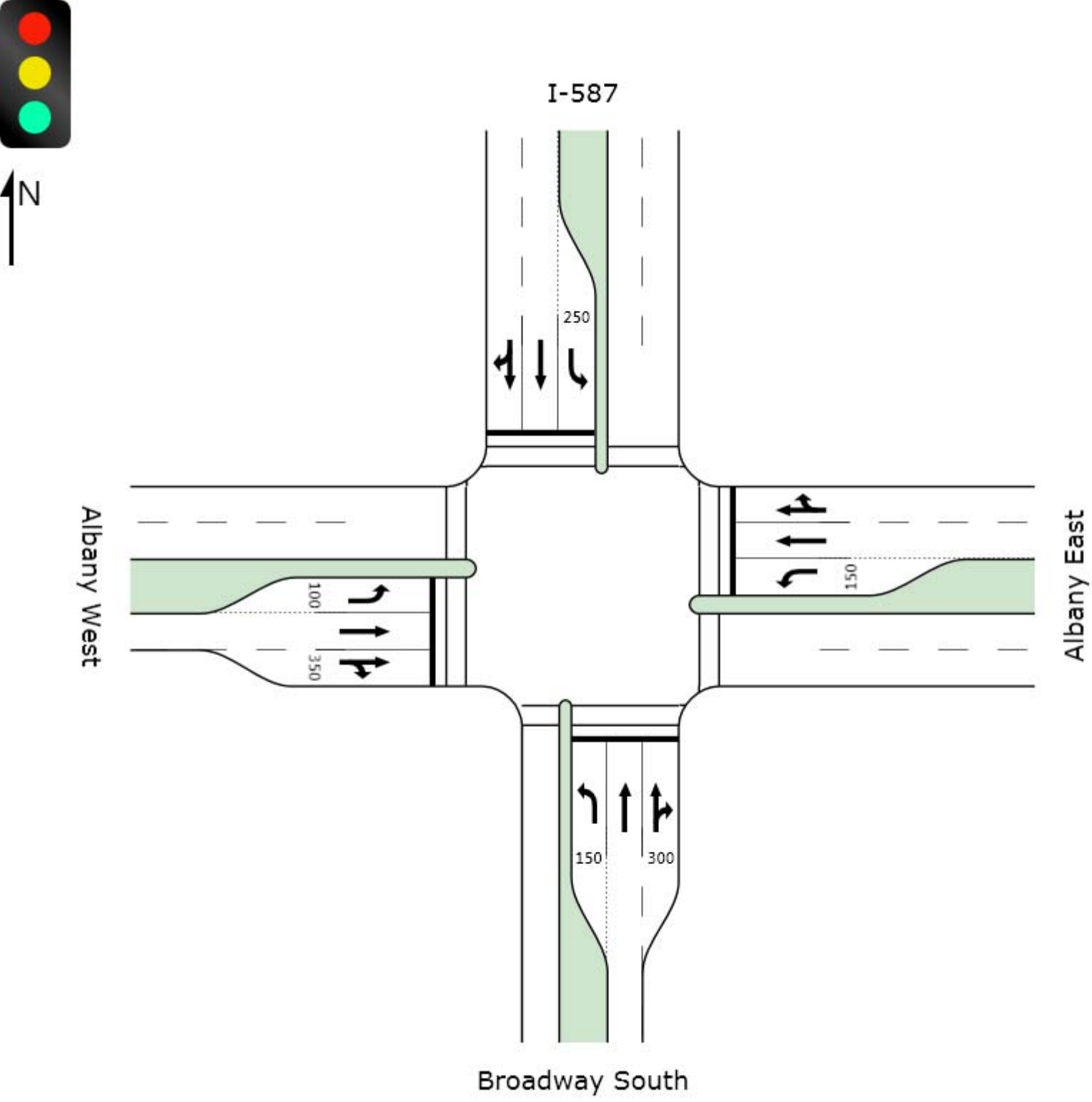
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Broadway South											
3L	L	228	2.0	0.676	36.1	LOS D	10.3	262.8	0.79	0.78	19.7
8T	T	276	2.0	0.322	32.5	LOS C	6.9	174.7	0.85	0.70	19.5
8R	R	1	2.0	0.343	41.8	LOS D	6.7	170.5	0.85	0.88	18.9
Approach		505	2.0	0.676	34.1	LOS C	10.3	262.8	0.83	0.74	19.6
East: Albany East											
1L	L	57	2.0	0.233	31.5	LOS C	2.8	70.4	0.72	0.73	21.1
6T	T	517	2.0	0.528	20.4	LOS C	15.2	385.8	0.78	0.68	23.5
6R	R	284	2.0	0.527	21.2	LOS C	11.9	302.5	0.73	0.85	25.1
Approach		858	2.0	0.528	21.4	LOS C	15.2	385.8	0.76	0.74	23.8
North: I-587											
7L	L	253	2.0	0.672	46.9	LOS D	12.7	322.5	0.93	0.82	17.1
4T	T	234	2.0	0.546	35.2	LOS D	11.4	288.9	0.91	0.76	18.8
4R	R	76	2.0	0.129	9.3	LOS A	0.5	11.6	0.10	0.70	31.4
Approach		563	2.0	0.672	37.0	LOS D	12.7	322.5	0.81	0.78	18.9
West: Albany West											
5L	L	95	2.0	0.612	45.4	LOS D	5.5	140.4	0.85	0.79	17.4
2T	T	507	2.0	0.372	20.5	LOS C	10.6	268.4	0.72	0.61	23.8
2R	R	1	2.0	0.386	29.0	LOS C	8.6	218.4	0.70	0.94	22.8
Approach		602	2.0	0.612	24.4	LOS C	10.6	268.4	0.74	0.64	22.5
All Vehicles		2528	2.0	0.676	28.1	LOS C	15.2	385.8	0.78	0.72	21.4

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on average delay for all vehicle movements.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per ped
P3	Across E approach	5	36.5	LOS D	0.0	0.1	0.90	0.90
P5	Across N approach	5	38.4	LOS D	0.0	0.1	0.90	0.90
All Pedestrians		10	37.4				0.90	0.90

Level of Service (Aver. Int. Delay): LOS D. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS D. LOS Method for individual pedestrian movements: Delay (HCM).


I-587
N
250
Albany West
100
350
150
Albany East
150
300
Broadway South

MOVEMENT SUMMARY

Site: Kingston PM compact sigs

Albany and I-587 Option compact signalized intersection
PM Peak Signals
Signals - Actuated Cycle Time = 71 seconds

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Broadway South											
3L	L	228	2.0	0.733	41.2	LOS D	9.6	244.7	0.85	0.81	18.1
8T	T	276	2.0	0.328	26.9	LOS C	5.9	149.6	0.86	0.70	21.2
8R	R	1	2.0	0.301	35.9	LOS D	5.7	145.2	0.85	0.87	20.6
Approach		505	2.0	0.733	33.4	LOS C	9.6	244.7	0.85	0.75	19.7
East: Albany East											
1L	L	57	2.0	0.226	35.5	LOS D	2.7	67.9	0.83	0.76	19.6
6T	T	517	2.0	0.638	22.7	LOS C	14.3	363.1	0.87	0.75	22.4
6R	R	284	2.0	0.638	23.2	LOS C	11.8	300.4	0.83	0.85	24.3
Approach		858	2.0	0.638	23.7	LOS C	14.3	363.1	0.86	0.79	22.8
North: I-587											
7L	L	253	2.0	0.546	34.4	LOS C	10.0	253.4	0.87	0.81	20.0
4T	T	234	2.0	0.557	29.8	LOS C	9.8	249.8	0.91	0.76	20.3
4R	R	76	2.0	0.114	14.4	LOS B	1.7	43.7	0.44	0.74	28.0
Approach		563	2.0	0.557	29.8	LOS C	10.0	253.4	0.83	0.78	20.9
West: Albany West											
5L	L	95	2.0	0.459	35.7	LOS D	4.3	109.7	0.83	0.76	19.6
2T	T	507	2.0	0.419	21.3	LOS C	9.2	233.5	0.81	0.68	23.3
2R	R	1	2.0	0.408	29.8	LOS C	9.1	229.9	0.81	0.90	22.7
Approach		602	2.0	0.459	23.6	LOS C	9.2	233.5	0.81	0.69	22.6
All Vehicles		2528	2.0	0.733	27.0	LOS C	14.3	363.1	0.84	0.75	21.6

