55 SS LLC

PROJECT UPDATE OVERVIEW
TRAFFIC REVIEW

Project Update

November 2, 2020

Current submission date: October 2020

Highlights:

- Worked with Conservation Commission to reduce environmental footprint
- Moved out of the riverfront area
- Reduced number of multi-family buildings to 2
- Increased distance between buildings
- Increased and redesigned amenity area
- Improved internal circulation
- Increased multi-family buildings to 6 floors
- Reduced overall single-family footprint by converting 14 singles to duplexes
- Adjusted driveways/intersection to address safety concern raised by Tetra Tech
- Revised product mix with no impact on traffic



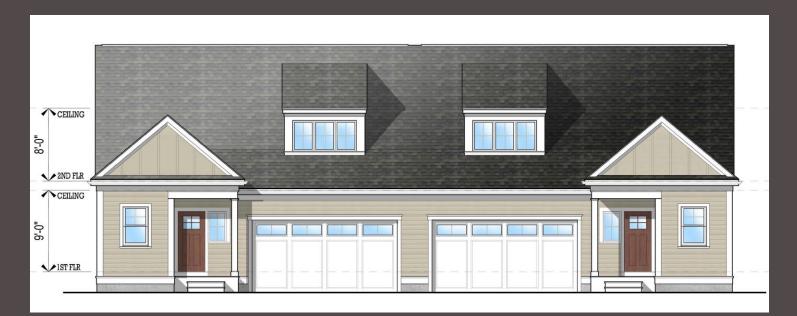
Unit Mix

Plan dates:	1-May-20	19-Oct-20	Change Since 5/1
Multi family			
studio	0	6	6
one bedroom	112	108	-4
two bedroom	80	78	-2
Total Multifamily	192	192	0
Rental Town Homes			
two bedroom	24	26	2
three bedroom	24	26	2
Total Rental Town homes	48	52	4
<u>Ownership</u>			
two bedroom stand alone		13	
three bedroom stand alone	60	29	
two bedroom duplex		6	
three bedroom duplex		8	
	60	56	-4
Totals	300	300	



Cedar Crossing/Cedar Edge / Overhead View / 20 October 2020





Typical 2-Bedroom

Duplex Configuration

Typical 3-Bedroom

Duplex Configuration





Cedar Crossing/Cedar Edge / Clubhouse/Multi-Family View / 02 November 2020



Traffic Review

Overview

- Bayside Engineering Qualifications
- Traffic Impact and Access Study Summary
- LOS at South Walpole Triangle 5/4/2020
- Safety Railroad Crossing Assessment 9/28/20
- Pedestrian Analysis 5/4/2020
- Traffic Light Warrant Analysis 10/19/20
- Potential Offsite Improvements







Summer Street, Neponset Street, Washington Street and Water Street Walpole, MA



TABLE 2 SUMMER STREET EASTBOUND TO WASHINGTON STREET NORTHBOUND **OBSERVED DELAYS AND QUEUES**

Time Period	Average Peak Hour Delay per Vehicle (sec)	Minimum Peak Hour Delay Observed (sec)	Maximum Peak Hour Delay per Vehicle Observed (sec)	Average Vehicle Queue Observed (Veh)	Maximum Queue Observed (Veh)
Weekday Morning Peak Hourb	10 (LOS A/B)	0	41	2	6
Weekday Evening Peak Hour ^c	6 (LOS A)	0	39	1	3

^aBased on count data compiled on November 6, 2019.

TABLE 3 WASHINGTON STREET SOUTHBOUND TO WATER STREET EASTBOUND **OBSERVED DELAYS AND QUEUES**

Time Period	Average Peak Hour Delay per Vehicle (sec)	Minimum Peak Hour Delay Observed (sec)	Maximum Peak Hour Delay per Vehicle Observed (sec)	Average Vehicle Queue Observed (Veh)	Maximum Queue Observed (Veh)
Weekday Morning Peak Hourb	7 (LOS A)	0	34	1	4
Weekday Evening Peak Hour ^c	24 (LOS C)	0	88	3	10

^bMorning Peak Hour from 7:00 – 8:00 AM.

Evening Peak Hour from 4:30 - 5:30 PM.

