

Town of Milton

Milton Village Mixed-Use Development Alternatives

November 27, 2018



Purpose

- Traffic study for the Milton Village Mixed-Use Development Alternatives
- Uses and builds on data in the *Milton Village Traffic Study*, dated October 2018
- ✓ Trip generation, distribution and mode split for the four alternatives provided:
 - ✓ Alternative 1A: Existing Zoning (Most Likely)
 - ✓ Alternative 1B: Existing Zoning (Not Likely – Off-Site Parking Required)
 - ✓ Alternative 2A: Proposed Zoning (Most Likely)
 - ✓ Alternative 2B: Proposed Zoning (Less Likely – Off-Site Parking Required)
- ✓ Assign development trips onto the existing roadway network and analyze study intersections
- ✓ Develop mitigation strategies to offset impacts from added development trips
- ✓ Survey existing parking supply and utilization within Milton Village

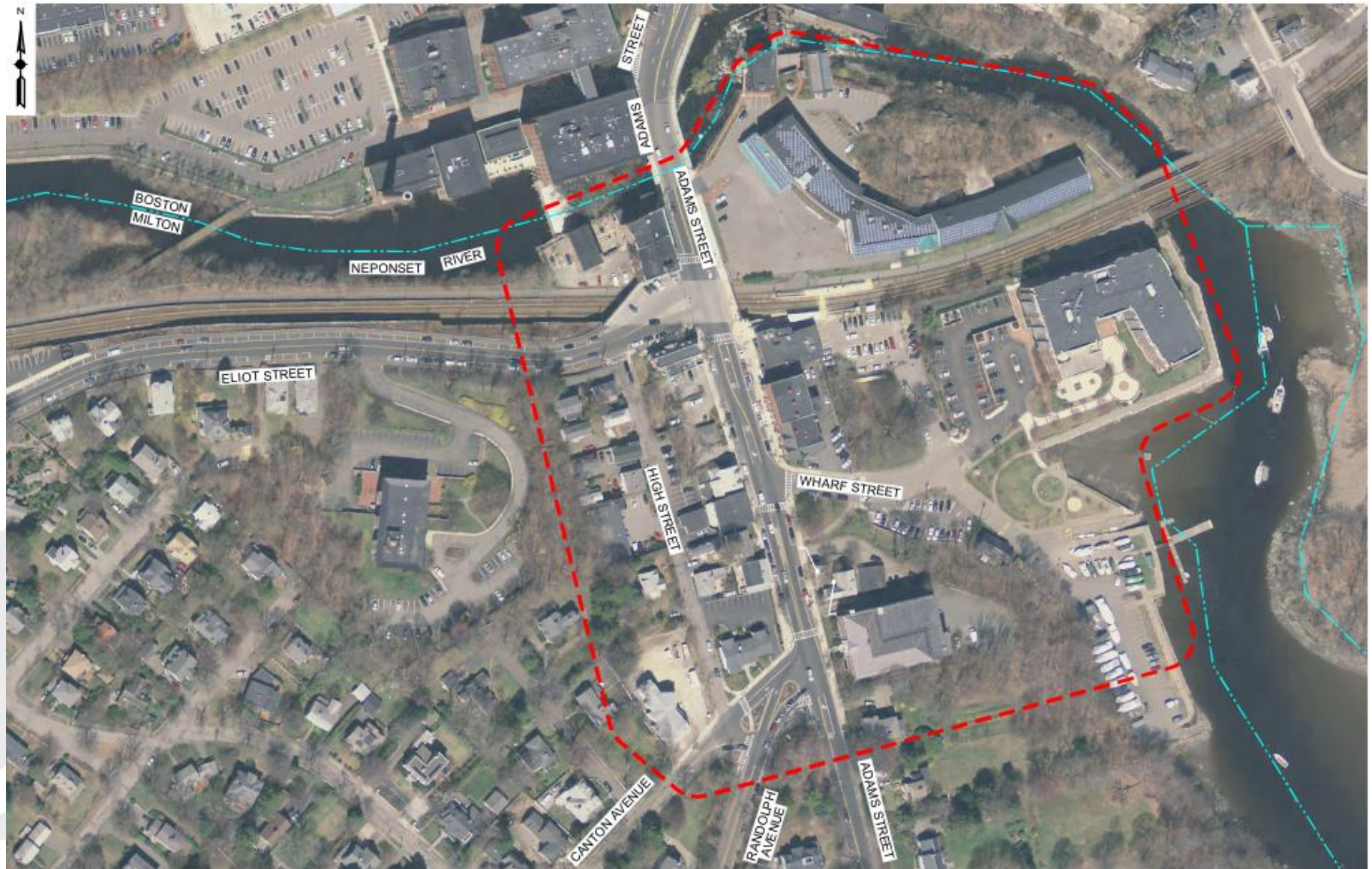
Milton Village Traffic Study

- Previous study provided traffic analysis results for Existing 2018 conditions
- Included the installation of a traffic signal at the intersection of Adams Street at Canton Avenue, Randolph Avenue and High Street
- 2018 Build conditions (signalization and coordination) will be used as the Base (2018) condition within the Mixed-Use Development Alternatives Study

Methodology

- Traffic Analysis
 - Synchro 9: Capacity Analysis Results
 - Vistro 5: Trip Generation, Distribution and Assignment
- Trip Generation
 - Institute of Transportation Engineers, *Trip Generation*, 10th Edition, 2017
- Trip Distribution/Mode Split
 - 2009-2013 5-Year American Community Survey Journey-to-Work data
- Pass-By Trips
 - Institute of Transportation Engineers, *Trip Generation Handbook*, 3rd Edition, 2017

Study Area



Traffic Count Data

- Manual Turning Movement Counts (TMC) collected Thursday, April 26, 2018
 - Adams St at Randolph Ave, Canton Ave & High St counted from 7AM-6PM
 - Adams St at Wharf Street counted from 7AM-9AM and 4PM-6PM
 - Adams St at Eliot St counted from 7AM-9AM and 4PM-6PM
- Passenger cars, heavy vehicles, pedestrians and bicycles were counted.
- Peak hours assumed to be 7:30-8:30 AM and 5:00-6:00 PM.
- Automatic Traffic Recorder (ATR) Counts were collected for a 48-hour period from Wednesday, April 25, 2018 through Thursday, April 26, 2018.
 - Adams St, Randolph Ave, Canton Ave and Eliot St were counted

Existing Parking Survey

- Conducted for 30-minute intervals from 7:00 AM to 6:00 PM on Thursday October 18, 2018 along:
 - Adams Street (Eliot to Randolph Avenue)
 - Eliot Street (Adams Street to #36 Eliot Street)
 - High Street
 - Wharf Street
- Total of 102 parking spaces were inventoried
- Surveyed public parking spaces only
 - Excluded service zone parking and the MBTA lot
- Milton Farmers Market was held on Wharf Street from 1:00 PM to 6:00 PM
- Illegally-parked and double-parked vehicles were accounted for
- Adams Street and Eliot Street broken down by travel direction
- All spaces time-restricted to either one or two hours