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on average delay for all vehicle movements.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	5	27.1	LOS C	0.0	0.0	0.87	0.87
P3	Across E approach	5	30.5	LOS D	0.0	0.0	0.88	0.88
P5	Across N approach	5	27.1	LOS C	0.0	0.0	0.87	0.87
P7	Across W approach	54	30.5	LOS D	0.2	0.5	0.88	0.88
All Pedestrians		69	30.0				0.88	0.88

Level of Service (Aver. Int. Delay): LOS D. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS D. LOS Method for individual pedestrian movements: Delay (HCM).

MOVEMENT SUMMARY

Site: No Broadway Kingston PM compact sigs

Albany and I-587 Option compact signalized intersection
PM Peak Signals No High-speed Broadway bypass.
Signals - Actuated Cycle Time = 76 seconds

Movement Performance - Vehicles

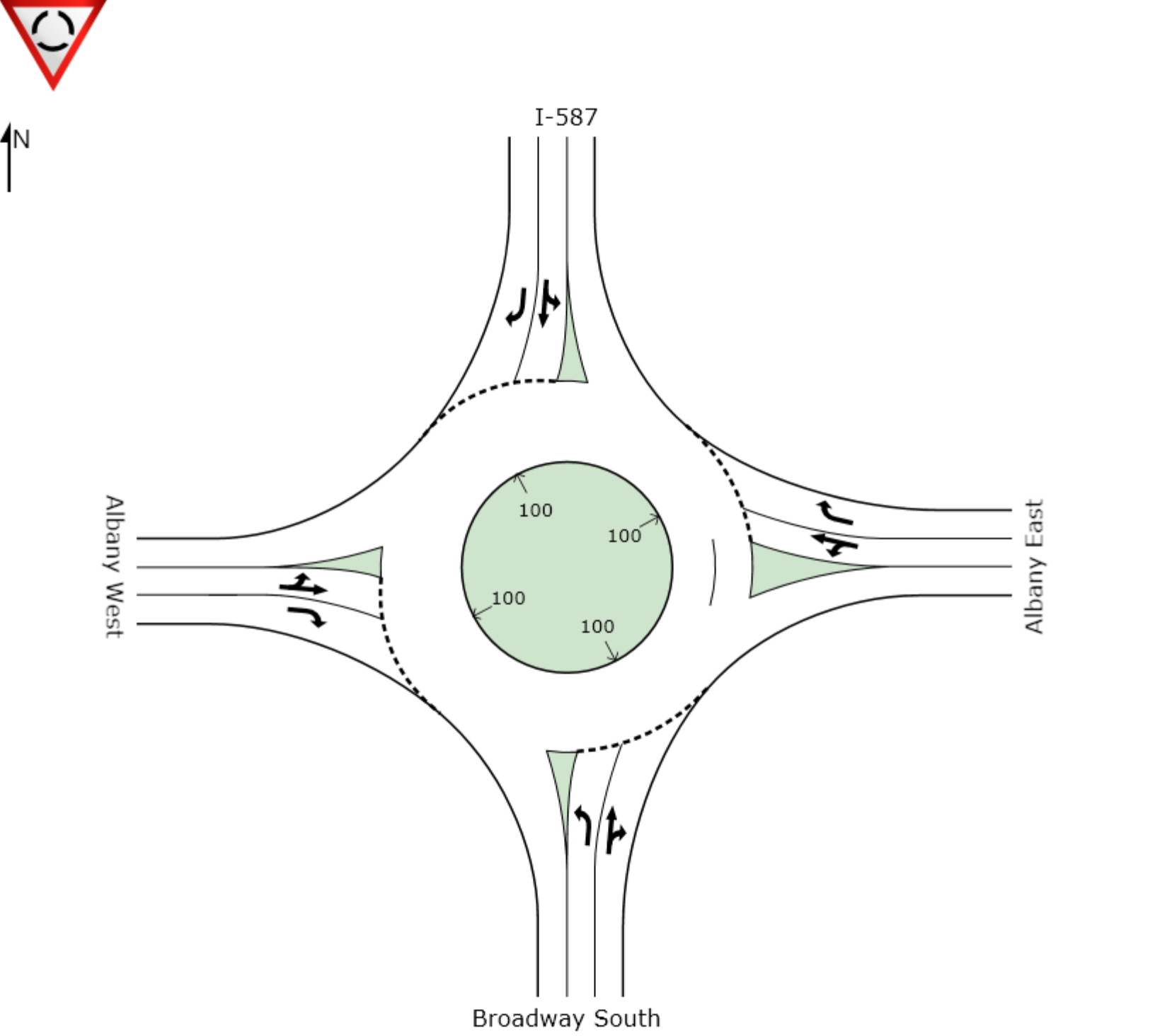
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Broadway South											
3L	L	228	2.0	0.792	49.6	LOS D	10.7	270.5	0.87	0.83	16.3
8T	T	276	2.0	0.298	33.3	LOS C	13.2	336.4	0.83	0.67	19.4
8R	R	1	2.0	0.281	48.8	LOS D	13.2	336.4	0.83	0.87	17.2
Approach		505	2.0	0.792	40.7	LOS D	13.2	336.4	0.85	0.75	17.8
East: Albany East											
1L	L	57	2.0	0.386	45.8	LOS D	3.3	83.4	0.92	0.77	17.1
6T	T	517	2.0	0.632	23.8	LOS C	15.0	381.9	0.87	0.75	22.0
6R	R	284	2.0	0.632	24.2	LOS C	12.5	318.4	0.83	0.85	23.8
Approach		858	2.0	0.632	25.4	LOS C	15.0	381.9	0.86	0.79	22.1
North: I-587											
7L	L	253	2.0	0.585	38.2	LOS D	10.8	274.7	0.89	0.82	18.9
4T	T	234	2.0	0.502	28.9	LOS C	10.0	253.1	0.88	0.74	20.6
4R	R	76	2.0	0.111	14.9	LOS B	1.8	46.9	0.44	0.74	27.8
Approach		563	2.0	0.585	31.2	LOS C	10.8	274.7	0.83	0.77	20.5
West: Albany West											
5L	L	95	2.0	0.470	35.7	LOS D	4.4	112.8	0.81	0.75	19.6
2T	T	507	2.0	0.659	25.1	LOS C	15.8	401.6	0.87	0.75	21.6
2R	R	363	2.0	0.659	24.5	LOS C	14.4	365.2	0.77	0.85	23.6
Approach		964	2.0	0.659	25.9	LOS C	15.8	401.6	0.83	0.79	22.1
All Vehicles		2890	2.0	0.792	29.4	LOS C	15.8	401.6	0.84	0.78	20.9

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on average delay for all vehicle movements.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	5	29.5	LOS C	0.0	0.0	0.88	0.88
P3	Across E approach	5	31.5	LOS D	0.0	0.0	0.89	0.89
P5	Across N approach	5	29.5	LOS C	0.0	0.0	0.88	0.88
P7	Across W approach	54	31.5	LOS D	0.2	0.5	0.89	0.89
All Pedestrians		69	31.2				0.89	0.89

Level of Service (Aver. Int. Delay): LOS D. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS D. LOS Method for individual pedestrian movements: Delay (HCM).