^aBased on count data compiled on November 6, 2019. ^bMorning Peak Hour from 7:00 – 8:00 AM.

Evening Peak Hour from 4:45 - 5:45 PM.

TABLE 4 NEPONSET STREET NORTHBOUND TO SUMMER STREET WESTBOUND OBSERVED DELAYS AND QUEUES

Time Period	Average Peak Hour Delay per Vehicle (sec)	Minimum Peak Hour Delay Observed (sec)	Maximum Peak Hour Delay per Vehicle Observed (sec)	Average Vehicle Queue Observed (Veh)	Maximum Queue Observed (Veh)
Weekday Morning Peak Hourb	3 (LOS A)	0	10	1	5
Weekday Evening Peak Hour ^c	5 (LOS A)	0	36	1	5

^aBased on count data compiled on November 6, 2019. ^bMorning Peak Hour from 7:00 – 8:00 AM. ^cEvening Peak Hour from 4:30 – 5:30 PM.

TRIP-GENERATION SUMMARY

	Apartment Trips ^a	Townhouse Trips ^b	Single- Family Home Trips ^c	Total Trips
Average Weekday Daily Traffic	1,044	322	650	2,016
Weekday Morning Peak Hour: Entering Exiting Total	17	6	12	35
	48	18	35	101
	65	24	47	136
Weekday Evening Peak Hour: Entering Exiting Total	51	20	39	110
	32	11	23	<u>66</u>
	83	31	62	176

^aBased on ITE LUC 221 – Multifamily Housing (Mid-Rise); 192 units.

^bBased on ITE LUC 220 – Multifamily Housing (Low-Rise); 48 units.

^cBased on ITE LUC 210 – Single-Family Detached Housing; 60 units.

PROPOSED TRIP DISTRIBUTION

Route	Direction	Percent of Residential Trips
Winter Street	West	2
Main Street (Route 1A)	North	11
North Street	East	3
Route 1	South	7
Route 1	North	55
Summer Street	West	1
Washington Street	North	_21
TOTALS		100

LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS^a

Resulting Level of Service $v/c^b < 1.0$
A
В
\mathbf{C}
D
E
F

^aHighway Capacity Manual; Transportation Research Board; Broad, DC; 2010; page 18-6.

LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS^a

Average Delay (seconds per vehicle)	Resulting Level of Service $v/c^b < 1.0$
< 10.0	A
$10.\overline{1}$ to 15.0	В
15.1 to 25.0	C
25.1 to 35.0	D
35.1 to 50.0	E
>50.0	F

^aHighway Capacity Manual; Transportation Research Board; Broad, DC; 2010; page 19-2

^bVolume to capacity ratio.

^bVolume to capacity ratio.

TABLE 14 SIGNALIZED LEVEL-OF-SERVICE SUMMARY ROUTE 1A, WINTER STREET AND JEAN ROAD

	8	2019 E	xisting			2026 N	No-Build		2026 Build						
Peak Hour/Lane Group	_V/Ca_	_Delay ^b _	LOSc	Queue ^d	V/C	Delay	LOS	Queue	<u>V/C</u>	Delay	LOS	Queue			
Weekday Morning															
Westbound Lt/Th/Rt	0.53	90.3	F	6/10	0.53	90.3	\mathbf{F}	6/10	0.50	80.3	F	6/10			
Northbound Lt	0.13	13.2	В	20/49	0.15	13.3	В	21/52	0.15	13.8	В	21/52			
Northbound Th/Rt	0.77	25.5	C	337/634	0.83	28.7	C	381/843	0.85	31.0	C	381/843			
Southbound Lt	0.15	16.2	В	9/26	0.20	17.5	В	10/28	0.21	17.5	В	12/31			
Southbound Th/Rt	0.34	19.0	В	104/180	0.36	19.4	В	113/194	0.37	19.6	В	113/194			
South-eastbound Lt/Th/Rt	1.00	91.4	F	253/502	1.10	120.8	F	301/555	1.12	126.0	F	308/563			
North-westbound Lt/Th/Rt	0.47	36.7	D	118/208	0.50	37.3	D	128/223	0.53	37.5	D	138/238			
Overall	0.85	39.8	D	==	0.92	47.8	D	5 111 1	0.93	49.8	D	-			
Weekday Evening															
Westbound Lt/Th/Rt	0.29	65.5	E	3/5	0.29	66.5	E	3/5	0.29	66.9	E	3/5			
Northbound Lt	0.11	14.9	В	5/20	0.16	17.8	В	6/22	0.17	18.4	В	7/22			
Northbound Th/Rt	0.34	13.2	В	92/186	0.37	14.4	В	110/201	0.38	14.9	В	113/201			
Southbound Lt	0.11	10.1	В	14/45	0.12	10.8	В	17/47	0.14	11.2	В	20/54			
Southbound Th/Rt	0.77	25.2	C	379/803	0.84	30.6	C	459/897	0.85	31.8	C	470/897			
South-eastbound Lt/Th/Rt	0.88	73.1	E	122/254	0.90	74.6	E	133/282	0.87	68.4	E	134/285			
North-westbound Lt/Th/Rt			211/354	0.90	64.0	E	230/412	0.89	62.8	E	238/428				
Overall	0.78	34.9	\mathbf{C}		0.84	37.9	D	. 	0.84	37.6	D	. 			

