Bowman

January 6, 2026

Tariq H. Fayyad, M.S.
The Meehan Group
32 Hastings Street
PO Box 444
Mendon, MA 01756

RE: Response to Peer Review Comments
Proposed Retail Development
190/194/198 Hartford Avenue (Route 126)
Bellingham, MA 01923

Dear Tariq,

Bowman Consulting Group Ltd. (Bowman) has completed a review of the Peer Review comments regarding the proposed retail development to be located at 190/194/198 Hartford Avenue (Route 126) in Bellingham, Massachusetts.

Bowman is in receipt of the Peer Review letter completed by MDM Transportation Consultants, Inc. (MDM), dated November 6, 2025. On behalf of the Town of Bellingham, MDM completed a review of the Traffic Impact Study (hereinafter referred to as "the TIS") completed by Bowman, dated June, 2025; the TIS addendum completed by Bowman, dated September 29, 2025; and the updated Site Plan prepared by Bohler Engineering, dated September 25, 2025. Bowman has prepared responses to the traffic related comments raised by MDM that require attention, and compiled responses to the remaining comments provided by others on the project team.

EXISTING CONDITIONS

MDM Comment #2: MDM has independently reviewed MassDOT permanent count station data that is local to the project area for seasonal fluctuations; MassDOT local permanent count station data indicate that March is approximately 4 percent below average travel months. The Applicant should review MassDOT permanent count station data for the area and update the analysis to reflect average season conditions.

Bowman Response to Comment #2: As noted in the TIS and the TIS addendum, according to MassDOT's 2023 and 2024 Weekday Seasonal Factors, traffic volumes collected on study area roadways including urban principal arterials, minor arterials and local roadway types in the month of Ma are higher than an average month. No MassDOT continuous count station is provided in the vicinity of the study area.

MDM Comment #3: Restriction of movements at the Site to right-in/right-out is appropriate to reduce potential for left-turn vehicle conflicts along Hartford Avenue. As discussed in more detail under Comment 9 the design of the driveway will need to factor in the planned widening of Hartford Avenue which will include a shared-use path along the site frontage that will significantly reduce the depth of the driveway, effectively eliminating the proposed island feature altogether. MDM therefore advises that Applicant coordinate the driveway design

with ongoing planned improvements along Hartford Avenue that we understand are nearing completion of the design process.

Bowman Response to Comment #3: An updated project site plan has been prepared by Bohler Engineering to address the Hartford Avenue driveway with the potential MassDOT roadway improvement in place.

MDM Comment #4: Sight lines at the proposed driveway locations exceed applicable criteria for the posted speed limit based on review by MDM. Field observations and review of the Road Safety Audit conducted for Hartford Avenue in 2014, travel speeds along Hartford Avenue significantly exceed the posted speed limit; Applicant should therefore confirm that sight line criteria based on the 85th percentile travel speeds are met along Hartford Avenue. Applicant should also confirm that site plan features including snow storage areas, signs and landscaping will not impeded sight lines under the future widening of Hartford Avenue.

The Site Design Plan should clearly indicate intersection sight triangles and include a note citing that "Signs, landscaping and other features located within sight triangle areas shall be designed, installed and maintained so as not to exceed 2.0-feet in height. Snow windrows located within sight triangle areas that exceed 3.5-feet in height or that would otherwise inhibit sight lines shall be promptly removed."

Bowman Response to Comment #4: The available sight lines at the proposed site driveway locations exceed the minimum sight distance requirements established by AASHTO for the posted speed limit. Adequate visibility is provided in the direction of approaching vehicles at the proposed driveway locations, ensuring safe vehicle ingress and egress. The available sight line at each of the proposed driveway locations are depicted in the attached Figure 1.

FUTURE CONDITIONS

MDM Comment #6: MDM concurs that the application of ITE trip rates and the methodology used in the TIS to estimate trip generation present a reasonable basis of estimating peak hour trip characteristics of the proposed use for a small retail plaza – a use that typically includes sale of dry-goods and that may also contain small office uses. However, trip generation should be updated to reflect the most current ITE Trip Generation, 12th Edition trip rates which are higher for the AM peak hours.

Since specific retail tenant(s) have not been identified, we note that any change in land use category such as drive-in bank, restaurant, coffee/donut shop and others as defined by the Institute of Transportation Engineers Trip Generation are expressly different and often higher traffic generators than general retail uses that would require Applicant to re-evaluate impacts for review and approval by the Town.

Bowman Response to Comment #6: The TIS was prepared with the most current ITE *Trip Generation Manual* (11th Edition) at the time of submission as is industry standard. Through conversation with the Town and MDM, Bowman has been asked to provide a comparison of the ITE 11th Edition trip generation rates with the new ITE 12th Edition trip generation rates that were released after submission of the project materials. Table 1 below shows a comparison of the trip generation estimates based on the ITE *Trip Generation Manual*, Editions 11 and 12.

Table 1: Trip Generation Comparison

	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour			Saturday Midday Peak Hour		
Description	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
ITE 12th Edition[1]	22	18	40	38	38	76	34	32	66
ITE 11th Edition[2]	14	9	23	39	39	78	34	32	66
Difference in New Trips	***8***	***9***	***17***	***-1***	***-1***	***-2***	***0***	***0***	***0***

1 ITE Trip Generation Manual, 12th Edition; Land Use Code (LUC) 822 (Strip Retail Plaza <40k), based on 10,000 sq ft.

2 ITE Trip Generation Manual, 11th Edition; LUC 822, based on 10,000 sq ft.

As shown in Table 1 above, the vehicle trip estimates generated using the ITE 12th Edition are higher than those from the ITE 11th Edition during the weekday morning peak hour, while estimates for the weekday afternoon and Saturday midday peak hours remain similar. A summary of the weekday morning peak hour trip generation estimates using ITE 12th Edition with the pass-by reduction is provided in Table 2 below.

Table 2: Trip Generation Comparison

	Weekday Morning Peak Hour		
Description	**In**	**Out**	**Total**
Proposed Retail Trips[1]	22	18	40
-Pass By Trips[2]	*-6*	*-6*	*-12*
New Retail Trips	***16***	***12***	***28***

1 ITE Trip Generation Manual, 12th Edition; Land Use Code (LUC) 822 (Strip Retail Plaza <40k), based on 10,000 sq ft.

2 A 30% pass-by rate was applied, consistent with the TIS.

The updated Project-related traffic for the weekday morning peak hour was assigned to the surrounding roadway network based on the trip distribution identified in the TIS. The updated weekday morning peak hour Project trips are shown in the attached Figure 2 and the updated weekday morning peak hour 2032 Build volumes are illustrated in the attached Figure 3,. Bowman has updated the 2032 Build traffic analysis for the weekday morning peak hour based on the updated trip generation estimates and the analysis is summarized in the response to comment #8.

MDM Comment #8: Operational analysis to reflect the updated access/egress and the proposed lane reassignments at the signal should be provided for review. The analysis should include required traffic signal timing/phasing adjustments with two-way Cedar Hill Road operation. We note that conversion of the northbound left-turn lane to a shared left/through lane would not align properly with Cedar Hill Road and may cause conflicts based on existing signal phasing that should be considered.

We also advise that Applicant should provide an operational analysis assuming planned MassDOT improvements are in place. A review of the proposed lane reassignments at the signalized Hartford Avenue at

Cedar Hill Road intersection indicates that it may be desirable to provide an exclusive left-turn lane on Hartford Avenue in the eastbound direction to shadow the proposed dual left-turn lanes in the westbound direction. Unless a separate eastbound left-turn lane is provided onto Cedar Hill Road, eastbound left-turning vehicles would have very limited sight line to through traffic due to its alignment with the dual left-turn lanes. The intersection would benefit from a design similar to the eastbound approach to Rawson Road which should be considered in consultation with designer of the MassDOT improvements so that adjustments to planned improvements can be made.