N
I-587
Albany West
Albany East
Broadway South
100
100
100
100

MOVEMENT SUMMARY

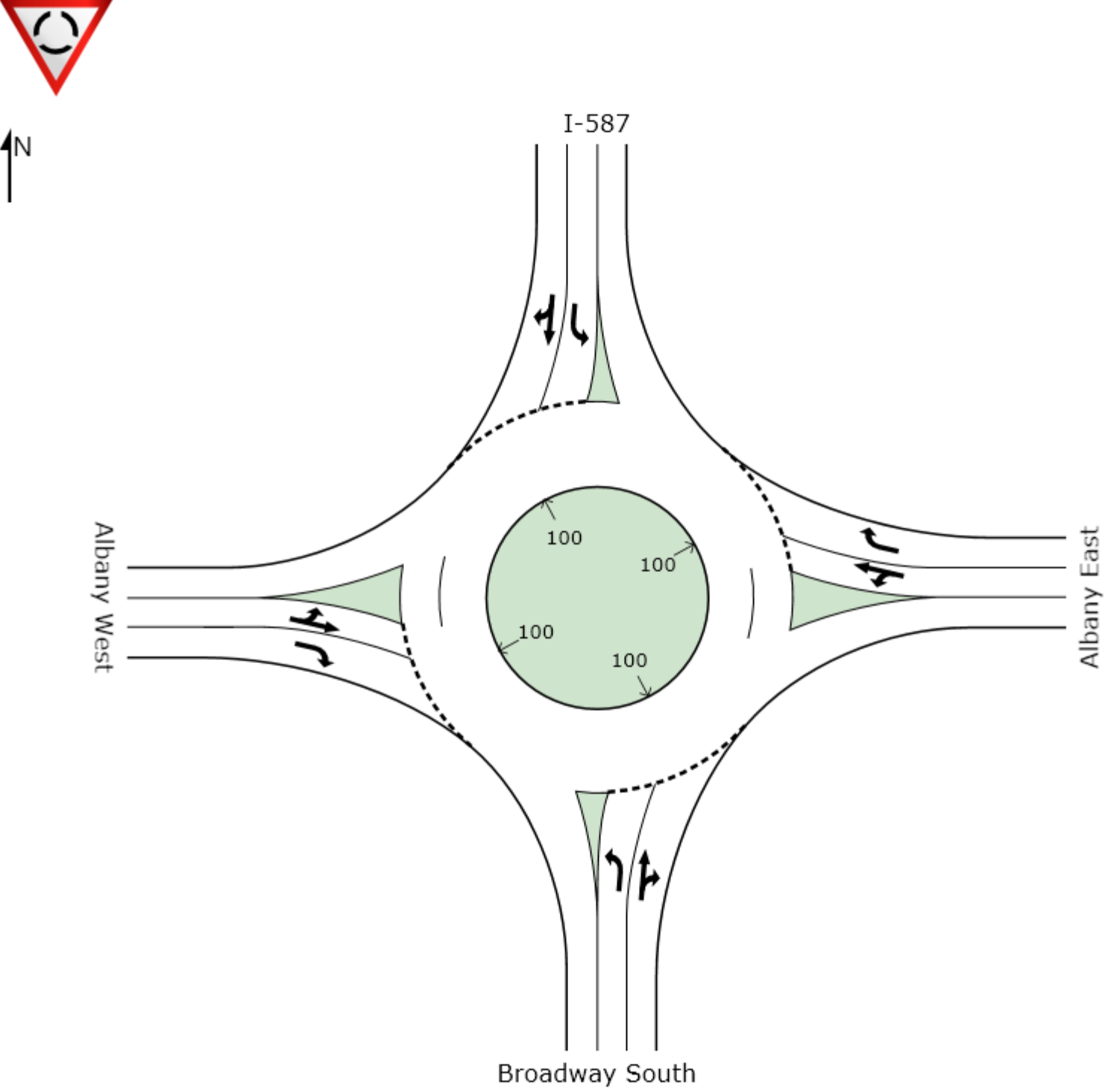
Site: Kingston PM Option1

Albany and I-587 Option 1 Right/through and left only lanes from I-587
PM Peak
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Broadway South											
3L	L	228	2.0	0.411	19.8	LOS B	3.5	88.9	0.87	0.99	26.1
8T	T	276	2.0	0.466	12.1	LOS B	4.6	116.2	0.90	0.96	29.5
8R	R	37	2.0	0.468	13.7	LOS B	4.6	116.2	0.90	0.98	29.3
Approach		541	2.0	0.466	15.5	LOS B	4.6	116.2	0.89	0.97	27.9
East: Albany East											
1L	L	57	2.0	0.665	16.3	LOS B	6.0	152.1	0.76	1.06	28.7
6T	T	517	2.0	0.667	8.9	LOS A	6.0	152.1	0.76	0.83	30.9
6R	R	284	2.0	0.415	9.3	LOS A	2.5	63.2	0.63	0.78	31.0
Approach		858	2.0	0.666	9.5	LOS B	6.0	152.1	0.72	0.83	30.8
North: I-587											
7L	L	253	2.0	0.420	19.0	LOS B	3.6	91.9	0.85	0.97	26.5
4T	T	234	2.0	0.437	10.8	LOS B	4.1	103.3	0.87	0.91	30.2
4R	R	76	2.0	0.437	12.4	LOS B	4.1	103.3	0.87	0.93	30.0
Approach		563	2.0	0.437	14.7	LOS B	4.1	103.3	0.86	0.94	28.3
West: Albany West											
5L	L	95	2.0	0.675	16.1	LOS B	6.1	156.0	0.74	1.05	28.8
2T	T	507	2.0	0.675	8.6	LOS A	6.1	156.0	0.74	0.80	30.9
2R	R	363	2.0	0.476	9.1	LOS A	3.1	78.9	0.63	0.77	31.0
Approach		964	2.0	0.676	9.5	LOS B	6.1	156.0	0.70	0.81	30.7
All Vehicles		2926	2.0	0.676	11.6	LOS B	6.1	156.0	0.77	0.87	29.7

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.
Roundabout LOS Method: Same as Signalised Intersections.
Roundabout Capacity Model: SIDRA Standard.