Existing Parking Survey



Existing Parking Survey



Existing Parking Survey



Existing Parking Survey

Existing Parking Supply Characteristics		
Street	No. of Spaces	Time Restriction
Adams St NB (A1-A13)	13	1-HR Parking*
Adams St SB (A14-A27)	14	1-HR Parking*
Eliot St (E20-E32)	13	2-HR Parking
Eliot St (E1-E19)	19	2-HR Parking
High St (H1-H11)	11	2-HR Parking (7AM-7PM)
Wharf St (W1-W32)	32	2-HR Parking (7AM-5PM)
Total	102	

* Certain spaces are time restricted to 7AM – 7PM

Existing Parking Survey

Existing Parking Occupancy					
Street	No. of Spaces	Occupancy (% Occupied)			
		Daily (7A-6P)	AM (7A-9A)	Midday (11A-2P)	PM (4P-6P)
Adams St NB (A1-A13)	13	61.2%	44.2%	75.6%	40.4%
Adams St SB (A14-A27)	14	59.0%	21.4%	69.0%	60.7%
Eliot St (E20-E32)	13	64.5%	36.5%	83.3%	57.7%
Eliot St (E1-E19)	19	69.1%	30.3%	76.3%	73.7%
High St (H1-H11)	11	86.2%	77.3%	106.1%	56.8%
Wharf St (W1-W32)	32	52.2%	11.7%	76.6%	55.5%
Total	102	65.4%	36.9%	81.2%	57.5%

- ✓ Overall occupancy approximately 66%
- ✓ Midday peak experiences the highest levels of occupancy (81%)
- ✓ High Street is over capacity with vehicles parking in unmarked spaces (midday)
- ✓ Overall, sufficient supply of parking within Milton Village

Existing Parking Survey

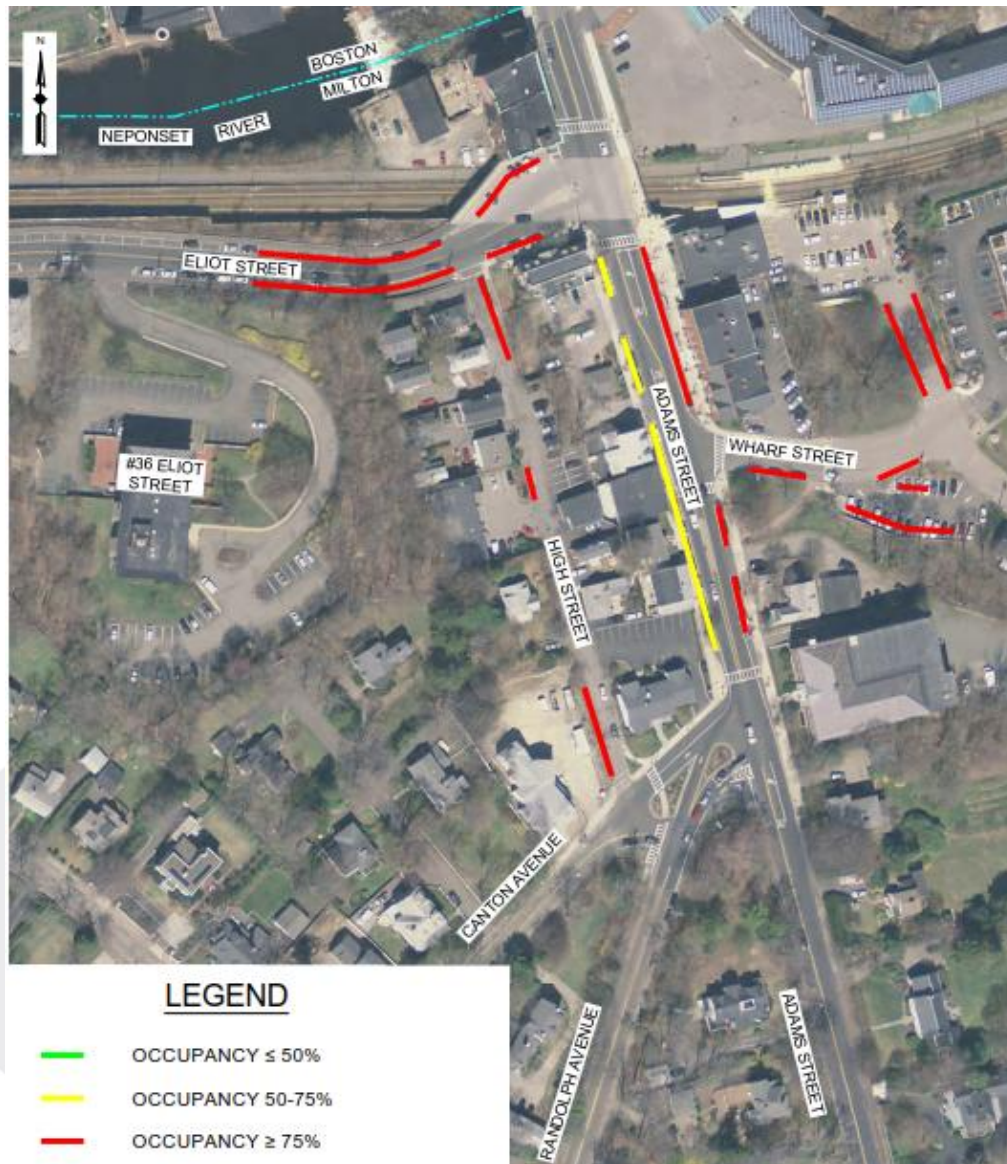


Occupancy – Daily (7AM – 6PM)



Occupancy - AM Peak (7AM – 9AM)

Existing Parking Survey



Occupancy – Midday (11AM – 2PM)



Occupancy - PM Peak (4PM – 6PM)

Existing Parking Survey

Existing Parking Duration					
Street	No. of Spaces	Duration (minutes/vehicle)			
		Daily (7A-6P)	AM (7A-9A)	Midday (11A-2P)	PM (4P-6P)
Adams St NB (A1-A13)	13	25.0	24.6	26.8	24.2
Adams St SB (A14-A27)	14	32.4	22.5	29.0	34.0
Eliot St (E20-E32)	13	43.2	20.4	75.0	26.5
Eliot St (E1-E19)	19	47.7	24.6	54.4	36.5
High St (H1-H11)	11	125.8	46.4	210.0	125.0
Wharf St (W1-W32)	32	45.7	32.1	45.9	42.6
Total	102	43.1	27.8	47.6	37.0

- ✓ Parking throughout the day is less than the time restriction
- ✓ High Street experiences higher than allowed durations (over two hours)
- ✓ Several vehicles parking significantly longer than the time-restricted periods
- ✓ Overall, duration is within time-restrictions

Existing Parking Survey

Existing Parking Turnover					
Street	No. of Spaces	Turnover (vehicles/space)			
		Daily (7A-6P)	AM (7A-9A)	Midday (11A-2P)	PM (4P-6P)
Adams St NB (A1-A13)	13	8.5	1.1	2.5	1.0
Adams St SB (A14-A27)	14	6.3	0.6	2.1	1.1
Eliot St (E20-E32)	13	5.2	1.1	1.0	1.3
Eliot St (E1-E19)	19	5.0	0.7	1.3	1.2
High St (H1-H11)	11	2.4	1.0	0.5	0.3
Wharf St (W1-W32)	32	3.9	0.2	1.5	0.8
Total	102	5.0	0.7	1.5	0.9