^aMaximum volume-to-capacity ratio. ^bDelay in seconds per vehicle. ^cLevel of service.

dAverage Queue (ff)/95th %tile Queue (ff) Lt = Left; Th = Through; Rt = Right.

TABLE 14 (Continued) SIGNALIZED LEVEL-OF-SERVICE SUMMARY ROUTE 1 AND NORTH STREET

		2019	Existing			2026 N	lo-Build		2026 Build						
Peak Hour/Lane Group	V/C ^a	Delayb	LOSc	Queued	V/C	Delay	LOS	Queue	V/C	Delay	LOS	Queue			
Weekday Morning															
Northbound Lt/Th/Rt	0.48	26.5	C	94/160	0.55	28.4	C	108/181	0.56	28.5	С	109/183			
Southbound Lt	1.05	116.1	F	122/269	1.31	211.4	\mathbf{F}	152/305	1.72	384.1	F	228/401			
Southbound Th/Rt	0.25	24.3	C	50/111	0.28	25.4	C	56/121	0.30	25.7	C	60/129			
North-eastbound Lt	0.77	45.3	D	162/251	0.79	46.8	D	173/271	0.79	46.6	D	175/274			
North-eastbound Th/Rt	0.82	27.8	C	316/414	0.87	29.9	C	356/472	0.86	29.8	C	356/472			
South-westbound Lt	0.55	41.8	D	69/104	0.58	43.1	D	74/108	0.58	43.2	D	74/108			
South-westbound Th/Rt	0.42	24.9	C	106/122	0.46	25.7	\mathbf{C}	120/132	0.47	25.9	C	123/135			
Overall	0.92	32.9	C		1.03	39.0	D	<u>22</u>	1.18	52.1	D	144			
Weekday Evening															
Northbound Lt/Th/Rt	0.45	29.5	C	46/85	0.48	29.7	C	53/94	0.45	29.0	С	55/97			
Southbound Lt/Th/Rt	0.70	34.5	C	101/167	0.73	35.6	D	114/186	0.79	37.7	D	142/223			
North-eastbound Lt	0.55	36.8	D	70/140	0.57	38.3	D	77/150	0.60	40.7	D	89/158			
North-eastbound Th/Rt	0.39	18.7	В	101/178	0.44	20.5	C	119/196	0.46	22.4	С	134/196			
South-westbound Lt	0.70	36.9	D	135/240	0.73	38.9	D	149/264	0.75	41.3	D	161/266			
South-westbound Th/Rt	0.79	21.0	C	290/516	0.87	25.3	C	346/603	0.94	33.0	С	416/639			
Overall	0.77	24.6	\mathbf{C}	-	0.82	27.4	\mathbf{C}		0.87	32.1	\mathbf{C}				

⁸Maximum volume-to-capacity ratio. ^bDelay in seconds per vehicle. ^cLevel of service.

dAverage Queue (ft)/95th %tile Queue (ft) Lt = Left; Th = Through; Rt = Right.