N
I-587
Albany West
Albany East
Broadway South
100
100
100
100

MOVEMENT SUMMARY

Site: Kingston PM Option 2

Albany and I-587 Option 2 right only and through left from I-587
PM Peak
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Broadway South											
3L	L	242	2.0	0.534	24.6	LOS C	5.4	137.3	0.96	1.08	24.0
8T	T	293	2.0	0.607	17.8	LOS B	7.3	184.8	1.00	1.13	26.2
8R	R	39	2.0	0.603	19.3	LOS B	7.3	184.8	1.00	1.13	26.1
Approach		574	2.0	0.607	20.8	LOS C	7.3	184.8	0.98	1.11	25.2
East: Albany East											
1L	L	60	2.0	0.778	19.0	LOS B	8.8	222.6	0.88	1.13	27.3
6T	T	548	2.0	0.778	11.9	LOS B	8.8	222.6	0.88	1.06	29.6
6R	R	301	2.0	0.488	10.8	LOS B	3.4	85.4	0.71	0.90	30.4
Approach		909	2.0	0.777	12.0	LOS B	8.8	222.6	0.83	1.01	29.6
North: I-587											
7L	L	268	2.0	0.816	32.2	LOS C	14.0	355.3	1.00	1.32	21.7
4T	T	248	2.0	0.815	25.0	LOS C	14.0	355.3	1.00	1.31	22.6
4R	R	81	2.0	0.230	15.9	LOS B	1.6	40.0	0.82	0.92	27.3
Approach		597	2.0	0.815	27.0	LOS C	14.0	355.3	0.98	1.26	22.7
West: Albany West											
5L	L	100	2.0	0.808	24.3	LOS C	13.8	351.3	1.00	1.17	24.9
2T	T	537	2.0	0.807	17.1	LOS B	13.8	351.3	1.00	1.17	26.5
2R	R	385	2.0	0.593	14.1	LOS B	6.5	164.1	0.90	1.01	28.3
Approach		1022	2.0	0.807	16.7	LOS C	13.8	351.3	0.96	1.11	27.0
All Vehicles		3102	2.0	0.815	18.1	LOS B	14.0	355.3	0.93	1.11	26.3

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.
Roundabout LOS Method: Same as Signalised Intersections.
Roundabout Capacity Model: SIDRA Standard.
Flow Scale Analysis Objective: Practical Capacity (v/c ratio = xp). (Results for Flow Scale = 106.0 % largest for any movement)

Appendix C: Route 28/I-87/I-587/Washington Avenue Roundabout

Michael Wallwork is one of North America's top roundabout designers and he is an author of several roundabout design guidelines. He helped design and analyze the roundabout recommended in this study. He also heard about the problems associated with the existing roundabout at I-87. A large part of his practice is fixing early generation roundabouts. Consequently, Mr. Wallwork conducted a couple of site visits to the existing roundabout, observed its operation, and recognized its design shortcomings and summarized them below.

Many comments were made regarding the existing roundabout at I-87; therefore, the roundabout was driven several times, the operation observed from various points and the crash performance discussed with Mr. Charlie Schaller, the County's Safety Engineer. There are approximately 61 crashes a year, most of which are caused by drivers making illegal left turns. My observations found that this roundabout has by far the most illegal left turns I have ever seen at a roundabout. When large trucks turn, their trailers take a straighter path than the truck cab creating a wide swept path. Because of non-standard design, the truck apron is too high and too narrow to accommodate the swept paths of large trucks, forcing truck drivers to make illegal left turns; i.e. turning left from the outside approach lane.

By rebuilding the truck apron so that is only three inches high and sufficiently wide to accommodate the swept paths of large trucks, say 10 feet or so wide, these trucks could then make legal left turns from the left most lane. After this change lane arrows could be added to the approach lanes to direct and educate all drivers as to which lanes to use when entering and turning at this roundabout.

Additionally, the roundabout could be refined further by lowering the berm in the center of the roundabout to a maximum of four feet, and redesigning the splitter islands. A proper redesign of the splitter islands could also lower vehicle entering and exit speeds. Consideration should also be given to the design and location of the trail crossing on Washington Avenue south of the roundabout, where is across the widest section of the road and where three lanes merge.

Six inch truck apron too high to mount effectively

Trucks make illegal left turns from the outside lane

High berm at center of roundabout restricts sight lines

Based on the 2010 NYSDOT Highway Design Manual, general objectives for intersection design are:

- To provide adequate sight distances.
- To minimize points of conflict.
- To simplify conflict areas.
- To limit conflict frequency.
- To minimize severity of conflicts.
- To minimize delay.
- To provide acceptable capacity for the design year.

Roundabouts are frequently able to address the above objectives better than other intersection types in both urban and rural environments and on high- and low-speed highways. Thus, when a project includes reconstructing or constructing new intersections, a roundabout alternative is to be analyzed to determine if it is a feasible solution based on site constraints, including ROW, environmental factors, and other design constraints. Exceptions to this requirement are where the intersection:

- Has no current or anticipated safety, capacity, or other operational problems.
- Is within a well working coordinated signal system in a low-speed (<80 km/h) urban environment with acceptable accident histories.
- Is where signals will be installed solely for emergency vehicle preemption.
- Has steep terrain that makes providing an area, graded at 5% or less for the circulating roadways, infeasible.
- Has been deemed unsuitable for a roundabout by the Roundabout Design Unit.

When the analysis shows that a roundabout is a feasible alternative, it should be considered the Department's preferred alternative due to the proven substantial safety benefits and other operational benefits.

Appendix D: Public Survey

1. What do you use this intersection for? (choose all that apply)

	Response Percent	Response Count
I-587/I-87 access	68.0%	68
Cross-town trips	**77.0%**	**77**
Destinations/origins near the intersection	56.0%	56
answered question		**100**
skipped question		**0**

2. Do you consider this intersection a gateway to the City of Kingston?

	Response Percent	Response Count
Yes	**75.8%**	**75**
No	24.2%	24
answered question		**99**
skipped question		**1**

3. Who do you think this intersection should primarily serve?

	Response Percent	Response Count
Local residents & businesses	8.0%	8
Through traffic	8.0%	8
Serve both equally	**84.0%**	**84**
answered question		**100**
skipped question		**0**

4. How much of an improvement do you think this intersection needs?

	Response Percent	Response Count
None, just maintenance	19.0%	19
Some improvements and maintenance	36.0%	36
Complete redesign/rebuild	**45.0%**	**45**
answered question		**100**
skipped question		**0**

5. Do you think that traffic congestion is a problem at this intersection?

	Response Percent	Response Count
Yes	**45.0%**	**45**
No	14.0%	14
Only periodically	41.0%	41
answered question		**100**
skipped question		**0**

6. Do you think safety is an issue at this intersection

	Response Percent	Response Count
Yes	**59.0%**	**59**
No	41.0%	41
If yes, where?		48
answered question		**100**
skipped question		**0**

7. What do you think causes traffic congestion at this intersection? (choose all that apply)

	Response Percent	Response Count
Too much traffic	48.4%	44
Intersection design	**62.6%**	**57**
Traffic light timing	47.3%	43
Other (please specify)		13
answered question		**91**
skipped question		**9**

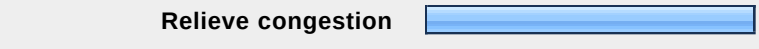
8. How would you expect traffic to behave following the intersection improvement?

	Response Percent	Response Count
Slow with predictable delay	38.0%	35
Fast with minimal delay	**62.0%**	**57**
answered question		**92**
skipped question		**8**

9. During what hours (if any) would you avoid driving through this intersection?

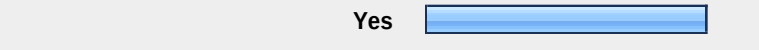
	Response Percent	Response Count
6am	2.6%	2
7	19.7%	15
8	57.9%	44
9	50.0%	38
10	7.9%	6
11	6.6%	5
12pm	30.3%	23
1	19.7%	15
2	6.6%	5
3	25.0%	19
4	52.6%	40
5	**86.8%**	**66**
6	44.7%	34
7	5.3%	4
8pm	1.3%	1
answered question		**76**
skipped question		**24**

10. If you had to pick just one type of improvement to this intersection, what should it accomplish?



	Response Percent	Response Count
Relieve congestion	**49.5%**	**49**
Improve appearance	19.2%	19
Maximize safety	15.2%	15
Accommodate pedestrians	2.0%	2
Bicycles and transit improvements	5.1%	5
Economic development	9.1%	9
answered question		**99**
skipped question		**1**

11. Would you be more likely to walk or bike in the vicinity of this intersection if substantial improvements were made to the sidewalks, crosswalks, bike lanes, and streetscape?