- ✓ Calculated as the ratio of the total number of parked vehicles accommodated, to the total number of parking spaces in that area
- ✓ Spaces are utilized (turnover) on average by approximately 5 vehicles
- ✓ High Street has significantly lower turnover rates

Development Alternatives

- Four Development Alternatives were evaluated:
 - Alternative 1A: Existing Zoning (Most Likely)
 - Alternative 1B: Existing Zoning (Not Likely – Off-Site Parking Required)
 - Alternative 2A: Proposed Zoning (Most Likely)
 - Alternative 2B: Proposed Zoning (Not Likely – Off-Site Parking Required)

Alternative 1A: Existing Zoning (Most Likely)

- Utilizes existing zoning
- Adds approximately 64,000 GSF
 - 11,130 GSF Retail Space
 - 53,300 GSF Office Space
- No additional residential units
- No additional off-site parking spaces needed
- 5 parcels redeveloped; 1 renovated

Alternative 1B: Existing Zoning (Not Likely – Off-Site Parking Required)

- Utilizes existing zoning
- Adds approximately 180,000 GSF
 - 31,300 GSF Retail Space
 - 149,900 GSF Office Space
- No additional residential units
- 500 additional off-site parking spaces needed
- 5 parcels redeveloped; 1 renovated

Alternative 2A: Proposed Zoning (Most Likely)

- Utilizes proposed zoning
- Adds approximately 141,000 GSF
 - 29,925 GSF Retail Space
 - 4,100 GSF Office Space
 - 133,125 GSF Residential Space (123 units)
- No additional off-site parking spaces needed
- 6 parcels redeveloped; 4 renovated; 3 unknown

Alternative 2B: Proposed Zoning (Not Likely – Off-Site Parking Required)

- Utilizes proposed zoning
- Adds approximately 153,000 GSF
 - 41,000 GSF Retail Space
 - 4,100 GSF Office Space
 - 168,515 GSF Residential Space (156 units)
- 25 additional off-site parking spaces needed
- 6 parcels redeveloped; 4 renovated; 3 unknown

Development Trip Generation

Vehicle Trip Generation Rates

Street	AM Peak Hour			PM Peak Hour		
	Rate	Enter	Exit	Rate	Enter	Exit
221 Multi-Family Housing (Mid-Rise)*	0.36	26%	74%	0.44	26%	39%
231 Mid-Rise Residential with 1 st Floor Commercial*	0.31	41%	59%	0.47	41%	56%
710 General Office Building**	1.16	86%	14%	1.15	86%	84%
712 Small Office Building**	1.92	83%	17%	2.45	83%	68%
720 Medical-Dental Office Building**	2.78	78%	22%	3.46	78%	72%
820 Shopping Center**	0.94	62%	38%	3.81	62%	52%

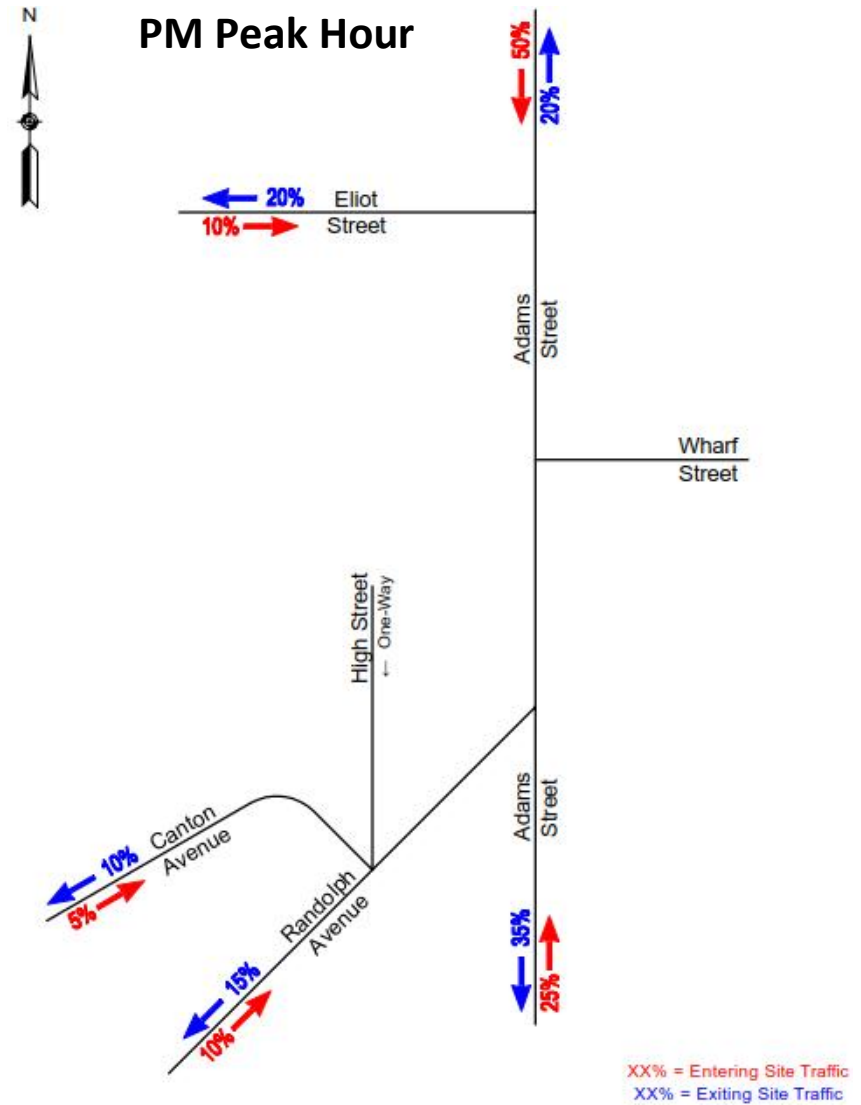
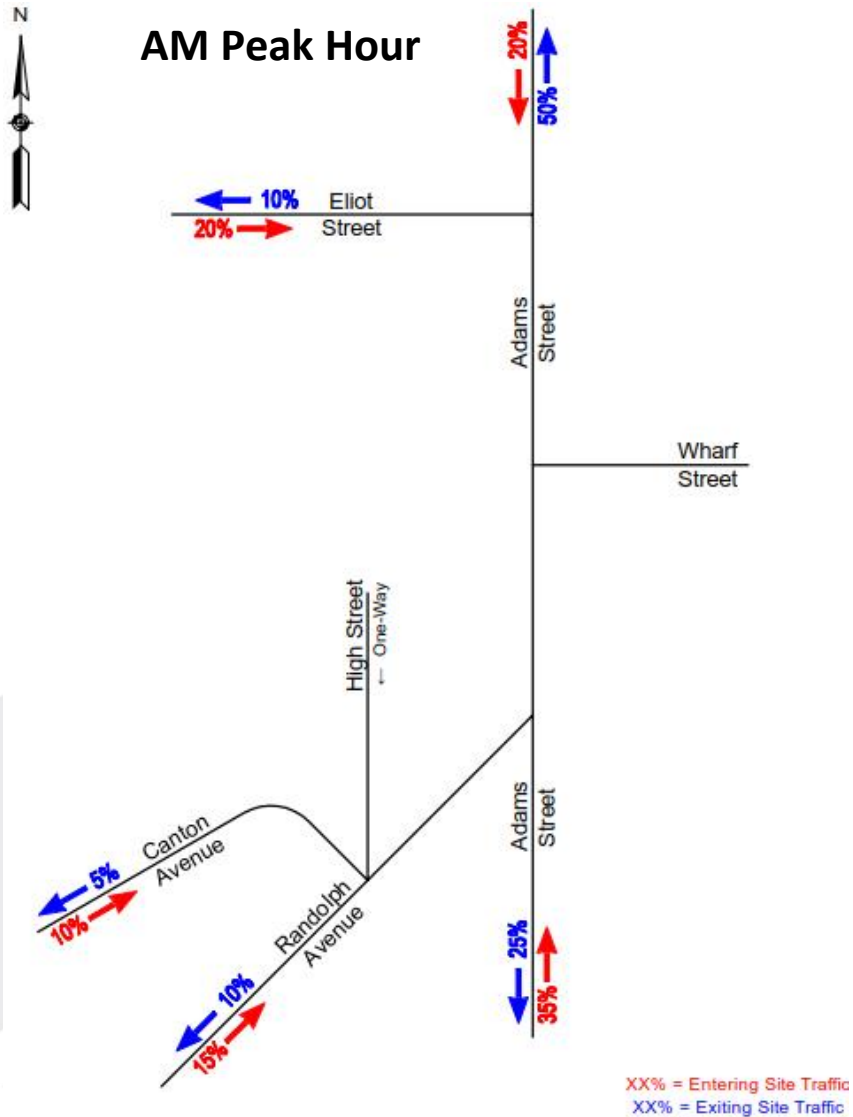
* Rate calculation is based on number of dwelling units