Bowman Response to Comment #8: Bowman has completed the traffic analysis for the 2032 Build conditions, both with and without the MassDOT improvements. The 2032 Build conditions include lane reconfigurations to support the two-way operation on Cedar Hill Road. For the 2032 Build conditions without the MassDOT improvements, the analysis includes minor signal timing adjustments. The 2032 Build condition with the MassDOT improvements includes signal timing changes and the addition of an eastbound left-turn lane onto Cedar Hill Road. The Applicant would coordinate with MassDOT and the Town to implement the eastbound left-turn lane and to update the signal timing changes. The specific design of the Hartford Avenue (Route 126) at North Main Street (Route 126)/Cedar Hill Road intersection would be completed once the conversion of Cedar Hill Road to two-way is approved by the Town of Bellingham.

Table 3, below, presents an overview of the Hartford Avenue (Route 126) at North Main Street (Route 126)/Cedar Hill Road intersection under 2032 No Build, 2032 Build without MassDOT Improvements and 2032 Build with MassDOT Improvements conditions. A detailed summary of intersection operations under the 2032 Build without MassDOT Improvements and 2032 Build with MassDOT Improvements conditions is provided as an attachment to this submission.

Table 3: Level-of-Service Summary

		2032 No Build			2032 Build *without MassDOT Improvements*			2032 Build *with MassDOT Improvements*		
Intersection	**Peak Hour**	**LOS[1]**	**Delay[2]**	**ICU[3]**	**LOS**	**Delay**	**ICU**	**LOS**	**Delay**	**ICU**
Hartford Avenue (Route 126) at	AM	D	49.5	0.86	D	37.4	0.86	C	32.0	0.86
North Main Street (Route 126)/	PM	D	50.0	0.80	D	53.7	0.94	C	29.0	0.84
Cedar Hill Road	SAT	C	27.2	0.75	C	32.9	0.91	C	26.8	0.81

1 Level-of-Service
2 Average vehicle delay in seconds
3 Intersection Capacity Utilization

As shown in Table 3 above, under the 2032 Build conditions without the MassDOT improvements in place, the signalized intersection of Hartford Avenue (Route 126) at North Main Street (Route 126)/Cedar Hill Road is projected to operate at an overall LOS D during the weekday morning and weekday afternoon peak hour, and at an overall LOS C during the Saturday midday peak hour. When compared to the 2032 No Build condition, the intersection is projected to experience a minor increase in overall delay during the weekday afternoon and Saturday midday peak periods.

For the 2032 Build conditions with the MassDOT improvement in place, the intersection operations are projected to be improved with the signal timing adjustments, the addition of the second westbound left-turn lane as part of the MassDOT project, and the addition of the eastbound left-turn lane as part of the proposed retail project. The intersection is projected to operate at an overall LOS C during all the three peak hours analyzed.

MDM Comment #9:

- *Conversion of Cedar Hill Road to two-way operation would require the northbound North Main Street left-turn lane to a shared left/through lane which would require adjustment (widening) of Cedar Hill Road for proper lane alignment and/or rephasing of the signal.*

- *The Applicant should identify signs indicating that Cedar Hill Road is not a through way into the Cedar Hill Road neighborhood.*

- *Design considerations for Cedar Hill Road and the eastbound lane arrangements should be made assuming planned improvements by MassDOT are in place; an exclusive eastbound left-turn lane and/or signal phasing adjustments may be required to address sight line restrictions caused by the proposed dual-left westbound lane alignment.*

- *Operational analyses for future Build conditions should be provided per Comment 8 to confirm adequate operations may be achieved with and without the MassDOT improvements in place.*

- *As discussed with Fire Department, Planning, Police and Public Works in an Applicant working session, the Cedar Hill Road design should include a mountable island feature to prevent through traffic into the Cedar Hill Road neighborhood; as currently shown, this design feature is flush scored concrete. A suggested design would include mountable granite curbing with 3-inch height and concrete surface that facilitates emergency apparatus travel but provides a positive physical deterrent to passenger vehicles. Refer to attached typical detail for reference which may be modified to replace scored/textured concrete with a smooth concrete surface.*

Bowman Response to Comment #9: The specific design, including necessary signage and lane markings, of improvements to the intersection of Hartford Avenue (Route 126) at North Main Street (Route 126)/Cedar Hill Road would be completed once the proposed retail project and the conversion of Cedar Hill Road to two-way is approved by the Town of Bellingham. Changes to the curbline along Cedar Hill Road would be evaluated and the project team would work with the Town and MassDOT to implement signal timing changes. The construction of an eastbound left-turn lane on Hartford Avenue (Route 126) would be completed in concert with the potential MassDOT improvements of the intersection.

The specific design of the transition of Cedar Hill Road from two-way to the existing one-way configuration at the project site driveway would be completed once the proposed retail project and the conversion of Cedar Hill Road to two-way is approved by the Town of Bellingham. The project team would work with Bellingham Fire Department, Planning, Police and Public Works on the appropriate design.

MDM Comment #10:

a. *A review of the AutoTurn® for the Town's fire apparatus (ladder truck) as shown in Exhibit EX-04 indicates that the fire truck would enter the site only using the Hartford Avenue driveway as right-turns. Alternative access via Cedar Hill Road should be tested as well to ensure that the site can accommodate these vehicles as a potentially shorter/less constrained route to the site in lieu of having to make left-turns on Hartford Avenue. MDM defers to the fire department on acceptability of swept paths which require the full extent/width of the driveways.*

b. *Modeling of service and delivery vehicles (EX-05/ EX-06) indicate that delivery truck and trash truck vehicles entering from Hartford Avenue will require the majority of driveway width to maneuver which presents a concern for impact to exiting vehicles. The Applicant should either restrict service vehicles to non-business hours, direct these vehicles to use Cedar Hill Road, restrict the Hartford Avenue driveway to "Enter Only" or modify driveway geometry to properly accommodate swept paths to avoid encroachment into the exit lane.*

c. *AutoTurn modeling for the Hartford Avenue driveway should be provided assuming completion of MassDOT to ensure that ample maneuvering area is available with no encroachment into the opposing (exiting) driveway lane. If such encroachment occurs, Applicant should confirm alternative service route or modification of driveway circulation patterns would be available to avoid vehicle lane encroachments including but not limited to conversion of the driveway to one-way entry and/or conversion of on-site circulation to one-way.*

Bowman Response to Comment #10: Modeling of the vehicles noted above has been completed by Bohler Engineering and has been reviewed with appropriate Town departments.

MDM Comment #11:

a. *The site sidewalk system has been extended to provide a connection to the existing sidewalk network on Cedar Hill Road which MDM concurs is a reasonable accommodation for pedestrians under current roadway conditions. MassDOT improvements will provide a shared use path along the site frontage to which the Applicant may wish to provide a more direct pedestrian pathway to the retail building; site plans should identify a potentially more direct connection to the store or at least confirm that such a connection is not precluded in the future.*

b. *The Site Design Plan should clearly indicate intersection sight triangles and include a note citing that "Signs, landscaping and other features located within sight triangle areas shall be designed, installed and maintained so as not to exceed 2.0-feet in height. Snow windrows located within sight triangle areas that exceed 3.5-feet in height or that would otherwise inhibit sight lines shall be promptly removed." As per Comment 4, Applicant should also confirm that site plan features including snow storage areas, signs and landscaping will not impeded sight lines under the future widening of Hartford Avenue.*

c. *Modification of the Hartford Avenue driveway to accommodate service vehicle sweeps per Comment 10(b) and 10(c) may be necessary unless alternative routing is identified.*

d. *The Future MassDOT Expansion exhibit indicates potential conversion of the circulation aisle with in the site to one-way (clockwise) under future conditions if necessary. MDM generally concurs that this design may reduce conflicts at the driveway that may occur once MassDOT improvements are built; curbline adjustments to the aisle adjacent to the driveway may be appropriate to reduce effective width of the aisle to a traditional one-way width are recommended but subject to future submittal to Town if the MassDOT improvements are built.*

Bowman Response to Comment #11:

a. **Bohler Engineering has prepared updated project site plans addressing pedestrian connections between the site and adjacent pedestrian network.**
b. **Please refer to the Bowman Response to Comment #4.**
c. **Bohler Engineering has prepared updated project site plans to accommodate service vehicle sweeps.**
d. **The updated Bohler Engineering site plans are considered to allow for safe and efficient access with or without the potential MassDOT improvements.**

If you should have any questions, or require further information, please feel free to contact us.