	Response Percent	Response Count
Yes	**42.4%**	**42**
No	**42.4%**	**42**
Maybe	15.2%	15
answered question		**99**
skipped question		**1**

12. Is this intersection adequately illuminated at night?

	Response Percent	Response Count
Yes	**71.6%**	**68**
No	28.4%	27
answered question		**95**
skipped question		**5**

13. Is the directional signage at this intersection sufficient? For example, given the existing signage, is it clear what lane to use?

	Response Percent	Response Count
Yes	**58.0%**	**58**
No	42.0%	42
answered question		**100**
skipped question		**0**

14. Do you think that there is adequate parking for the businesses in this area?

	Response Percent	Response Count
Yes	37.6%	35
No	**62.4%**	**58**
answered question		**93**
skipped question		**7**

15. There are many small parcels of green space at this intersection now, if these spaces could be combined, do you think that a small park would be appropriate at this intersection?

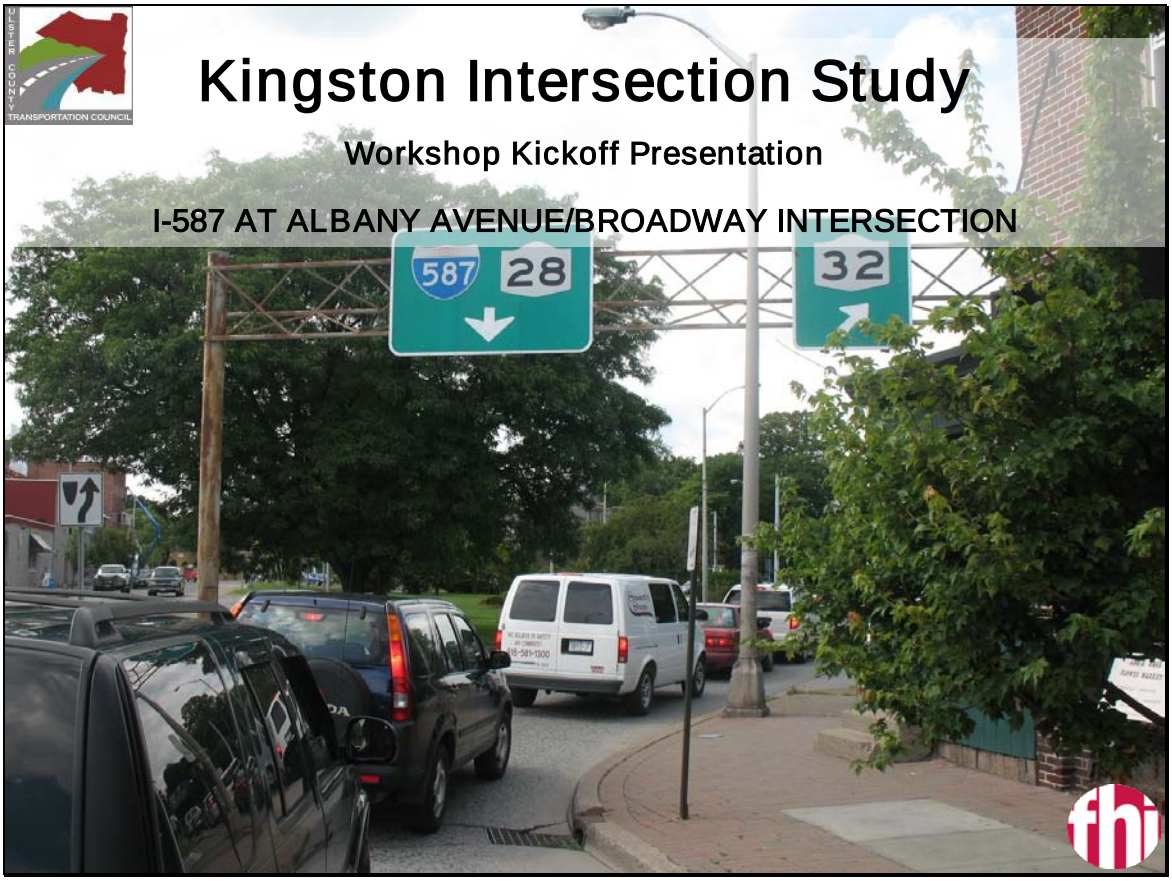
	Response Percent	Response Count
Yes	38.0%	38
No	**62.0%**	**62**
answered question		**100**
skipped question		**0**

Appendix E: Advisory Committee Presentation

Kingston Intersection Study

Workshop Kickoff Presentation

I-587 AT ALBANY AVENUE/BROADWAY INTERSECTION



3-Day Workshop Agenda

Day 1

Discovery Day

- **AC Meeting**
- **Stakeholder interviews**
- Starter ideas
- Screening
- **Public Meeting #1 (Visioning)**

Day 2

Design Day

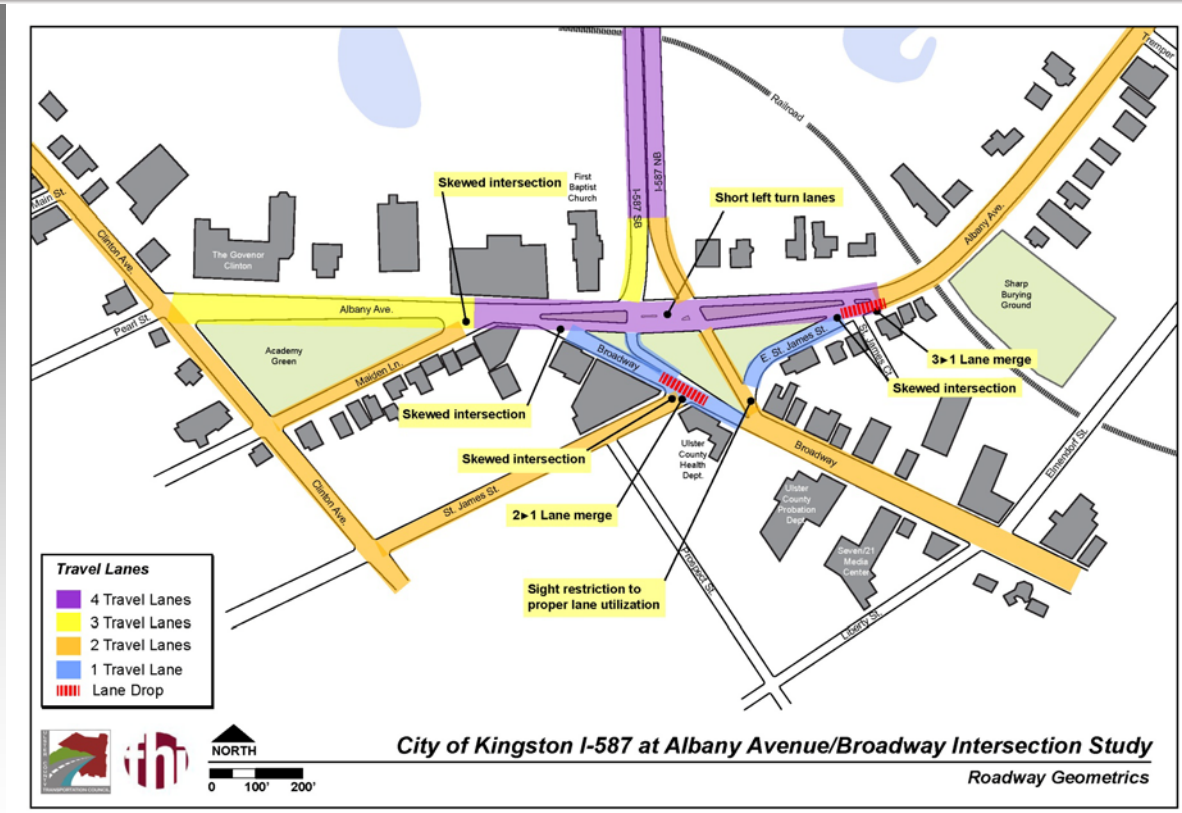
- Refine and focus ideas
- **Stakeholder Interviews**
- Sketch and analyze concepts