** Rate calculation is based on 1,000 Square Feet of Gross Floor Area

Development Trip Distribution

- Based on US Census Bureau data
 - Census Tract level
 - Published by the 2009-2013 5-Year American Community Survey Journey-to-Work Data
- Distributed to 5 major gateways into Milton Village
 - Adams St NB
 - Adams St SB
 - Canton Ave
 - Randolph Ave
 - Eliot St

Development Trip Distribution



Mode Split

- Based on US Census Bureau data
 - Census Tract level
 - Published by the 2009-2013 5-Year American Community Survey Commuting Flows
- Mode Splits for Milton Village:
 - 85% Vehicular Traffic
 - 8% Transit (including bus & trolley car)
 - 2% Pedestrian & Bicycle Traffic
 - 5% Work-from-Home

Trip Generation Summary

Vehicle Trip Generation Summary						
Alternative	AM Peak Hour			PM Peak Hour		
	Total	Enter	Exit	Total	Enter	Exit
Alternative 1A	91	71	20	118	35	83
Alternative 1B	235	186	49	306	89	217
Alternative 2A	75	34	41	132	65	67
Alternative 2B	98	47	51	173	87	86

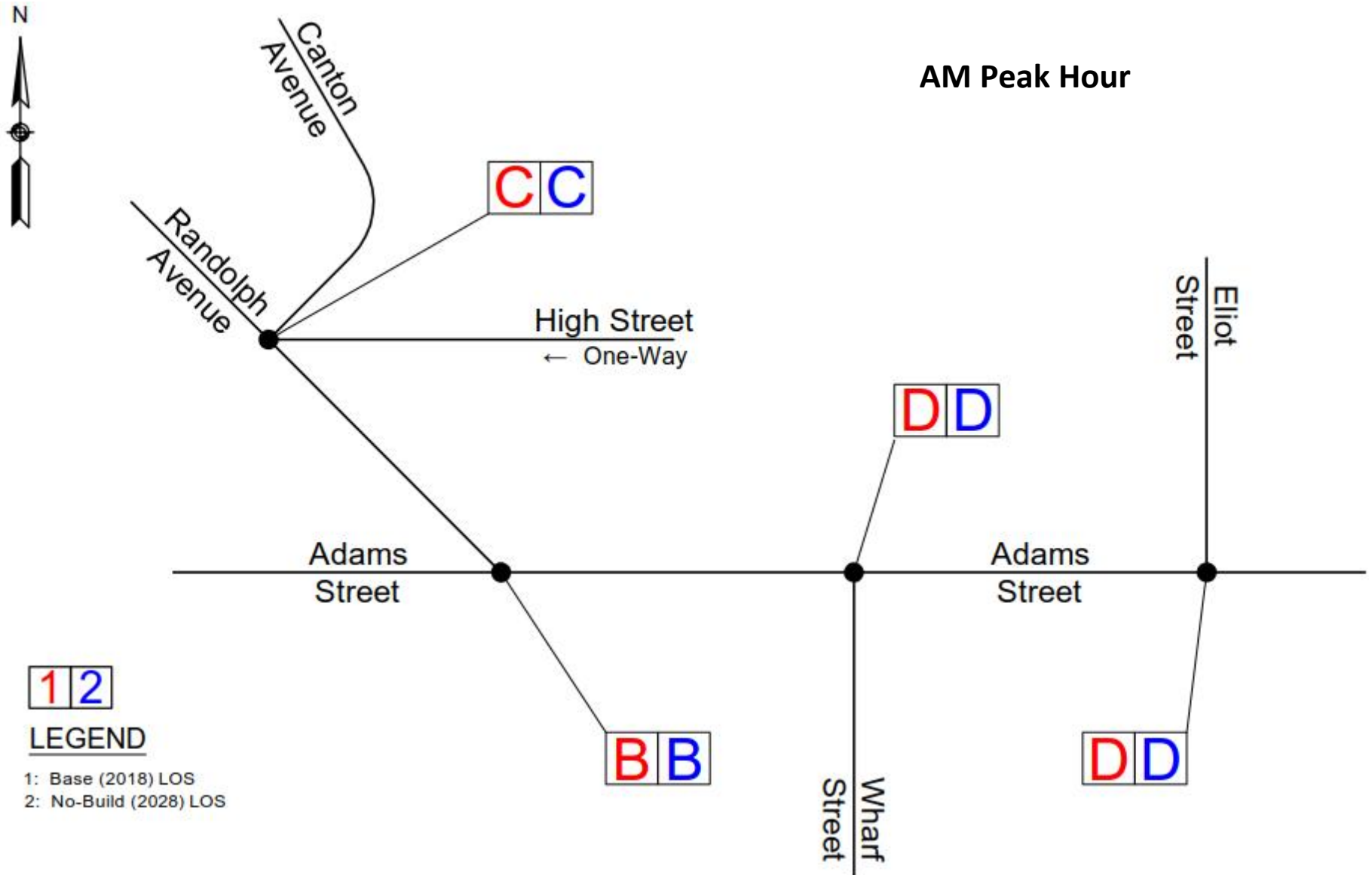
Future Traffic Growth

- Future No-Build traffic volume projections
 - General background growth factor
 - Traffic generated from other known development within study area
 - Context of the study area (well-developed/limited additional growth potential)
- 10-year projection to 2028
- Using a 0.5% per year growth rate
- Results in an approximate 5.0% increase from 2018 to 2028
- No specific planned future projects, beyond the alternative land use scenarios discussed below, were identified in the study area
- Background traffic growth accounts for any small new development projects which may occur over the 10-year analysis period.