Sincerely,

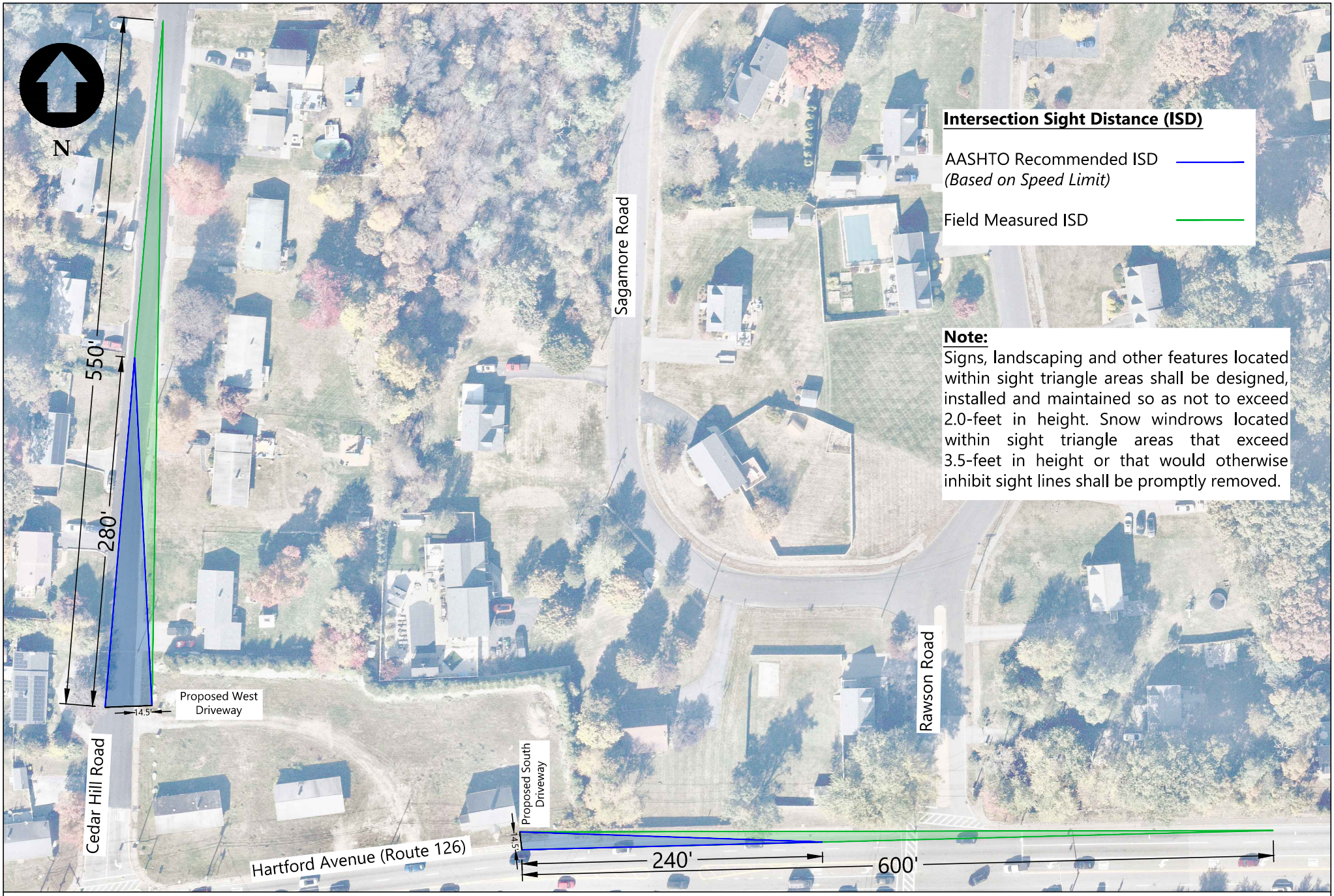
Jason Adams, P.E., PTOE
Regional Manager

Attachments
Sight Triangles Figure
Traffic Volume Figures
LOS Summary
Synchro Reports

Bowman

ATTACHMENT

SIGHT TRIANGLES FIGURE



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0 100 200 300

SCALE: 1" = 100'

Figure 1

Sight Triangles

Proposed Retail Development

Bellingham, MA

Bowman

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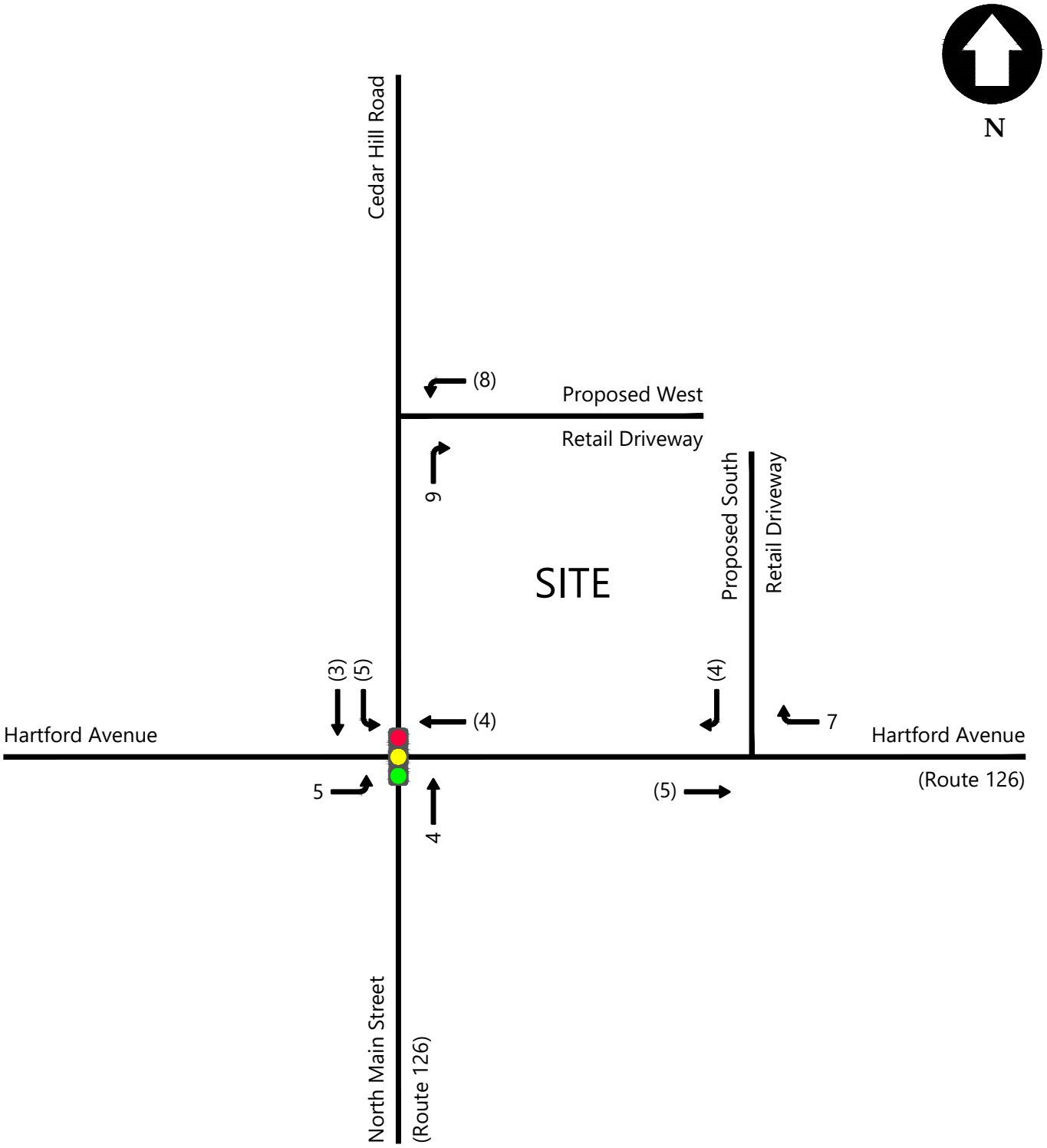
TRAFFIC VOLUME FIGURES