TABLE 13 UNSIGNALIZED LEVEL-OF-SERVICE ANALYSIS SUMMARY

	_	2	019 Existing			2026 Build									
Critical Movement/ Peak Hour	Demanda	V/C ^b	_Delay ^c _	LOSd	Queue	Demand	_V/C	Delay	LOS	Queue	Demand	V/C	Delay	LOS	Queue
Summer Street, Winter Street and Nottingham Way															
All movements from Winter Street (EB):	12221														
Weekday Morning Weekday Evening	270 151	0.50 0.40	16.6 17.7	C C	70.0 47.5	290 162	0.56 0.46	18.5 19.8	C C	87.5 60.0	295 176	0.58 0.50	19.2 21.3	C C	92.5 70.0
weekday Evening	131	0.40	17.7	C	47.3	102	0.40	15.0	C	00.0	170	0.50	21.3	C	70.0
Washington Street and Summer Street All movements from Summer Street (EB):															
Weekday Morning	244	0.79	47.2	E	162.5	261	0.92	71.3	F	220.0	282	1.00	90.5	F	265.0
Weekday Evening	70	0.34	21.9	C	35.0	75	0.39	24.8	С	45.0	89	0.48	28.3	D	60.0
Washington Street, Washington Street Extension, Water Street and Neponset Street															
All movements from Washington Street (SWB): Weekday Morning	120	0.35	20.2	C	37.5	129	0.41	22.9	C	47.5	129	0.48	28.5	D	60.0
Weekday Evening	339	1.11	113.6	F	380.0	363	1.28	178.2	F	502.5	363	1.59	312.7	F	660.0
Summer Street and Neponset Street All movements from Summer Street (EB): Weekday Morning	456	0.57	12.8	В	92.5	488	0.62	14.1	В	110.0	575	0.75	19.2	С	172.5
Weekday Evening	211	0.39	11.7	В	45.0	226	0.43	12.6	В	52.5	283	0.59	17.7	C	97.5
All movements from Summer Street (WB):															
Weekday Morning	57	0.14	9.4	A	12.5	61	0.15	9.6	A	12.5	68	0.17	10.1	В	15.0
Weekday Evening	255	0.53	14.7	В	77.5	273	0.59	16.6	$^{\rm C}$	95.0	296	0.71	23.5	\mathbf{C}	142.5
All movements from Neponset Street (NB):															
Weekday Morning	133	0.23	10.2	В	22.5	142	0.25	10.5	В	25.0	165	0.30	11.5	В	32.5
Weekday Evening	350	0.62	17.7	C	105.0	375	0.68	20.7	C	130.0	447	0.87	39.1	E	247.5
All movements from Neponset Street (SB):															
Weekday Morning	10	0.03	10.4	В	2.5	11	0.03	10.5	В	2.5	11	0.04	11.0	В	2.5
Weekday Evening	12	0.03	9.3	A	2.5	13	0.04	9.6	A	2.5	13	0.05	10.7	В	2.5
Summer Street and Site Driveway All movements from Site Driveway (SB):															
Weekday Morning		-									101	0.28	17.6	С	27.5
Weekday Evening		==	-	-83		==	-80	-6		-	66	0.27	23.6	Č	27.5

^aDemand of critical movements in vehicles per hour. ^bVolume-to-capacity ratio. ^cDelay in seconds per vehicle. ^cLevel of service. ^c95th percentile queue in feet.

TABLE 1 UNSIGNALIZED LEVEL-OF-SERVICE COMAPRISON

			2019 Exis	ting		20	19 Existin	g with Cal	ibrated Mo	odel		2026 No-Build						2026 No-Build with Calibrated Model					2026 Build	d	2026 Build with Calibrated Model					
Intersection/Critical Movement/ Peak Hour	Demanda	$\frac{V/C^{b}}{}$	Delay	LOSd	Queue	Demand	V/C	Delay	LOS	Queue	Demand	V/C	Delay	LOS	Queue	Demand	V/C	Delay	LOS	Queue	Demand	V/C	Delay	LOS	Queue	Demand	V/C	Delay	LOS	Queue
Washington Street and Summer Street All movements from Summer Street (EB): Weekday Moming Weekday Evening	244 70	0.79 0.34	47.2 21.9	E C	162.5 35.0	244 70	0.27 0.08	10.1 7.8	B A	27.0 6.0	261 75	0.92 0.39	71.3 24.8	F C	220.0 45.0	261 75	0.29 0.08	10.3 7.7	B A	30.0 6.0	282 89	1.00 0.48	90.5 28.3	F D	265.0 60.0	282 89	0.31 0.09	10.4 7.7	B A	33.0 8.0
Washington Street, Washington Street Extension, Water Street and Neponset Street All movements from Washington Street (SWB): Weekday Moming Weekday Evening	120 339	0.35 1.11	20.2 113.6	C F	37.5 380.0	120 339	0.09 0.70	7.9 23.9	A C	8.0 137.0	129 363	0.41 1.28	22.9 178.2	C F	47.5 502.5	129 363	0.10 0.78	7.9 30.0	A D	8.0 178.0	129 363	0.48 1.59	28.5 312.7	D F	60.0 660.0	129 363	0.10 0.87	7.8 43.8	A E	8.0 235.0
Summer Street and Neponset Street All movements from Summer Street (EB): Weekday Morning Weekday Evening	456 211	0.57 0.39	12.8 11.7	В В	92.5 45.0	-	825 870	er es	e e		488 226	0.62 0.43	14.1 12.6	ВВ	110.0 52.5	<u>.</u>				<u>.</u>	575 283	0.75 0.59	19.2 17.7	C C	72.5 97.5	٠	-	2	<u>.</u>	2
All movements from Summer Street (WB): Weekday Morning Weekday Evening	57 255	0.14 0.53	9.4 14.7	A B	12.5 77.5	- -E	ie Ie		e F	± E	61 273	0.15 0.59	9.6 16.6	A C	12.5 95.0		2	e E	e E	-	68 296	0.17 0.71	10.1 23.5	B C	15.0 142.5			2 1	2	<u>.</u>
All movements from Neponset Street (NB) ^f : Weekday Morning Weekday Evening	133 350	0.23 0.62	10.2 17.7	B C	22.5 105.0	-	ie ie	3.0 5.0	-	125.0 125.0	142 375	0.25 0.68	10.5 20.7	B C	25.0 130.0		-	ie G	ie e	:	165 447	0.30 0.87	11.5 39.1	B E	32.5 247.5	ws ::::	-	# #	-	-
All movements from Neponset Street (SB): Weekday Morning Weekday Evening *Demand of critical movements in v	10 12	0.03 0.03	10.4 9.3	B A	2.5 2.5	5 5	150 151	.ā.	e 		11 13	0.03 0.04	10.5 9.6	B A	2.5 2.5	550 570	5.	0.5. 0.5.	(A.	5. -	11 13	0.04 0.05	11.0 10.7	B B	2.5 2.5		-	5	5	5 5

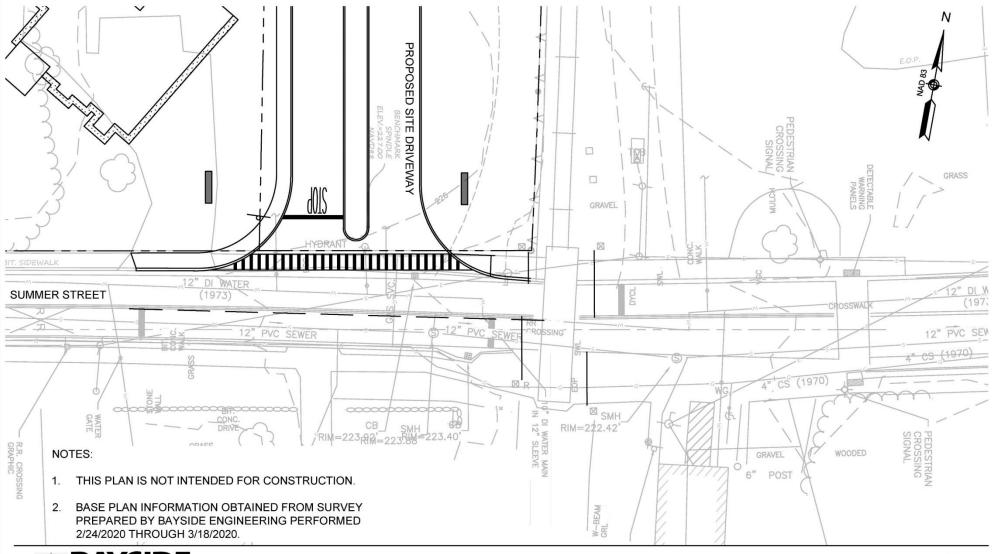
b Volume-to-capacity ratio.

Delay in seconds per vehicle.

d Level of service.

g percentile queue in feet.

Delay shown in Calibrated Model Column is actual observed delay and the queue shown is the maximum queue observed queue in feet. HCM methodology does not allow any calibration for all-way STOP analyses.





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Phone: 781.932.3201 ▲ Fax: 781.932.3413
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Proposed Residential Cedar Crossing and Cedar Edge Walpole, MA Figure 1 SUMMER STREET AT PROPOSED DRIVEWAY SCALE: 1" = 20'

TABLE 2 RAILROAD OPERATIONS SUMMARY^a

Time Period	Weekday Morning Peak Period ^b	Weekday Evening Peak Period ^b	NB Trains	SB Trains
Average Time for Flashing Operations (sec)	58	62	58	62

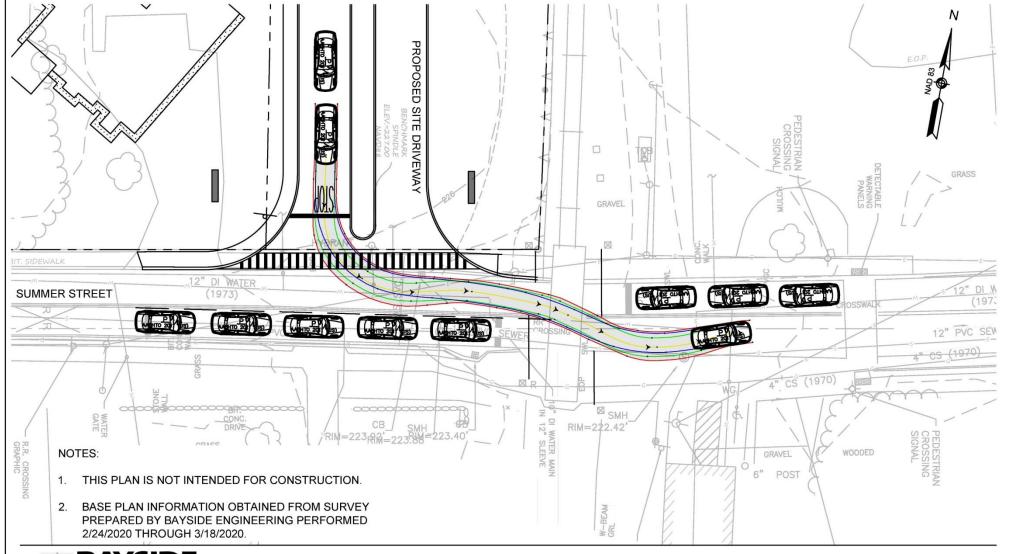
^aBased on count data compiled November 6, 2019 to November 12, 2019. ^bMorning Peak period from 7:00 – 9:00 AM. ^cEvening Peak period from 4:00 – 6:30 PM.

TABLE 5 SUMMER STREET OBSERVED RAILROAD CROSSING DELAYS AND VEHICLE QUEUES^a

Time Period	Average Time for Westbound Vehicle Queue to Clear (sec)	Average Time for Eastbound Vehicle Queue to Clear (sec)	Average Westbound Vehicle Queue (veh)	Average Eastbound Vehicle Queue (veh)
Weekday Morning Peak Period ^b	10	15	2	5
Weekday Evening Peak Period ^c	26	11	8	3

^aBased on count data compiled November 6, 2019 to November 12, 2019. ^bMorning Peak period from 7:00-9:00 AM. ^cEvening Peak period from 4:00-6:30 PM.

Projected Weekday Morning Conditions





600 Unicorn Park Drive ▲ Woburn, MA 01801
Phone: 781.932.3201 ▲ Fax: 781.932.3413

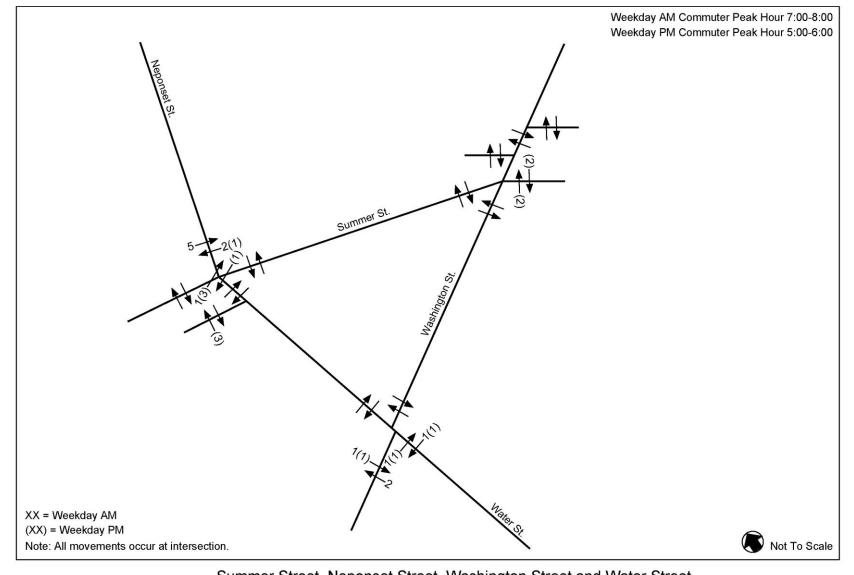
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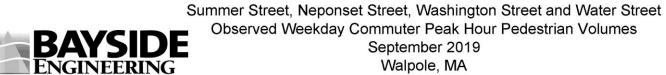
Proposed Residential Cedar Crossing and Cedar Edge Walpole, MA Figure 1 5 MPH AUTOTURN RUN SCALE: 1" = 20'



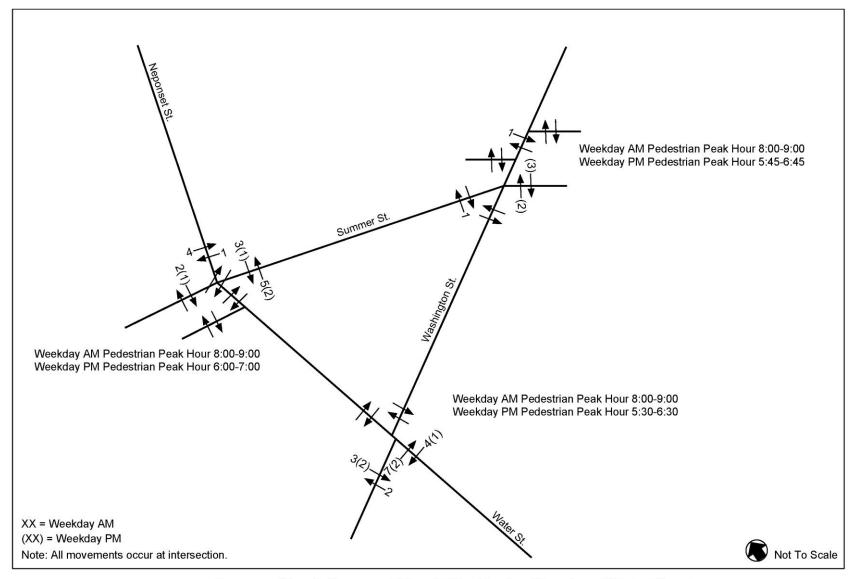
September 2019 Pedestrian Crossings

Wednesday 7 am to 8 am 5 pm to 6 pm





September 2019 Pedestrian Peak Hour Crossings

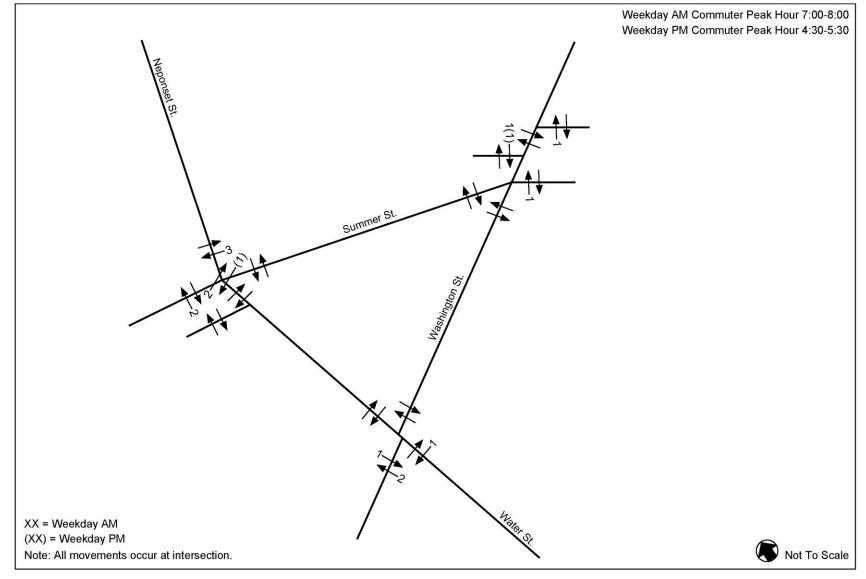




Summer Street, Neponset Street, Washington Street and Water Street
Observed Weekday Pedestrian Peak Hour Pedestrian Volumes
September 2019
Walpole, MA

November 2019 Pedestrian Crossings

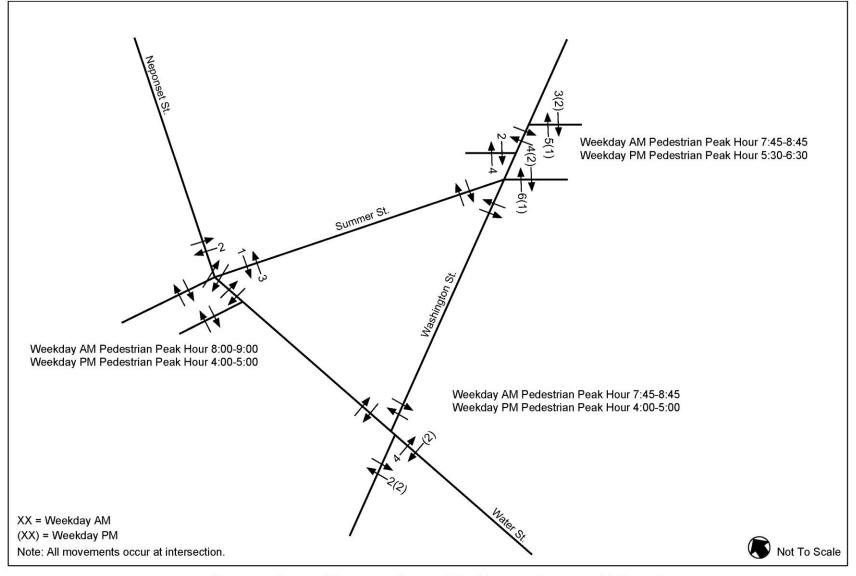
7 am to 8 am 4:30 pm to 5:30 pm

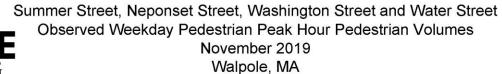




Summer Street, Neponset Street, Washington Street and Water Street
Observed Weekday Commuter Peak Hour Pedestrian Volumes
November 2019
Walpole, MA

November 2019 Pedestrian Peak Hour Crossings









Summer Street, Neponset Street, Washington Street and Water Street Walpole, MA



Potential Offsite Improvements

- Commitment to join the Neponset Valley Transportation Management Association upon occupancy.
- Commit to provide funding of \$131,625 on the same per market unit basis as Liberty Station and 95 West Street* toward "offsite infrastructure"
- These funds together with municipal funding could be used to fund the following items within 24 months of the issuance of building permits for the development:
 - A sidewalk along the north side of Summer Street from the railroad crossing to Neponset Street.
 - The installation of a Rectangular Rapid Flashing Beacon (RRFB) at the crosswalk on Washington Street at the Boyden School.
 - Perform Washington Street speed study.
 - Or other priorities mutually agreed upon.

^{*}Liberty Station (150 units) and 95 West Street (192 units) each contributed \$100,000 to "Offsite Infrastructure" for an average of \$585.00 per market rate unit (Cedars Projects have 225 market rate units).

Questions