Level of Service Analysis Results

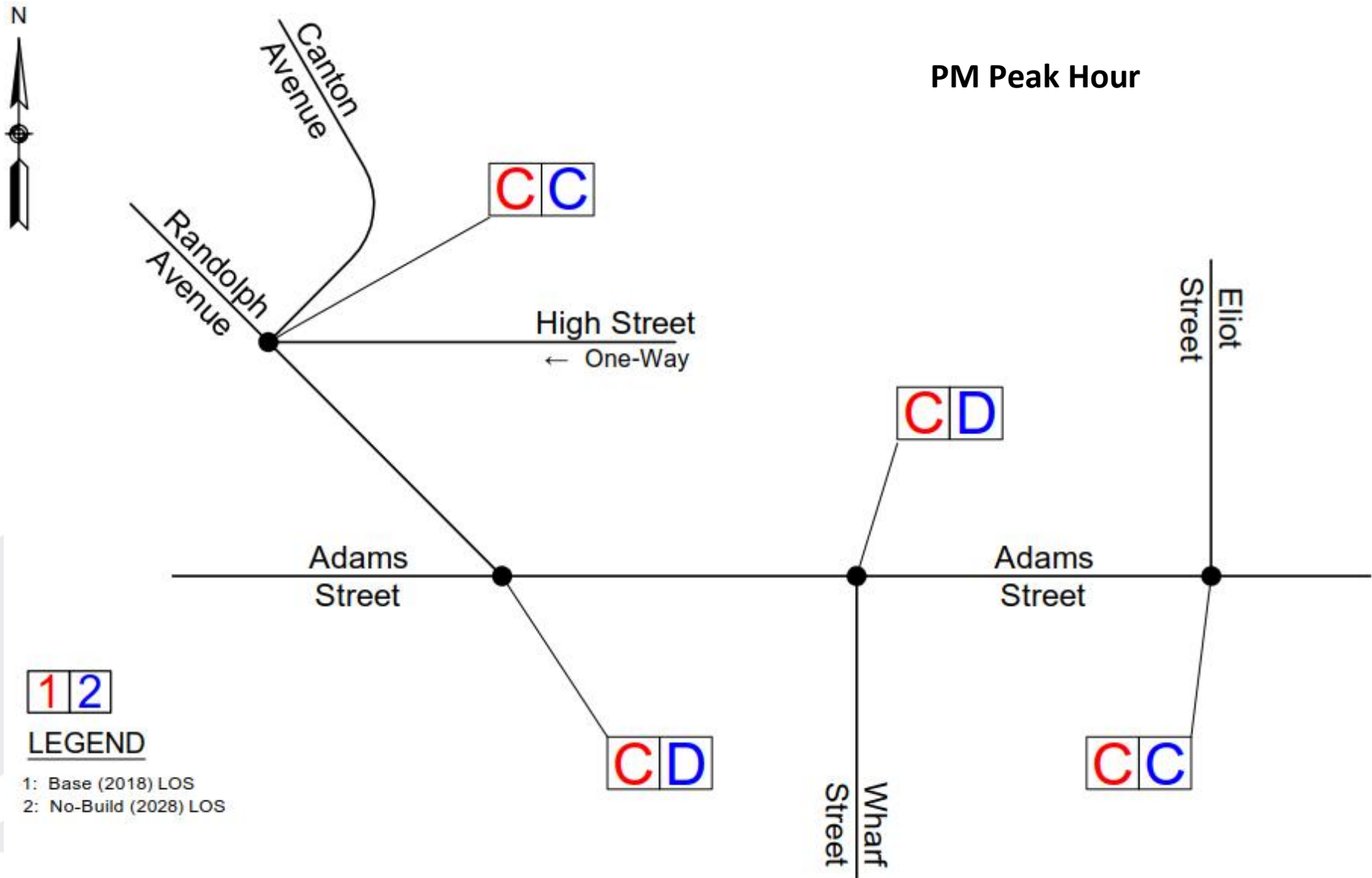
- Performed using Synchro analysis software
 - Methods of the 2000 *Highway Capacity Manual*
 - *Six Levels (A – F)*; D or better is considered acceptable
- Analyzed for four conditions:
 - Baseline (2018)
 - No-Build (2028)
 - Build (2028)
 - Alternatives 1A, 1B, 2A, 2B
 - Build (2028) with Mitigation
 - Alternatives 1A, 1B, 2A, 2B