Enter (Exit)

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Figure 2
New Project Trips
Weekday Morning Peak Hour
Proposed Retail Development
Bellingham, MA

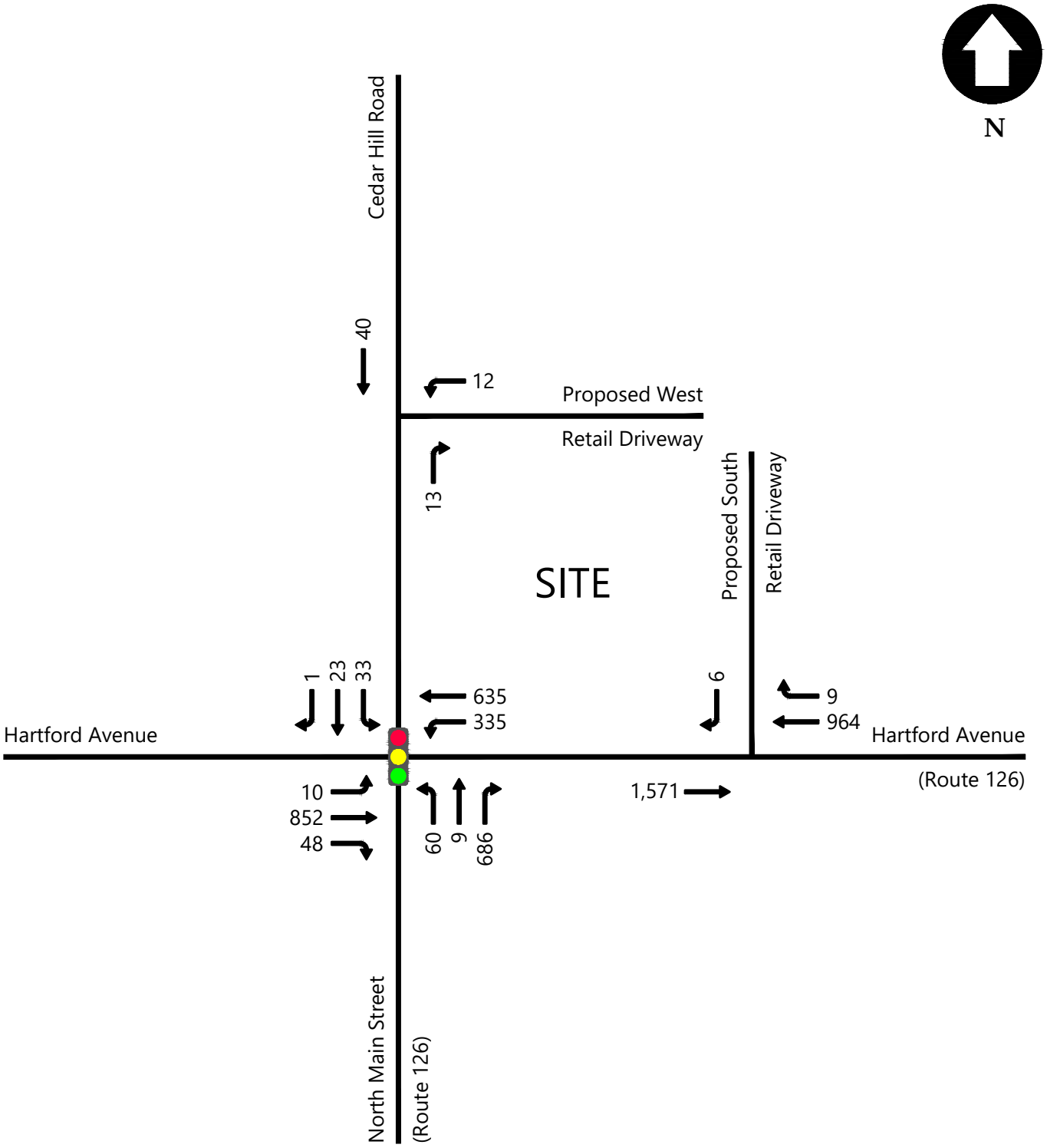

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Figure 3
2032 Build Volumes
Weekday Morning Peak Hour
Proposed Retail Development
Bellingham, MA

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LEVEL-OF-SERVICE SUMMARY

CAPACITY ANALYSIS SUMMARY

Weekday Morning Peak Hour
Proposed Retail Development
Bellingham, MA

Intersection	Movement		2032 No Build LOS[1]	2032 No Build Delay[2]	2032 No Build V/C[3]	2032 No Build 50th Q[4]	2032 No Build 95th Q[5]	2032 Build (without MassDOT Improvements) LOS	Delay	V/C	50th Q	95th Q	2032 Build (with MassDOT Improvements) LOS	Delay	V/C	50th Q	95th Q
Hartford Avenue (Route 126) at	EB	LTR	-	-	-	-	-	D	52.8	0.97	287	425	-	-	-	-	-
North Main Street (Route 126)/		L	-	-	-	-	-	-	-	-	-	-	C	22.6	0.05	4	17
Cedar Hill Road		TR	D	47.6	0.94	281	412	-	-	-	-	-	D	54.3	0.97	285	422
(Signalized)	WB	L	F	192.5	1.30	271	441	E	79.6	0.98	208	386	C	33.1	0.49	94	137
		T	C	21.5	0.74	280	425	-	-	-	-	-	-	-	-	-	-
		TR	-	-	-	-	-	B	15.2	0.66	234	357	B	16.8	0.68	250	381
	NB	L	C	22.5	0.16	27	58	-	-	-	-	-	-	-	-	-	-
		LT	-	-	-	-	-	D	36.5	0.26	33	119	D	36.1	0.25	32	128
		R	B	12.2	0.74	139	296	B	17.3	0.79	145	494	B	15.9	0.77	129	488
	SB	L	C	21.9	0.06	10	28	-	-	-	-	-	-	-	-	-	-
		TR	C	20.9	0.05	8	25	-	-	-	-	-	-	-	-	-	-
		LTR	-	-	-	-	-	C	34.9	0.23	26	74	C	32.2	0.17	25	84
		Overall	***D***	***49.5***	***0.86***	-	-	***D***	***37.4***	***0.86***	-	-	***C***	***32.0***	***0.86***	-	-
Proposed South Retail Driveway on	EB	T	-	-	-	-	-	A	0.0	0.00	-	0	***Same as 2032 Build without MassDOT Improvements***				
Hartford Avenue (Route 126)	WB	TR	-	-	-	-	-	A	0.0	0.00	-	0					
(Unsignalized)	SB	R	-	-	-	-	-	A	12.4	0.01	-	0					
Proposed West Retail Driveway on	EB	R	-	-	-	-	-	A	8.5	0.01	-	0					
Cedar Hill Road	WB	L	-	-	-	-	-	A	9.0	0.01	-	0					
(Unsignalized)	NB	LR	-	-	-	-	-	A	2.0	0.00	-	0					
	SB	LTR	-	-	-	-	-	A	0.0	0.00	-	0					