Day 3

Production Day

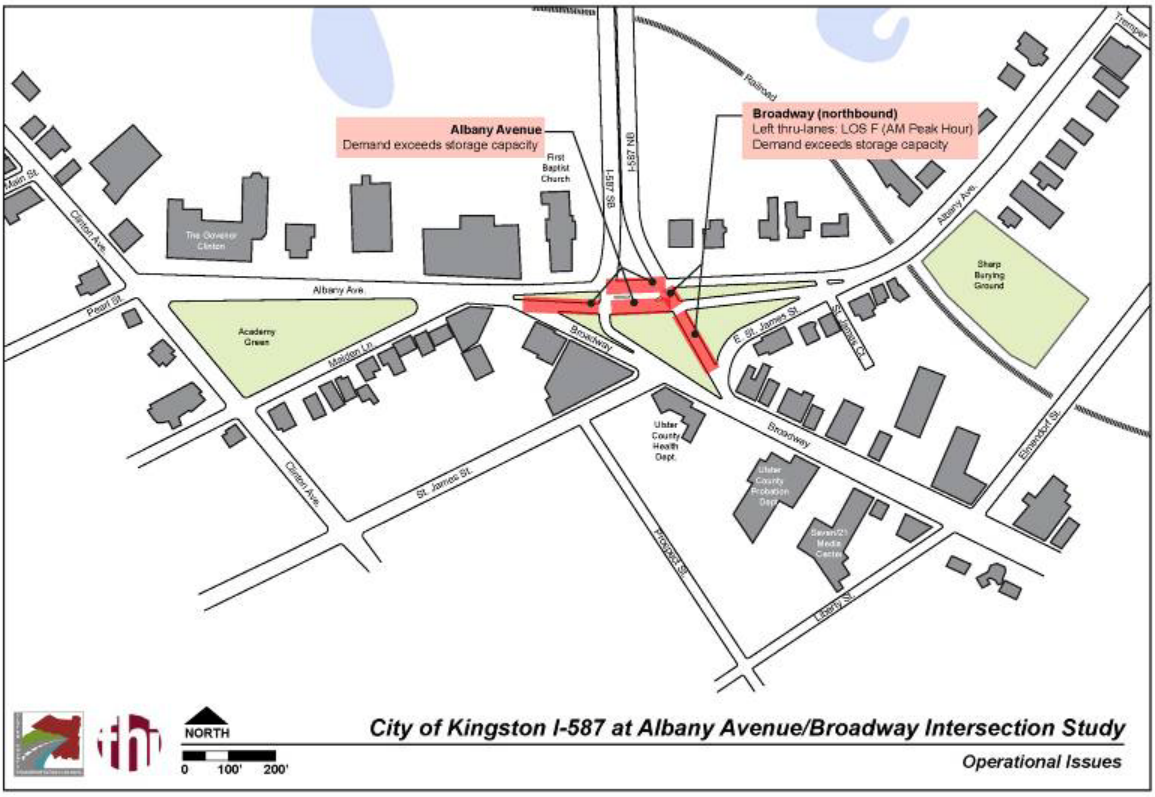
- **Open house for public**
- Concept development
- Operations analysis
- Design options
- Visualizations
- Costs

Intersection Geometry

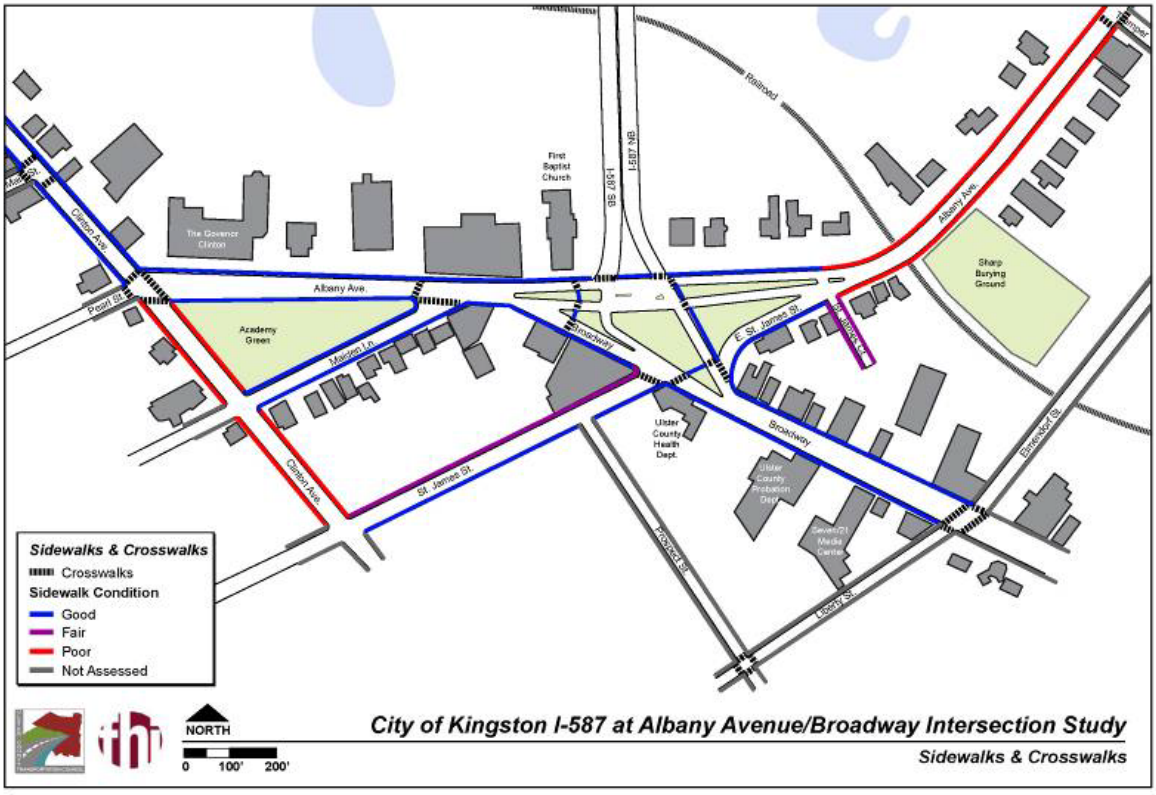


Daily Traffic

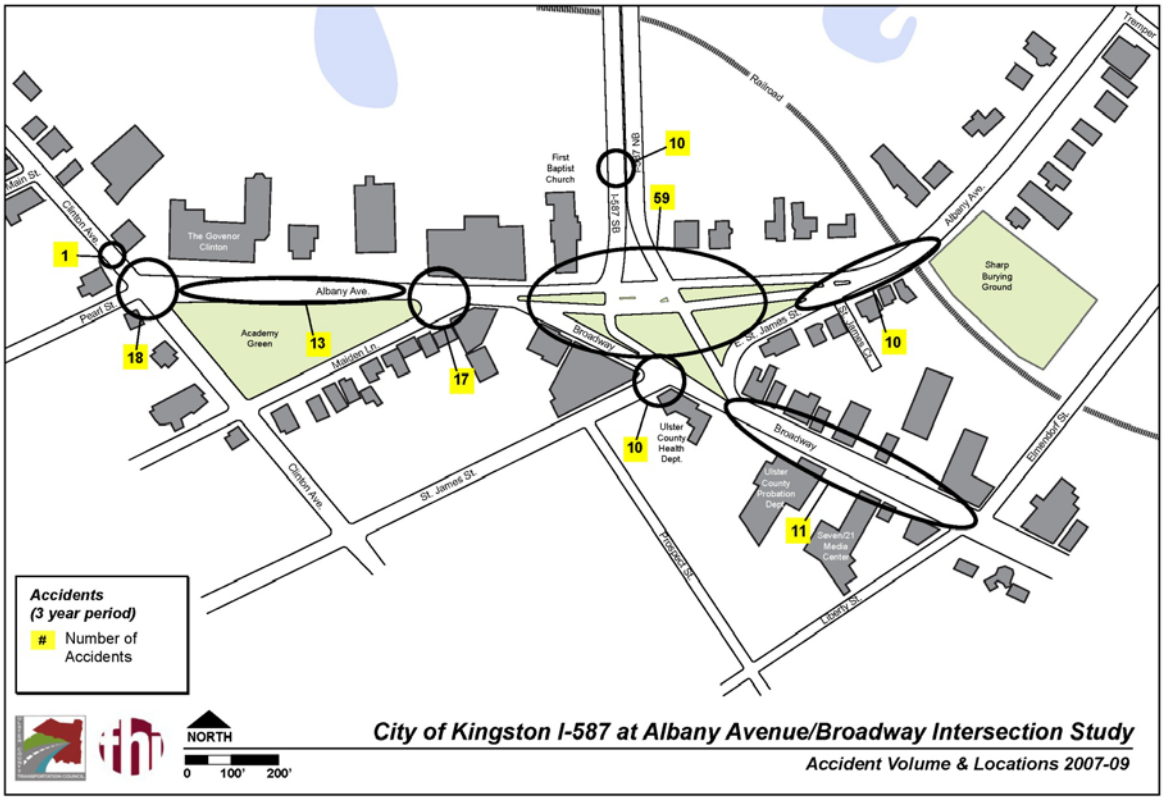
Operational Issues



Pedestrian Network



Safety



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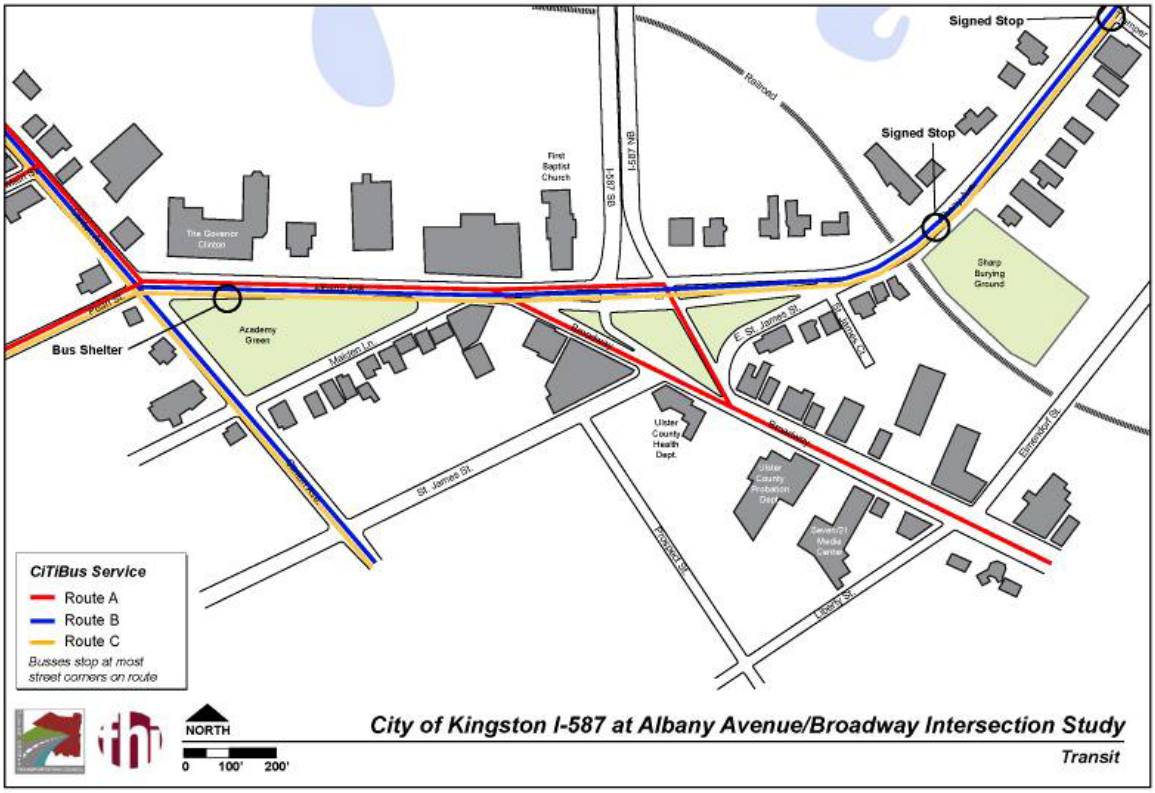
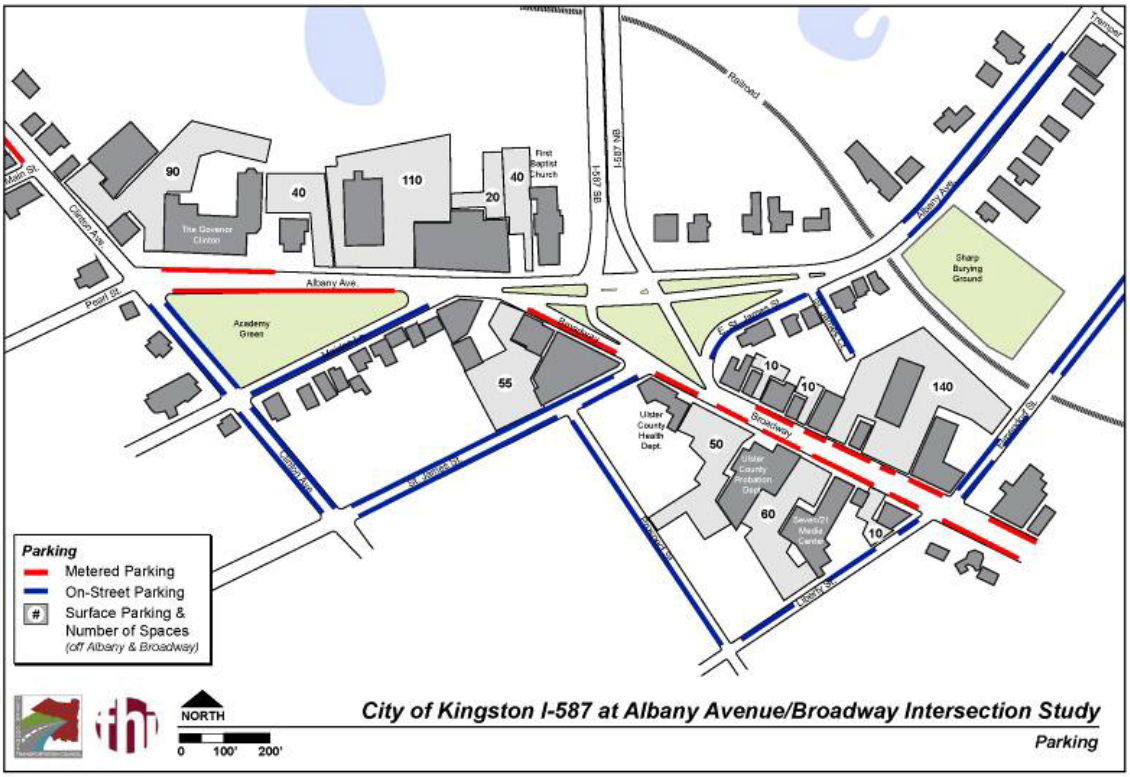
Transit

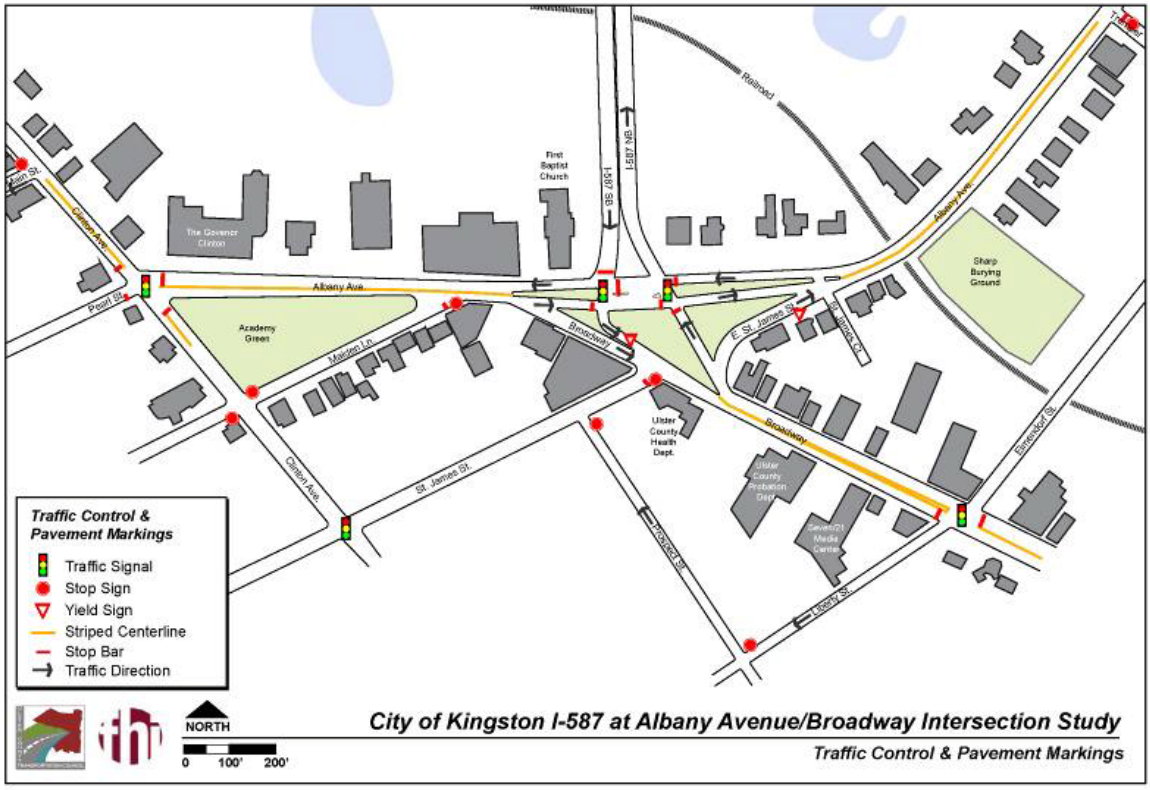


Fitzgerald & Halliday, Inc

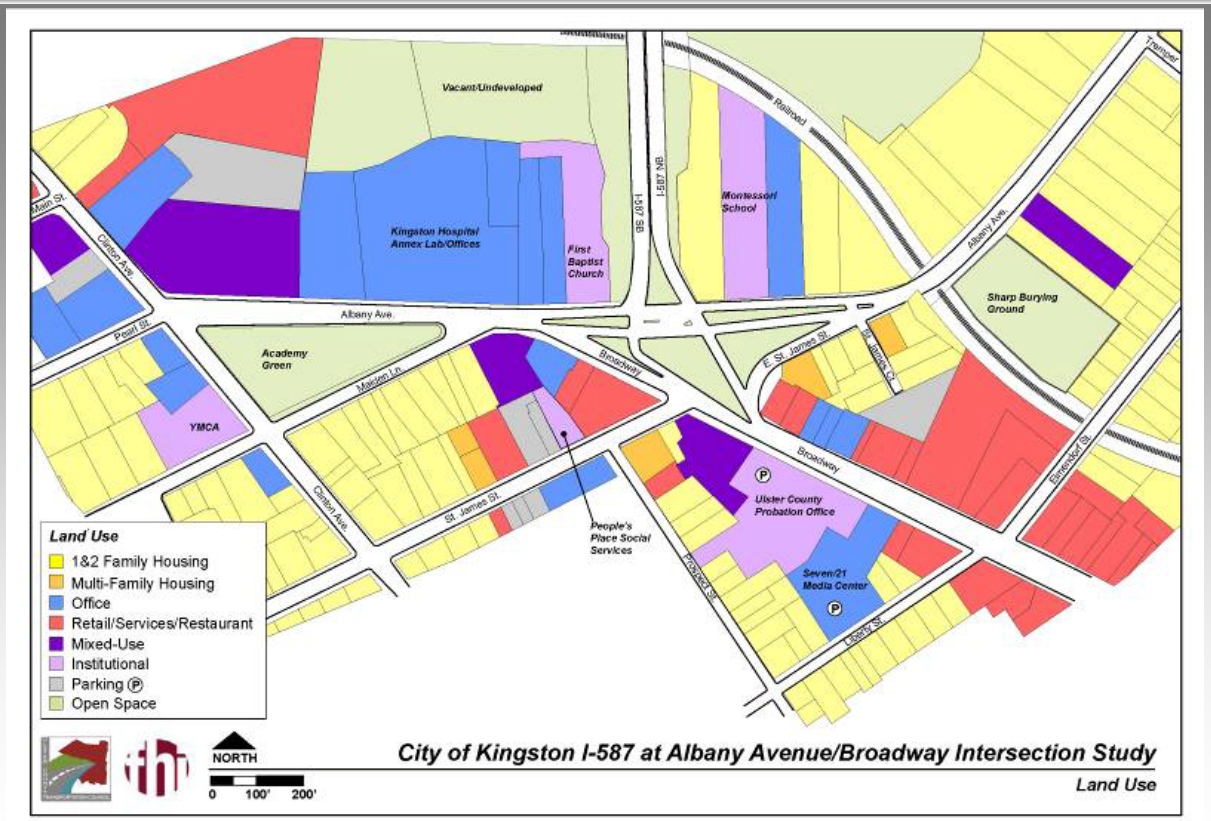
Parking



Traffic Control and Signage



Land Use



Historic and Open Spaces