Level of Service Analysis Results

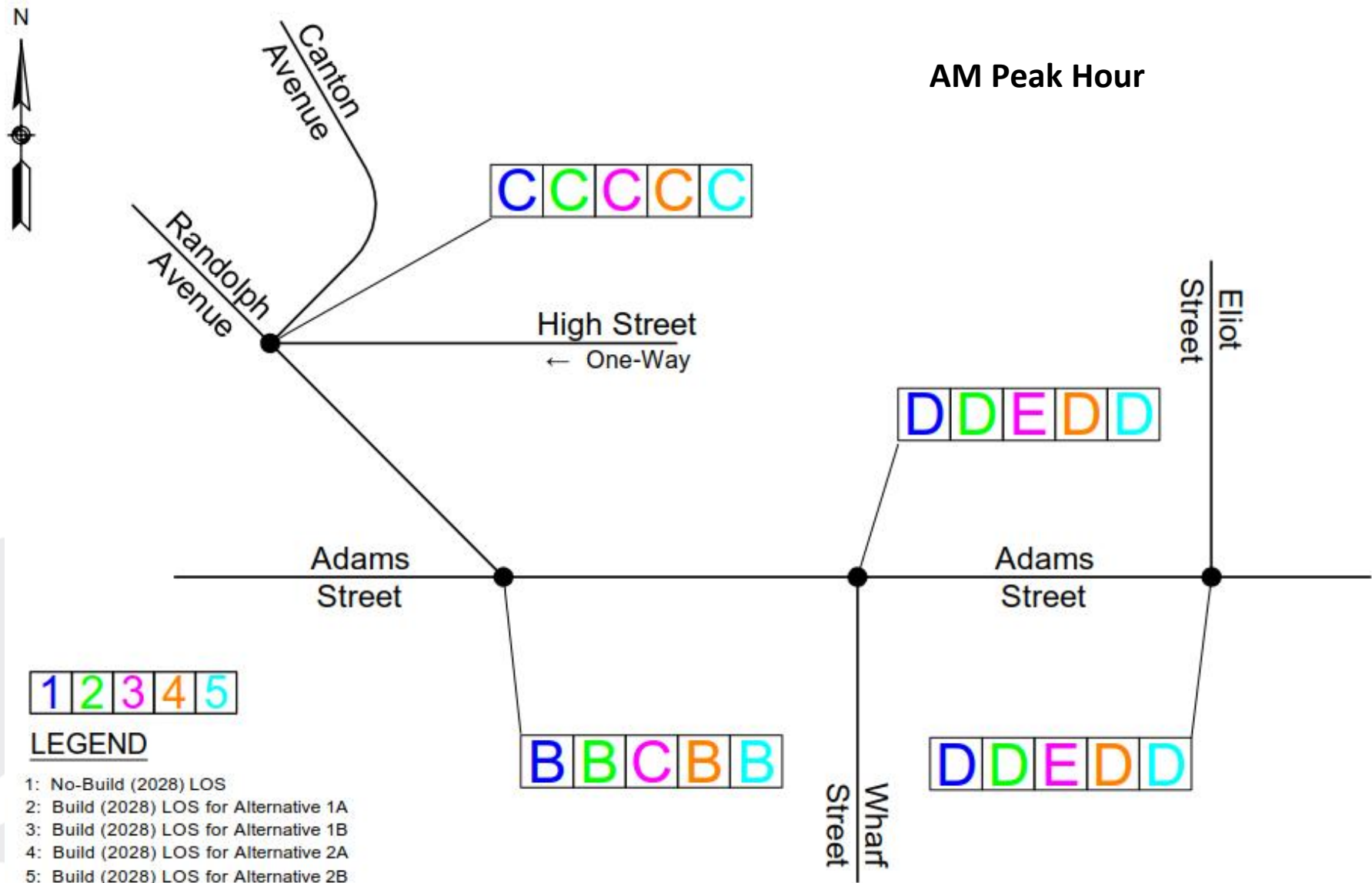


Level of Service Analysis Results

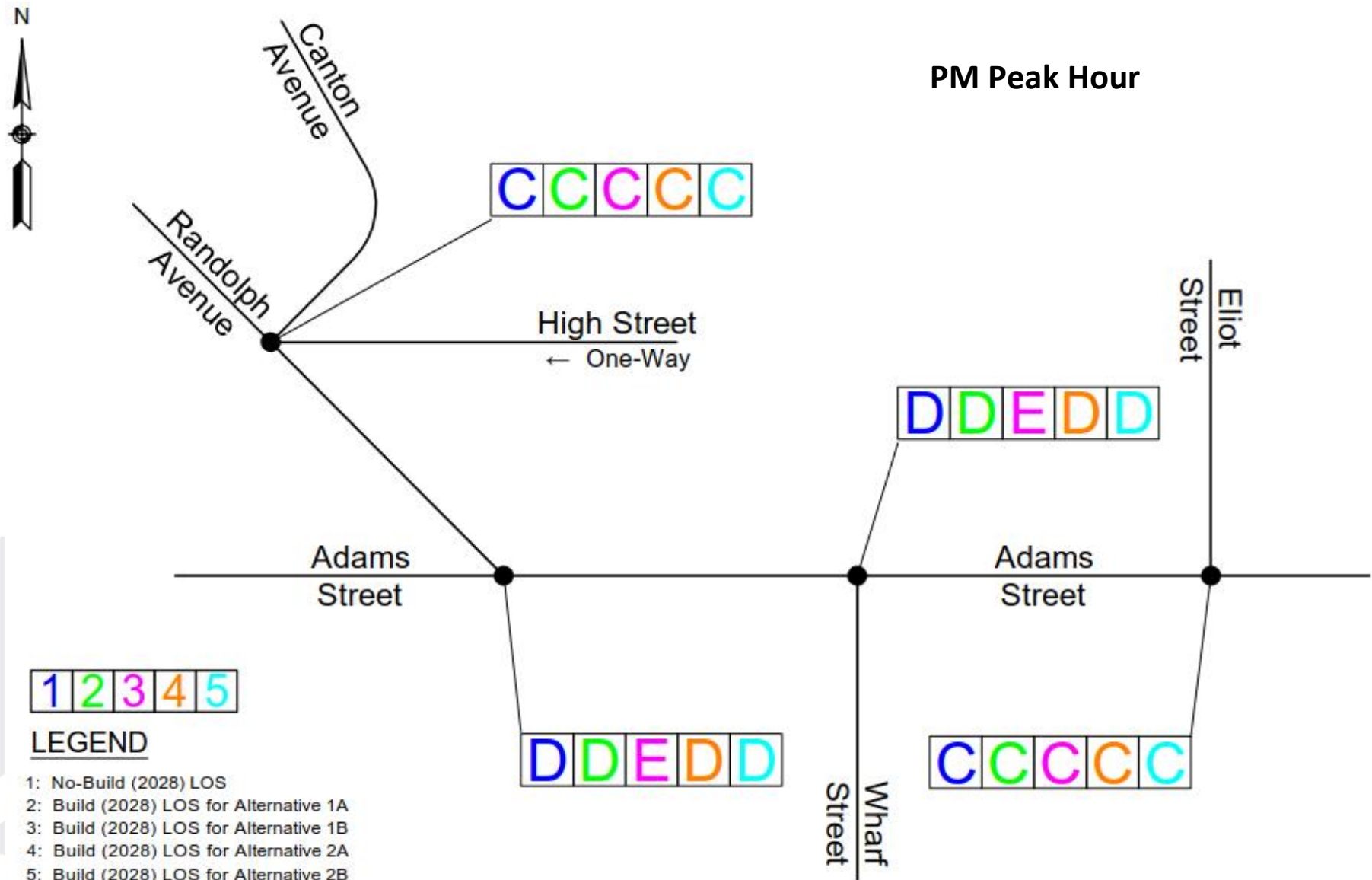
PM Peak Hour



Level of Service Analysis Results



Level of Service Analysis Results



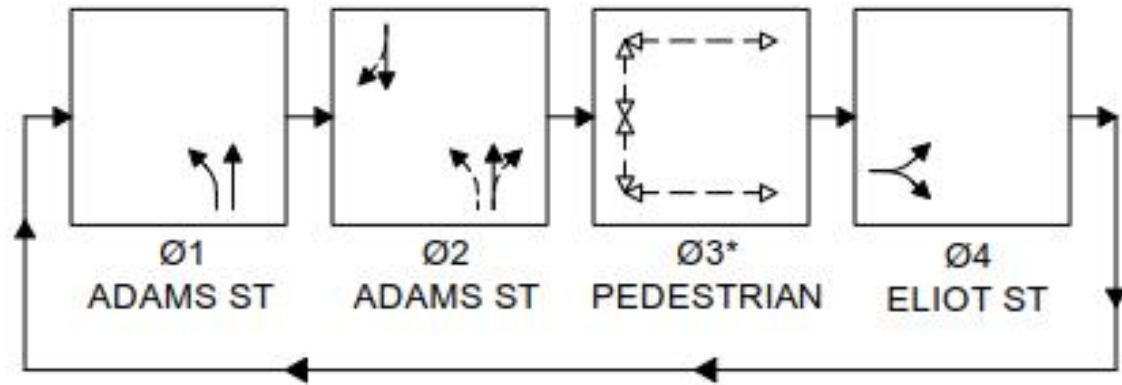
Mitigation Strategies

- Timing, Phasing, Coordination
 - Optimize signal timings and coordination patterns
 - Adams St at Eliot St
 - Convert exclusive pedestrian signal phase for Eliot St crosswalk to concurrent two stage crossing
 - Both Adams St crosswalks would remain exclusive
 - Reconstruction of median island of Eliot Street
- Geometric Improvements
 - Adams St at Randolph Avenue
 - Install short southbound right-turn lane
 - Requires removal of three parking spaces (A14-A16)