1 Level-of-Service
2 Average vehicle delay, in seconds
3 Volume to capacity ratio
4 Average vehicle queue, in feet
5 95th percentile vehicle queue, in feet
- Not Applicable

CAPACITY ANALYSIS SUMMARY

Weekday Afternoon Peak Hour
Proposed Retail Development
Bellingham, MA

			2032 No Build					2032 Build (without MassDOT Improvements)					2032 Build (with MassDOT Improvements)				
Intersection	**Movement**		**LOS[1]**	**Delay[2]**	**V/C[3]**	**50th Q[4]**	**95th Q[5]**	**LOS**	**Delay**	**V/C**	**50th Q**	**95th Q**	**LOS**	**Delay**	**V/C**	**50th Q**	**95th Q**
Hartford Avenue (Route 126) at	EB	LTR	-	-	-	-	-	F	120.1	1.16	346	473	-	-	-	-	-
North Main Street (Route 126)/		L	-	-	-	-	-	-	-	-	-	-	C	28.2	0.16	9	29
Cedar Hill Road		TR	F	134.5	1.20	312	433	-	-	-	-	-	D	47.6	0.92	243	357
(Signalized)	WB	L	D	37.2	0.87	332	588	E	71.2	1.05	467	678	C	31.6	0.66	165	247
		T	B	12.1	0.71	251	460	-	-	-	-	-	-	-	-	-	-
		TR	-	-	-	-	-	A	9.3	0.77	75	90	C	20.6	0.82	331	699
	NB	L	D	40.9	0.46	51	95	-	-	-	-	-	-	-	-	-	-
		LT	-	-	-	-	-	D	47.6	0.46	58	199	D	43.3	0.43	51	180
		R	A	2.4	0.47	13	47	A	4.6	0.50	26	129	A	6.0	0.53	30	161
	SB	L	C	32.3	0.15	23	51	-	-	-	-	-	-	-	-	-	-
		TR	C	32.7	0.18	29	61	-	-	-	-	-	-	-	-	-	-
		LTR	-	-	-	-	-	D	43.5	0.40	71	225	D	39.7	0.38	63	201
		Overall	***D***	***50.0***	***0.80***	-	-	***D***	***53.7***	***0.94***	-	-	***C***	***29.0***	***0.84***	-	-

1 Level-of-Service
2 Average vehicle delay, in seconds
3 Volume to capacity ratio
4 Average vehicle queue, in feet
5 95th percentile vehicle queue, in feet
- Not Applicable

CAPACITY ANALYSIS SUMMARY

Saturday Midday Peak Hour
Proposed Retail Development
Bellingham, MA

			2032 No Build					2032 Build (without MassDOT Improvements)					2032 Build (with MassDOT Improvements)				
Intersection	**Movement**		**LOS[1]**	**Delay[2]**	**V/C[3]**	**50th Q[4]**	**95th Q[5]**	**LOS**	**Delay**	**V/C**	**50th Q**	**95th Q**	**LOS**	**Delay**	**V/C**	**50th Q**	**95th Q**
Hartford Avenue (Route 126) at	EB	LTR	-	-	-	-	-	D	51.3	0.93	275	397	-	-	-	-	-
North Main Street (Route 126)/		L	-	-	-	-	-	-	-	-	-	-	C	29.3	0.12	10	30
Cedar Hill Road		TR	D	43.8	0.87	260	337	-	-	-	-	-	D	48.7	0.90	266	375
(Signalized)	WB	L	D	43.8	0.85	326	615	E	58.6	0.94	344	641	C	28.4	0.50	142	207
		T	B	12.3	0.70	265	548	-	-	-	-	-	-	-	-	-	-
		TR	-	-	-	-	-	B	14.9	0.73	309	601	B	17.2	0.77	332	583
	NB	L	D	44.9	0.50	66	111	-	-	-	-	-	-	-	-	-	-
		LT	-	-	-	-	-	D	41.1	0.47	69	114	D	37.6	0.40	67	116
		R	A	4.9	0.51	44	112	A	5.0	0.51	44	111	A	4.3	0.50	38	97
	SB	L	C	34.4	0.11	16	38	-	-	-	-	-	-	-	-	-	-
		TR	C	31.1	0.09	13	34	-	-	-	-	-	-	-	-	-	-
		LTR	-	-	-	-	-	C	34.5	0.27	42	77	C	32.5	0.21	41	77
		Overall	***C***	***27.2***	***0.75***	-	-	***C***	***32.9***	***0.91***	-	-	***C***	***26.8***	***0.81***	-	-

1 Level-of-Service
2 Average vehicle delay, in seconds
3 Volume to capacity ratio
4 Average vehicle queue, in feet
5 95th percentile vehicle queue, in feet
- Not Applicable

Bowman

ATTACHMENT

SYNCHRO REPORTS

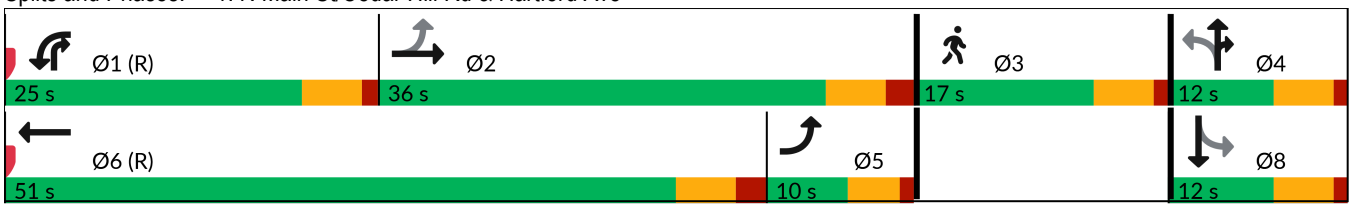
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	852	48	335	635	0	60	9	686	33	23	1
Future Volume (vph)	10	852	48	335	635	0	60	9	686	33	23	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	16	16	16
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	330		0	100		0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (ft)	25			25			150			200		
Satd. Flow (prot)	0	3214	0	1646	1701	0	0	1659	1501	0	2089	0
Flt Permitted		0.945		0.950				0.730			0.823	
Satd. Flow (perm)	0	3040	0	1645	1701	0	0	1264	1501	0	1769	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7							380		1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		249			382			594			238	
Travel Time (s)		5.7			8.7			13.5			5.4	
Confl. Peds. (#/hr)			1	1								
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	8%	0%	6%	8%	2%	7%	0%	4%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	989	0	364	690	0	0	75	746	0	62	0
Turn Type	pm+pt	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	
Protected Phases	5	2		1	6			4	4 1		8	
Permitted Phases	2						4			8		
Detector Phase	5	2		1	6		4	4	4 1	8	8	
Switch Phase												
Minimum Initial (s)	5.0	14.0		6.0	14.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	9.5	20.0		11.0	20.0		11.0	11.0		11.0	11.0	
Total Split (s)	10.0	36.0		25.0	51.0		12.0	12.0		12.0	12.0	
Total Split (%)	11.1%	40.0%		27.8%	56.7%		13.3%	13.3%		13.3%	13.3%	
Yellow Time (s)	3.5	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)		6.0		5.0	6.0			5.0			5.0	
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Min		C-Max	C-Min		None	None		None	None	
Act Effct Green (s)		30.0		20.3	55.3			20.3	45.6		13.6	
Actuated g/C Ratio		0.33		0.23	0.61			0.23	0.51		0.15	
v/c Ratio		0.97		0.98	0.66			0.26	0.79		0.23	
Control Delay (s/veh)		52.8		79.6	15.2			36.5	17.3		34.9	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay (s/veh)		52.8		79.6	15.2			36.5	17.3		34.9	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Mid-Block Traffic (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	17.0
Total Split (s)	17.0
Total Split (%)	19%
Yellow Time (s)	4.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		D		E	B			D	B		C	
Approach Delay (s/veh)		52.8			37.4			19.1			34.9	
Approach LOS		D			D			B			C	
Queue Length 50th (ft)		287		208	234			33	145		26	
Queue Length 95th (ft)		#425		#386	357			#119	#494		74	
Internal Link Dist (ft)		169			302			514			158	
Turn Bay Length (ft)												
Base Capacity (vph)		1018		371	1045			285	948		272	
Starvation Cap Reductn		0		0	0			0	0		0	
Spillback Cap Reductn		0		0	0			0	0		0	
Storage Cap Reductn		0		0	0			0	0		0	
Reduced v/c Ratio		0.97		0.98	0.66			0.26	0.79		0.23	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 1:WBL and 6:WBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay (s/veh): 37.4		Intersection LOS: D	
Intersection Capacity Utilization 86.2%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: N Main St/Cedar Hill Rd & Hartford Ave