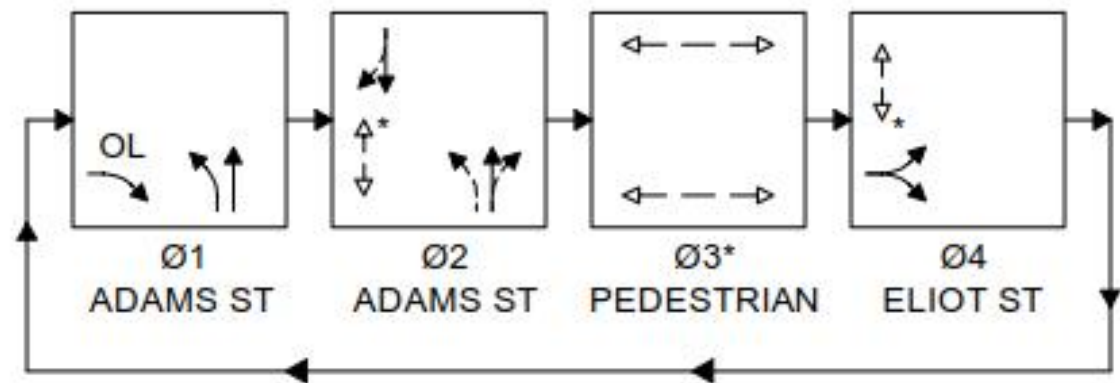
Mitigation Strategies

Adams St at Eliot St Traffic Signal Phasing

Existing Phasing



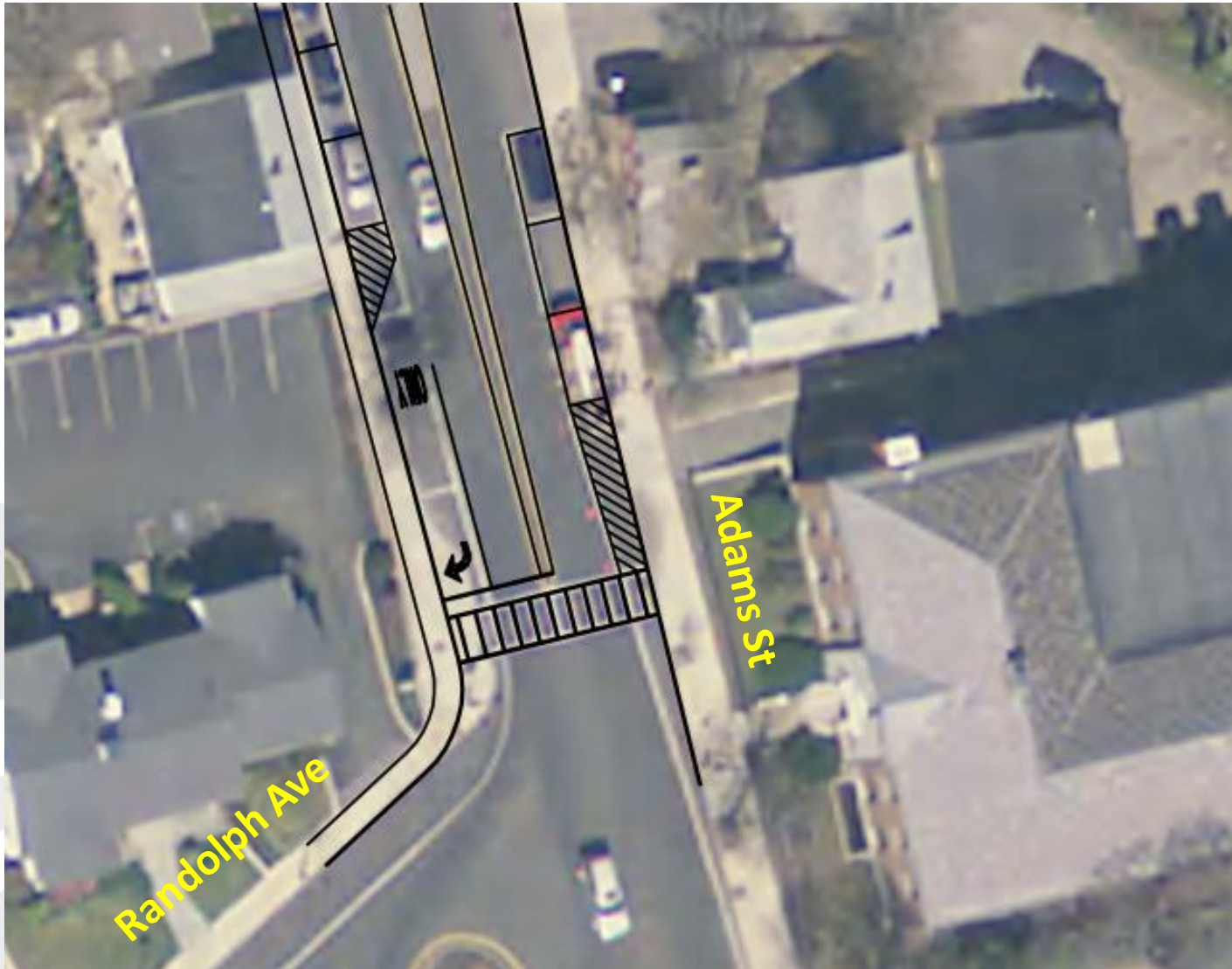
Mitigation Phasing



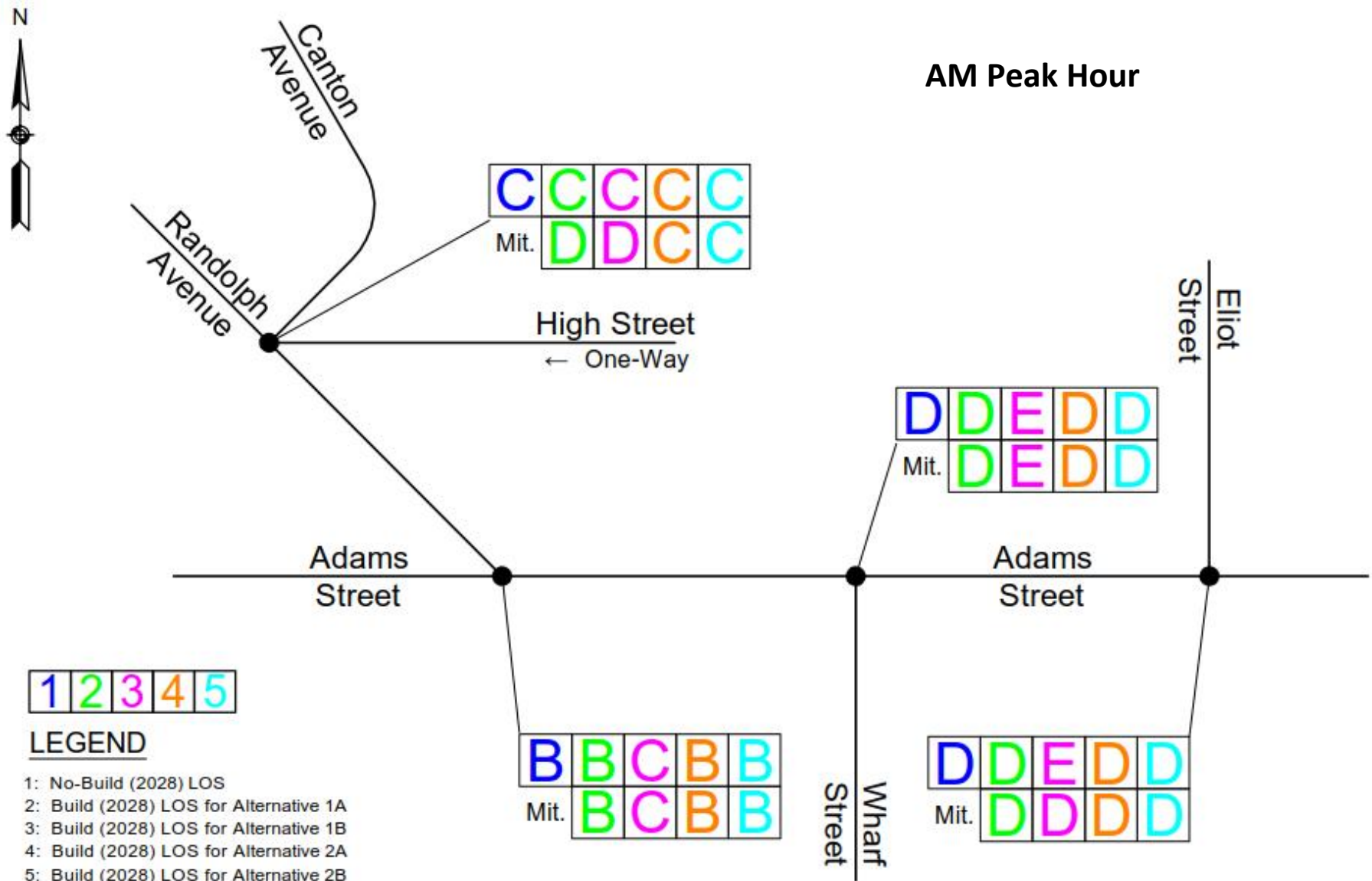
*PUSHBUTTON ACTUATED

Mitigation Strategies

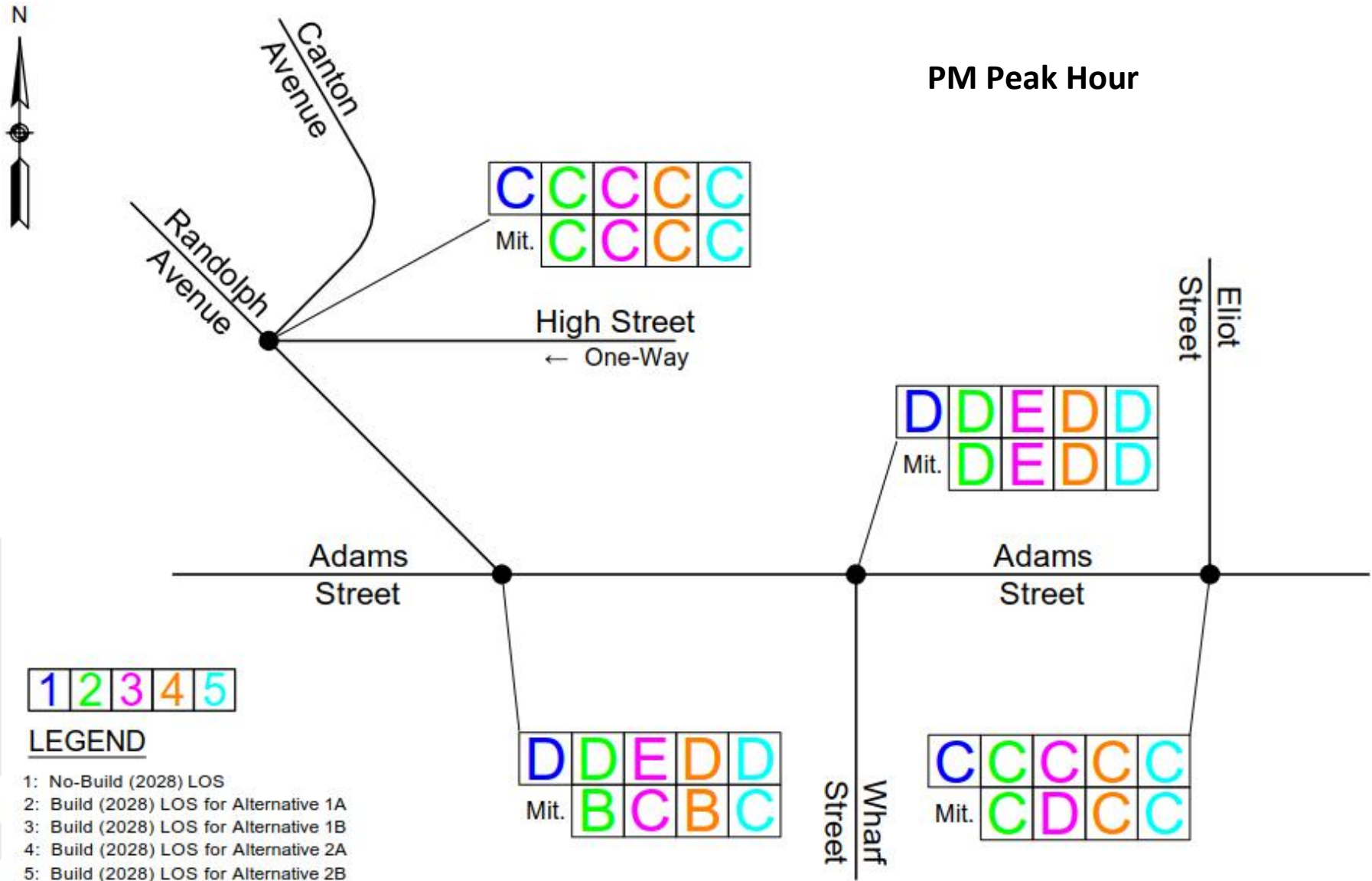
Adams St at Randolph Ave Right-Turn Lane



Mitigation Strategies



Mitigation Strategies



Questions?