Lane Group	Ø3
LOS	
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	5	12	0	0	5	0	13	0	40	0
Future Vol, veh/h	0	0	5	12	0	0	5	0	13	0	40	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	0	2
Mvmt Flow	0	0	5	13	0	0	5	0	14	0	43	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	54	68	43	61	61	7	43	0	0	14	0	0
Stage 1	43	43	-	18	18	-	-	-	-	-	-	-
Stage 2	11	25	-	43	43	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	944	822	1027	934	829	1075	1565	-	-	1604	-	-
Stage 1	971	859	-	1001	880	-	-	-	-	-	-	-
Stage 2	1010	874	-	971	859	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	940	819	1027	926	827	1075	1565	-	-	1604	-	-
Mov Cap-2 Maneuver	940	819	-	926	827	-	-	-	-	-	-	-
Stage 1	971	859	-	998	877	-	-	-	-	-	-	-
Stage 2	1006	871	-	966	859	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	8.52	8.95	2.03	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	417	-	-	1027	926	1604	-	-
HCM Lane V/C Ratio	0.003	-	-	0.005	0.014	-	-	-
HCM Ctrl Dly (s/v)	7.3	0	-	8.5	8.9	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1571	964	9	0	6
Future Vol, veh/h	0	1571	964	9	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1708	1048	10	0	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1058	0	-	0	1907	529
Stage 1	-	-	-	-	1053	-
Stage 2	-	-	-	-	854	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	654	-	-	-	60	494
Stage 1	-	-	-	-	297	-
Stage 2	-	-	-	-	378	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	654	-	-	-	60	494
Mov Cap-2 Maneuver	-	-	-	-	60	-
Stage 1	-	-	-	-	297	-
Stage 2	-	-	-	-	378	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	12.38
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	654	-	-	-	494
HCM Lane V/C Ratio	-	-	-	-	0.013
HCM Ctrl Dly (s/v)	0	-	-	-	12.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

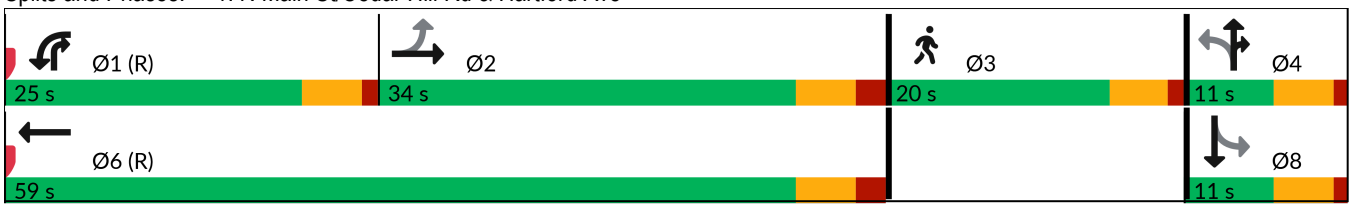
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	852	48	335	635	0	60	9	686	33	23	1
Future Volume (vph)	10	852	48	335	635	0	60	9	686	33	23	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	16	16	16
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	25		0	0		0	330		0	100		0
Storage Lanes	1		0	2		0	0		1	0		0
Taper Length (ft)	25			25			150			200		
Satd. Flow (prot)	1745	3216	0	3193	1701	0	0	1659	1501	0	2089	0
Flt Permitted	0.403			0.950				0.733			0.825	
Satd. Flow (perm)	740	3216	0	3192	1701	0	0	1269	1501	0	1773	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7							393		1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		249			382			594			238	
Travel Time (s)		5.7			8.7			13.5			5.4	
Confl. Peds. (#/hr)			1	1								
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	8%	0%	6%	8%	2%	7%	0%	4%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	978	0	364	690	0	0	75	746	0	62	0
Turn Type	Perm	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	
Protected Phases		2		1	6			4	4 1		8	
Permitted Phases	2						4			8		
Detector Phase	2	2		1	6		4	4	4 1	8	8	
Switch Phase												
Minimum Initial (s)	14.0	14.0		6.0	14.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	20.0	20.0		11.0	20.0		11.0	11.0		11.0	11.0	
Total Split (s)	34.0	34.0		25.0	59.0		11.0	11.0		11.0	11.0	
Total Split (%)	37.8%	37.8%		27.8%	65.6%		12.2%	12.2%		12.2%	12.2%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		1.0	2.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.0	6.0		5.0	6.0			5.0			5.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Recall Mode	Min	Min		C-Max	C-Min		None	None		None	None	
Act Effct Green (s)	28.0	28.0		20.8	53.8			21.2	47.0		18.0	
Actuated g/C Ratio	0.31	0.31		0.23	0.60			0.24	0.52		0.20	
v/c Ratio	0.05	0.97		0.49	0.68			0.25	0.77		0.17	
Control Delay (s/veh)	22.6	54.3		33.1	16.8			36.1	15.9		32.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay (s/veh)	22.6	54.3		33.1	16.8			36.1	15.9		32.2	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Mid-Block Traffic (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	20.0
Total Split (s)	20.0
Total Split (%)	22%
Yellow Time (s)	4.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	D		C	B			D	B		C	
Approach Delay (s/veh)		53.9			22.5			17.8			32.2	
Approach LOS		D			C			B			C	
Queue Length 50th (ft)	4	285		94	250			32	129		25	
Queue Length 95th (ft)	17	#422		137	381			#128	#488		#84	
Internal Link Dist (ft)		169			302			514			158	
Turn Bay Length (ft)	25											
Base Capacity (vph)	230	1005		736	1015			299	971		355	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.05	0.97		0.49	0.68			0.25	0.77		0.17	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 1:WBL and 6:WBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay (s/veh): 32.0	Intersection LOS: C
Intersection Capacity Utilization 85.9%	ICU Level of Service E
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 1: N Main St/Cedar Hill Rd & Hartford Ave



Lane Group	Ø3
LOS	
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	726	58	618	845	0	82	15	510	60	60	1
Future Volume (vph)	19	726	58	618	845	0	82	15	510	60	60	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	16	16	16
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	330		0	100		0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (ft)	25			25			150			200		
Satd. Flow (prot)	0	3357	0	1728	1783	0	0	1732	1531	0	2100	0
Flt Permitted		0.911		0.950				0.656			0.795	
Satd. Flow (perm)	0	3061	0	1728	1783	0	0	1185	1531	0	1707	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8							437			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		249			382			594			238	
Travel Time (s)		5.7			8.7			13.5			5.4	
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	3%	0%	1%	3%	2%	2%	0%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	873	0	672	918	0	0	105	554	0	131	0
Turn Type	pm+pt	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	
Protected Phases	5	2		1	6			4	4 1		8	
Permitted Phases	2						4			8		
Detector Phase	5	2		1	6		4	4	4 1	8	8	
Switch Phase												
Minimum Initial (s)	5.0	14.0		6.0	14.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	10.0	20.0		11.0	20.0		11.0	11.0		11.0	11.0	
Total Split (s)	12.0	30.5		41.5	60.0		11.0	11.0		11.0	11.0	
Total Split (%)	12.0%	30.5%		41.5%	60.0%		11.0%	11.0%		11.0%	11.0%	
Yellow Time (s)	3.5	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)		6.0		5.0	6.0			5.0			5.0	
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Min		C-Max	C-Min		None	None		None	None	
Act Effct Green (s)		24.5		37.0	66.5			19.1	61.1		19.1	
Actuated g/C Ratio		0.25		0.37	0.67			0.19	0.61		0.19	
v/c Ratio		1.16		1.05	0.77			0.46	0.50		0.40	
Control Delay (s/veh)		120.1		71.2	9.2			47.6	4.6		43.5	
Queue Delay		0.0		0.0	0.1			0.0	0.0		0.0	
Total Delay (s/veh)		120.1		71.2	9.3			47.6	4.6		43.5	

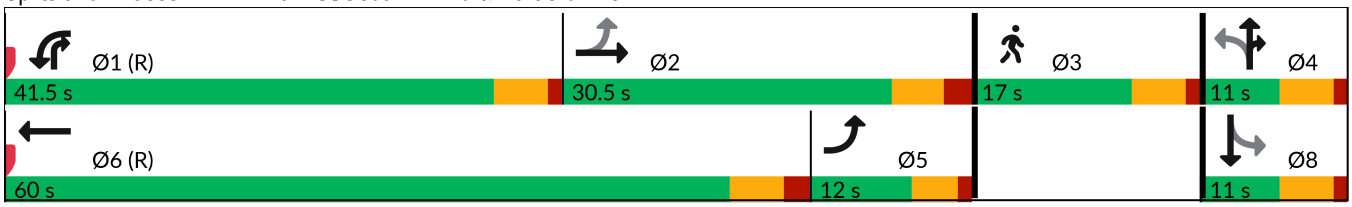
Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Mid-Block Traffic (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	17.0
Total Split (s)	17.0
Total Split (%)	17%
Yellow Time (s)	4.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		F		E	A			D	A		D	
Approach Delay (s/veh)		120.1			35.5			11.4			43.5	
Approach LOS		F			D			B			D	
Queue Length 50th (ft)		~346		~467	75			58	26		71	
Queue Length 95th (ft)		#473		m#678	m90			#199	129		#225	
Internal Link Dist (ft)		169			302			514			158	
Turn Bay Length (ft)												
Base Capacity (vph)		755		638	1185			226	1105		326	
Starvation Cap Reductn		0		0	19			0	0		0	
Spillback Cap Reductn		0		0	0			0	0		0	
Storage Cap Reductn		0		0	0			0	0		0	
Reduced v/c Ratio		1.16		1.05	0.79			0.46	0.50		0.40	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 23 (23%), Referenced to phase 1:WBL and 6:WBT, Start of Green			
Natural Cycle: 140			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.16			
Intersection Signal Delay (s/veh): 53.7		Intersection LOS: D	
Intersection Capacity Utilization 94.3%		ICU Level of Service F	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: N Main St/Cedar Hill Rd & Hartford Ave



Lane Group	Ø3
LOS	
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	726	58	618	845	0	82	15	510	60	60	1
Future Volume (vph)	19	726	58	618	845	0	82	15	510	60	60	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	16	16	16
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	25		0	0		0	330		0	100		0
Storage Lanes	1		0	2		0	0		1	0		0
Taper Length (ft)	25			25			150			200		
Satd. Flow (prot)	1745	3358	0	3351	1783	0	0	1732	1531	0	2100	0
Flt Permitted	0.267			0.950				0.668			0.797	
Satd. Flow (perm)	490	3358	0	3351	1783	0	0	1206	1531	0	1711	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9							423			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		249			382			594			238	
Travel Time (s)		5.7			8.7			13.5			5.4	
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	3%	0%	1%	3%	2%	2%	0%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	852	0	672	918	0	0	105	554	0	131	0
Turn Type	Perm	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	
Protected Phases		2		1	6			4	4 1		8	
Permitted Phases	2						4			8		
Detector Phase	2	2		1	6		4	4	4 1	8	8	
Switch Phase												
Minimum Initial (s)	14.0	14.0		6.0	14.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	20.0	20.0		11.0	20.0		11.0	11.0		11.0	11.0	
Total Split (s)	31.0	31.0		28.0	59.0		11.0	11.0		11.0	11.0	
Total Split (%)	34.4%	34.4%		31.1%	65.6%		12.2%	12.2%		12.2%	12.2%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		1.0	2.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.0	6.0		5.0	6.0			5.0			5.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Recall Mode	Min	Min		C-Max	C-Min		None	None		None	None	
Act Effct Green (s)	24.7	24.7		27.2	56.9			18.1	50.3		18.1	
Actuated g/C Ratio	0.27	0.27		0.30	0.63			0.20	0.56		0.20	
v/c Ratio	0.16	0.92		0.66	0.82			0.43	0.53		0.38	
Control Delay (s/veh)	28.2	47.6		31.6	20.6			43.3	6.0		39.7	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay (s/veh)	28.2	47.6		31.6	20.6			43.3	6.0		39.7	

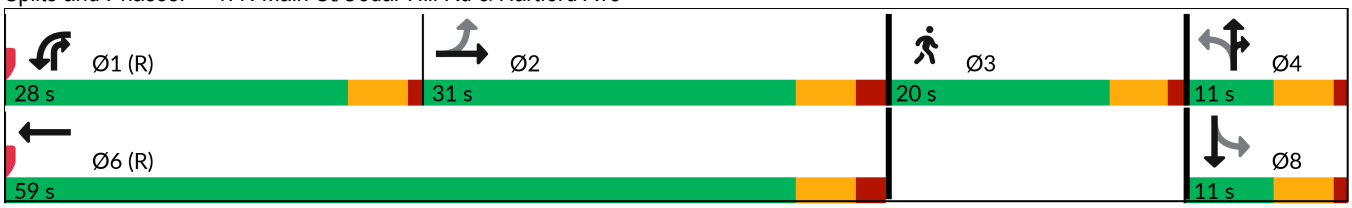
Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Mid-Block Traffic (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	20.0
Total Split (s)	20.0
Total Split (%)	22%
Yellow Time (s)	4.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	D		C	C			D	A		D	
Approach Delay (s/veh)		47.1			25.3			11.9			39.7	
Approach LOS		D			C			B			D	
Queue Length 50th (ft)	9	243		165	331			51	30		63	
Queue Length 95th (ft)	29	#357		247	#699			#180	161		#201	
Internal Link Dist (ft)		169			302			514			158	
Turn Bay Length (ft)	25											
Base Capacity (vph)	136	939		1012	1126			242	1042		344	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.15	0.91		0.66	0.82			0.43	0.53		0.38	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 79 (88%), Referenced to phase 1:WBL and 6:WBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay (s/veh): 29.0	Intersection LOS: C
Intersection Capacity Utilization 83.5%	ICU Level of Service E
Analysis Period (min) 15	

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: N Main St/Cedar Hill Rd & Hartford Ave



Lane Group	Ø3
LOS	
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

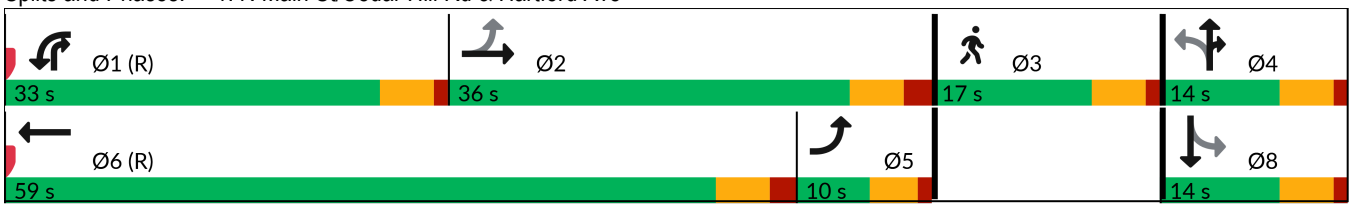
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	707	67	520	844	0	96	15	503	42	27	3
Future Volume (vph)	18	707	67	520	844	0	96	15	503	42	27	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	16	16	16
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	330		0	100		0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (ft)	25			25			150			200		
Satd. Flow (prot)	0	3381	0	1711	1801	0	0	1744	1546	0	1998	0
Flt Permitted		0.916		0.950				0.730			0.777	
Satd. Flow (perm)	0	3100	0	1711	1801	0	0	1329	1546	0	1599	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10							386		2	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		249			382			594			238	
Travel Time (s)		5.7			8.7			13.5			5.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	0%	2%	2%	2%	1%	0%	1%	7%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	861	0	565	917	0	0	120	547	0	78	0
Turn Type	pm+pt	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	
Protected Phases	5	2		1	6			4	4 1		8	
Permitted Phases	2						4			8		
Detector Phase	5	2		1	6		4	4	4 1	8	8	
Switch Phase												
Minimum Initial (s)	5.0	14.0		6.0	14.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	9.5	20.0		11.0	20.0		11.0	11.0		11.0	11.0	
Total Split (s)	10.0	36.0		33.0	59.0		14.0	14.0		14.0	14.0	
Total Split (%)	10.0%	36.0%		33.0%	59.0%		14.0%	14.0%		14.0%	14.0%	
Yellow Time (s)	3.5	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)		6.0		5.0	6.0			5.0			5.0	
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Min		C-Max	C-Min		None	None		None	None	
Act Effct Green (s)		29.6		35.1	69.8			19.2	59.4		17.7	
Actuated g/C Ratio		0.30		0.35	0.70			0.19	0.59		0.18	
v/c Ratio		0.93		0.94	0.73			0.47	0.51		0.27	
Control Delay (s/veh)		51.3		58.6	14.9			41.1	5.0		34.5	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay (s/veh)		51.3		58.6	14.9			41.1	5.0		34.5	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Mid-Block Traffic (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	17.0
Total Split (s)	17.0
Total Split (%)	17%
Yellow Time (s)	4.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		D		E	B			D	A		C	
Approach Delay (s/veh)		51.3			31.6			11.5			34.5	
Approach LOS		D			C			B			C	
Queue Length 50th (ft)		275		344	309			69	44		42	
Queue Length 95th (ft)		#397		#641	601			114	111		77	
Internal Link Dist (ft)		169			302			514			158	
Turn Bay Length (ft)												
Base Capacity (vph)		937		601	1256			255	1074		292	
Starvation Cap Reductn		0		0	0			0	0		0	
Spillback Cap Reductn		0		0	0			0	0		0	
Storage Cap Reductn		0		0	0			0	0		0	
Reduced v/c Ratio		0.92		0.94	0.73			0.47	0.51		0.27	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 1:WBL and 6:WBT, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay (s/veh): 32.8		Intersection LOS: C	
Intersection Capacity Utilization 91.4%		ICU Level of Service F	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: N Main St/Cedar Hill Rd & Hartford Ave



Lane Group	Ø3
LOS	
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

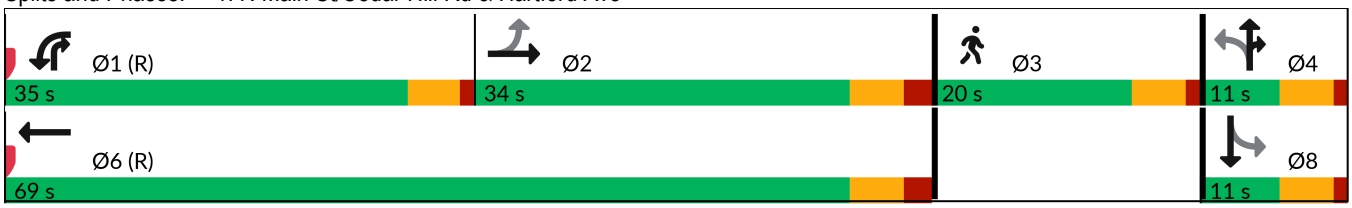
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	707	67	520	844	0	96	15	503	42	27	3
Future Volume (vph)	18	707	67	520	844	0	96	15	503	42	27	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	16	16	16
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	25		0	0		0	330		0	100		0
Storage Lanes	1		0	2		0	0		1	0		0
Taper Length (ft)	25			25			150			200		
Satd. Flow (prot)	1745	3383	0	3319	1801	0	0	1744	1546	0	1998	0
Flt Permitted	0.326			0.950				0.729			0.787	
Satd. Flow (perm)	599	3383	0	3319	1801	0	0	1327	1546	0	1619	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10							398		2	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		249			382			594			238	
Travel Time (s)		5.7			8.7			13.5			5.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	0%	2%	2%	2%	1%	0%	1%	7%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	20	841	0	565	917	0	0	120	547	0	78	0
Turn Type	Perm	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	
Protected Phases		2		1	6			4	4 1		8	
Permitted Phases	2						4			8		
Detector Phase	2	2		1	6		4	4	4 1	8	8	
Switch Phase												
Minimum Initial (s)	14.0	14.0		6.0	14.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	20.0	20.0		11.0	20.0		11.0	11.0		11.0	11.0	
Total Split (s)	34.0	34.0		35.0	69.0		11.0	11.0		11.0	11.0	
Total Split (%)	34.0%	34.0%		35.0%	69.0%		11.0%	11.0%		11.0%	11.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		1.0	2.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.0	6.0		5.0	6.0			5.0			5.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Recall Mode	Min	Min		C-Max	C-Min		None	None		None	None	
Act Effct Green (s)	27.4	27.4		34.0	66.3			22.7	61.6		22.7	
Actuated g/C Ratio	0.27	0.27		0.34	0.66			0.23	0.62		0.23	
v/c Ratio	0.12	0.90		0.50	0.77			0.40	0.50		0.21	
Control Delay (s/veh)	29.3	48.7		28.4	17.2			37.6	4.3		32.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay (s/veh)	29.3	48.7		28.4	17.2			37.6	4.3		32.5	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Mid-Block Traffic (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	20.0
Total Split (s)	20.0
Total Split (%)	20%
Yellow Time (s)	4.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	D		C	B			D	A		C	
Approach Delay (s/veh)		48.2			21.5			10.3			32.5	
Approach LOS		D			C			B			C	
Queue Length 50th (ft)	10	266		142	332			67	38		41	
Queue Length 95th (ft)	30	#375		207	583			116	97		77	
Internal Link Dist (ft)		169			302			514			158	
Turn Bay Length (ft)	25											
Base Capacity (vph)	167	954		1127	1194			301	1105		368	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.12	0.88		0.50	0.77			0.40	0.50		0.21	

Intersection Summary	
Area Type:	Other
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 1:WBL and 6:WBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay (s/veh): 26.8	Intersection LOS: C
Intersection Capacity Utilization 80.8%	ICU Level of Service D
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 1: N Main St/Cedar Hill Rd & Hartford Ave



Lane Group	Ø3
LOS	
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary