



Nantasket Ave Seawall Project

April 2024

Study Phase 2019

Nantasket Avenue Seawall
Allerton Lagoon
Allerton Harbor



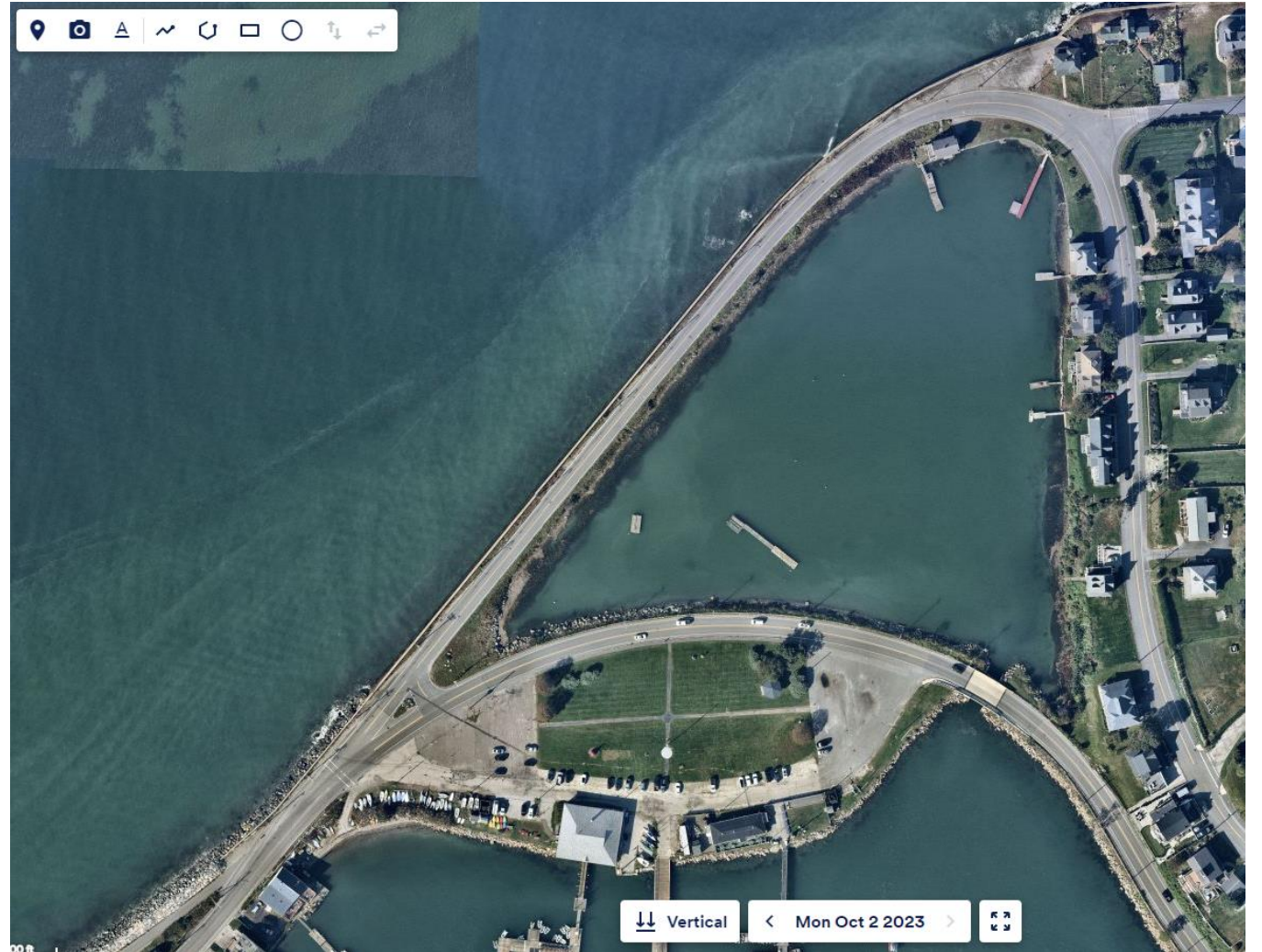
Purpose and Scope

- Develop a comprehensive long-term plan for rehabilitation and upgrade
- Scope
- Review historical information
 - Topographic survey
 - Condition survey (Inspection)
 - Wave analysis
 - Develop Short term and Long term alternatives for repairs and upgrades
-
- ***Nantasket Seawall identified as first project***



Nantasket Seawall

- Critical link in the Town
- Protects road to Pemberton Point
 - Two schools
 - Wastewater treatment plant
 - US Coastguard Station
 - Commuter ferry
 - 650 homes
- Protects utilities in road
 - Hull wastewater treatment plant serves three communities



Existing Wall Conditions



Concrete seawall with Revetment
Previous repair to wall
Revetment and structure in
overall poor condition
Top of wall elevation +20.5



Existing Wall Conditions



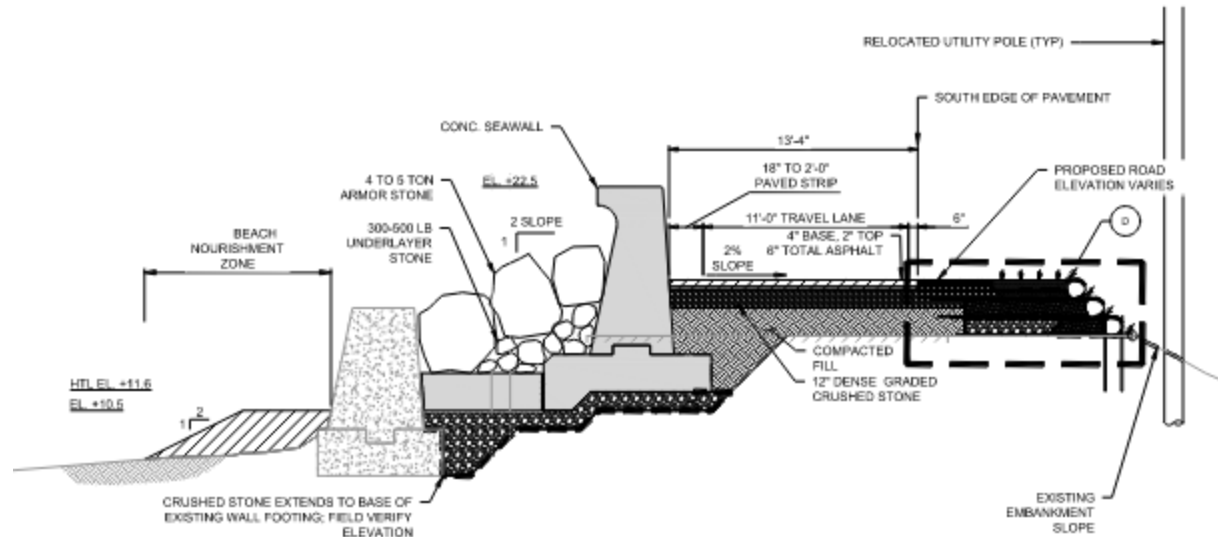
Concrete seawall

Horizontal and vertical cracks throughout
Top of footing exposed for most of wall
Wall movement up to 4 inches
Overall poor condition
Top of wall elevation +20.5



Long Term Alternative

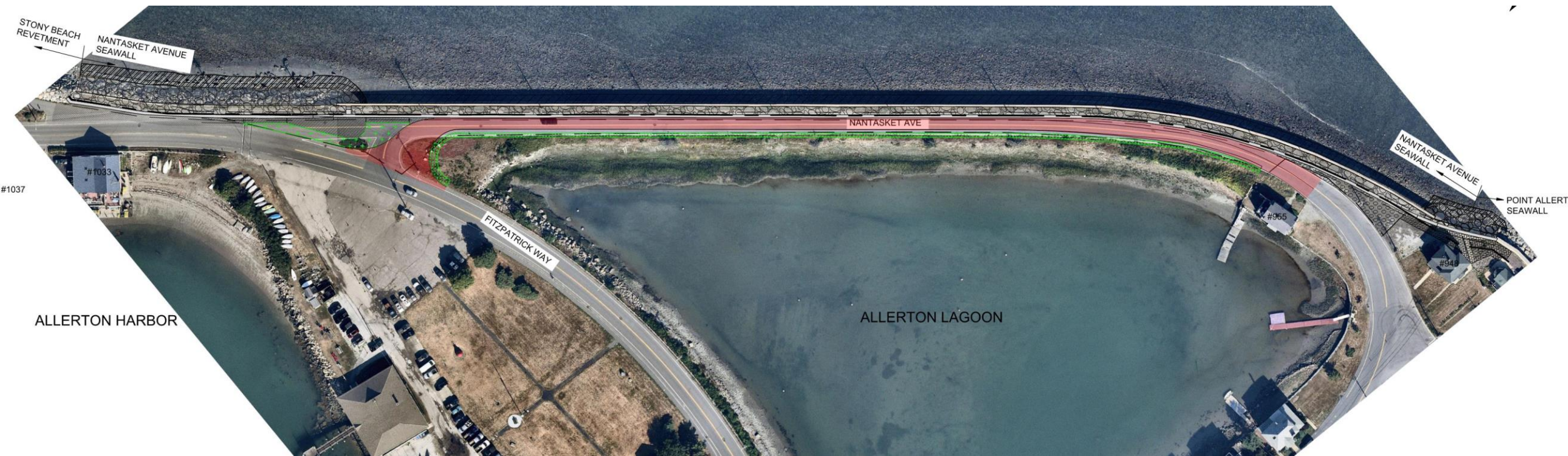
- Investigated range of alternatives
- Town and regulatory review process identified selected option



- No expansion seaward
- Old wall partially removed
- New concrete wall 2 feet higher than existing
- Raise road elevation above surge
- Reduce road to single lane

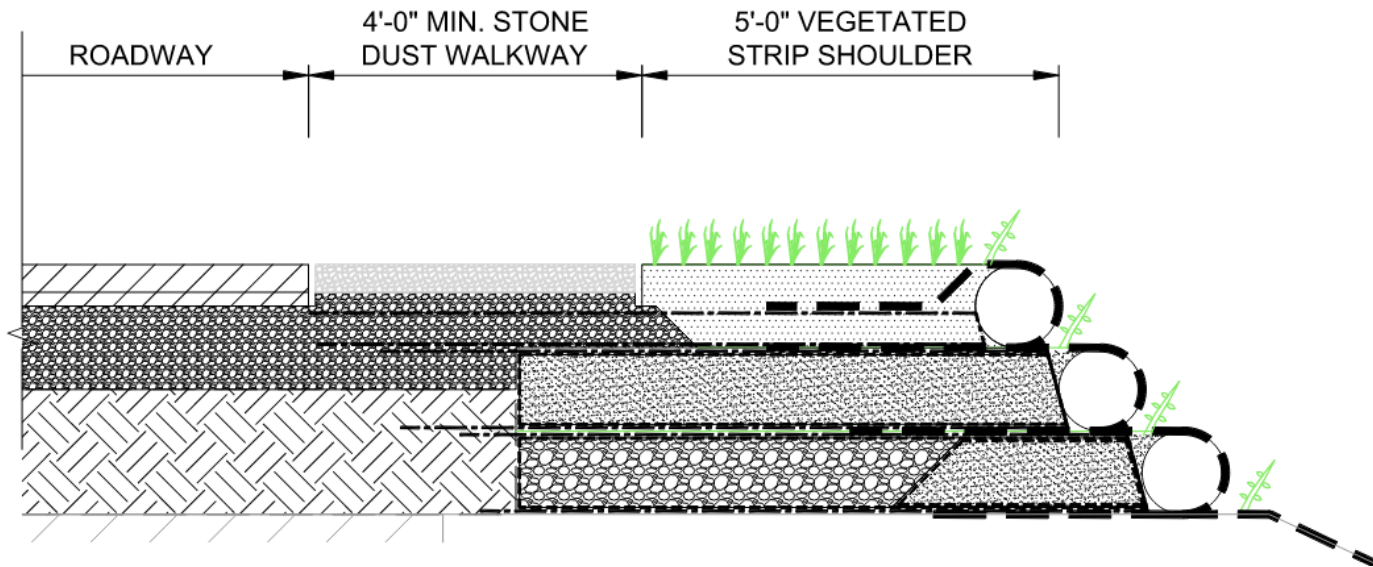


Proposed Design



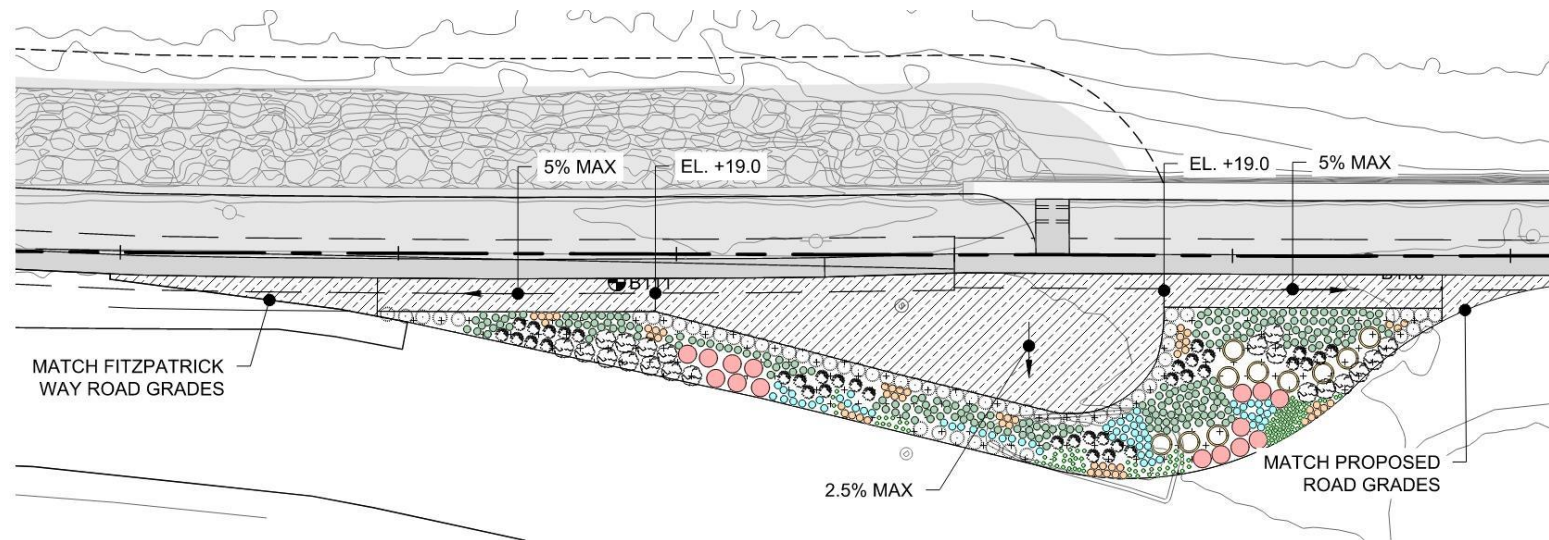
Proposed Design

- One Lane Road
- Walkway
- Vegetated Strip



Proposed Design

- Overlook at Fitzpatrick
- Path connects to Crosswalk



Current Status

- Project design is complete
- Town has received bids for construction
- Low Bidder is Manafort Transportation LLC
- Town has grant funding to partially fund construction
- Construction anticipated mid 2024

Total Project Cost	\$15.608 million
FEMA grant	\$4.943 million
FEMA grant (pending)	\$0.665 million
State grants	\$3.000 million
Approved Town funding	\$1.000 million
Town Meeting Request	\$6.000 million



Traffic Study



Construction Impacts



Long Term Improvements



Traffic Study – Major Findings

- Level of Service – Good for all Scenarios
- Crash Rate at intersection of Nantasket/Fitzpatrick/Beacon above average
 - Primarily due to low volumes of traffic (one crash per year)
- Sight distance limited for Beacon Ave looking right due to grade



Alternative 1 – One-way Fitzpatrick and Nantasket



Advantages	Disadvantages
Largest decrease on overall intersection delays at Fitzpatrick Way/Y Street among all alternatives.	Increased delays for westbound approach of Y Street and northbound approach of Nantasket Avenue at Beacon Road and Nantasket Avenue intersection.
Lowest construction cost/time, no ROW impacts	Longest delay at Beacon Road and Nantasket Avenue intersection among all alternatives.
Addressed intersections unconventional geometry, removes sight distance conflicts	Redirects all northbound traffic onto Nantasket Avenue north leg, increasing traffic through the residential neighborhood.
Lowest level of conflict points at intersection with all two-way movements.	
Provides space for multi-modal accommodation along both Nantasket Ave and Fitzpatrick Way	



Alternative 2 – One Way Nantasket

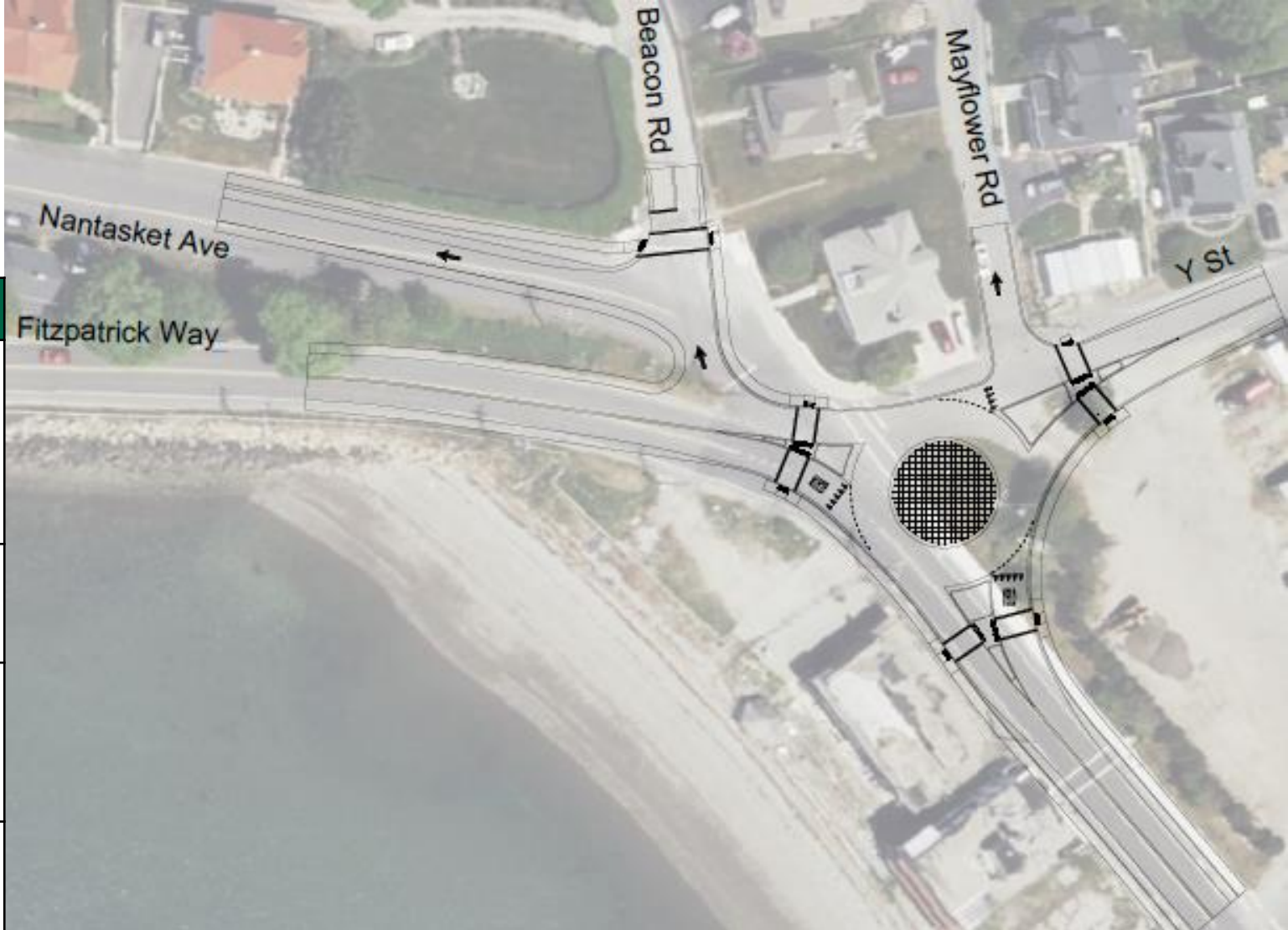


Advantages	Disadvantages
Decreased overall intersection delay at Fitzpatrick Way/Y Street	Longest delay of westbound approach from Y Street among all alternatives. Increased delay of Nantasket Avenue northbound approach at Fitzpatrick Way/Y Street and Beacon Rd/Nantasket Avenue intersections.
Limited ROW impacts, low maintenance cost after build.	May need ROW and would increase impervious areas to provide multi-modal accommodation.
Addressed intersections unconventional geometry, removes sight distance conflicts	Moderate construction cost/time
Fewer conflict points at intersection with all two-way movements than existing conditions.	
Maintains traffic on Fitzpatrick Way, reducing traffic impacts on neighborhood adjacent to Nantasket Avenue.	



Alternative 3 – Roundabout East

Advantages	Disadvantages
Decreased overall intersection delay at Fitzpatrick Way/Y Street intersection. Decrease all approaches delays and LOS at all-two intersections.	Land taking of Town Parking Lot
Addressed intersections unconventional geometry, removes sight distance conflicts.	High construction cost/time
Fewer point of conflicts at intersection than existing conditions and provides traffic calming.	Reduced opportunity for adjacent development
Maintains traffic on Fitzpatrick Way, reducing traffic impacts on neighborhood adjacent to Nantasket Avenue.	Required rerouting traffic on Mayflower Road, leading to longer travel time for vehicles exiting the neighborhood.
Easier left turn from Fitzpatrick Way onto Nantasket Avenue.	



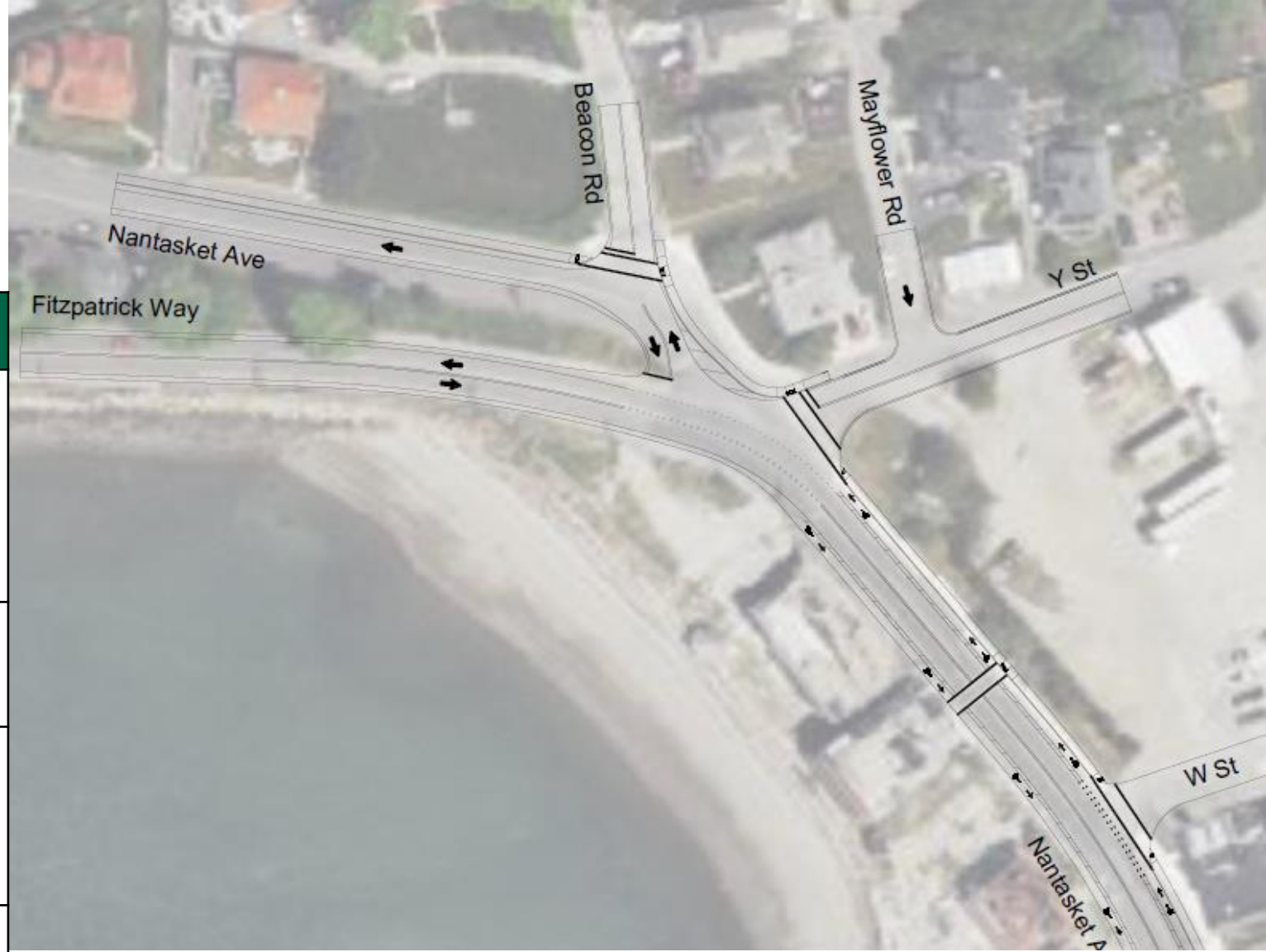
Alternative 4 – Roundabout West

Advantages	Disadvantages
Decreased overall intersection delay at Fitzpatrick Way/Y Street intersection. Decrease all approaches delays and LOS at all-two intersections.	Land taking of Town Parking Lot
Addressed intersections unconventional geometry, removes sight distance conflicts.	High construction cost/time
Fewer point of conflicts at intersection than existing conditions and provides traffic calming.	Reduced opportunity for adjacent development
Maintains traffic on Fitzpatrick Way, reducing traffic impacts on neighborhood adjacent to Nantasket Avenue.	Required rerouting traffic on Mayflower Road, leading to longer travel time for vehicles exiting the neighborhood.
Easier left turn from Fitzpatrick Way onto Nantasket Avenue.	



Alternative 5 – Two-Way Beacon

Advantages	Disadvantages
Maintains access from the neighborhood to points south.	Maintains the existing traffic delay and conflict points at the intersection.
Limited ROW impacts, low maintenance cost after build, low construction cost.	Doesn't allow for additional multi-modal accommodations.
Removes sight distance conflict at Beacon Street	
Maintains traffic on Fitzpatrick Way, reducing traffic impacts on neighborhood adjacent to Nantasket Avenue.	



Preferred Alternative 6 – Two-Way Nantasket

Advantages	Disadvantages
Maintains access from the neighborhood to points south.	Maintains the existing traffic delay and conflict points at the intersection.
Limited ROW impacts, low maintenance cost after build, low construction cost.	Doesn't allow for additional multi-modal accommodations.
Minimal rerouting of existing traffic	Retains sight distance conflict at Beacon Street
Maintains traffic on Fitzpatrick Way, reducing traffic impacts on neighborhood adjacent to Nantasket Avenue.	



Next Steps



Next Steps

- Obtain Comments on proposed traffic flow
- Please submit comments to NantasketReconfigurationStudy@gmail.com
 - By 5:00pm Wednesday 17th April
- Finalize Traffic Study and road layout
- Complete permitting
- Confirm Project Funding
 - Finalize grants and release of funding
 - Request at Town Meeting
- Issue Notice to Proceed to Contractor
- Construction anticipated mid 2024



Questions



Traffic Volumes

Location	85 th Percentile Speed	Average Weekday Volume	Weekday AM Peak Hour				Weekday PM Peak Hour			
			Time	Volume	K-Factor	Dir. Dist.	Time	Volume	K-Factor	Dir. Dist.
Fitzpatrick Way (West of Nantasket Avenue)	36.5 MPH	4,497	7:45 - 8:45	415	9.22 %	43.5 % EB / 56.5% WB	3:15 - 4:15	435	9.66%	57.5 % EB / 42.5% WB
Nantasket Ave (North of Fitzpatrick Way)	36 MPH	191	7:00 - 8:00	20	10.21 %	20.5 % NB / 79.5 % SB	4:30 - 5:30	19	9.79%	56.8 % NB / 43.2 % SB

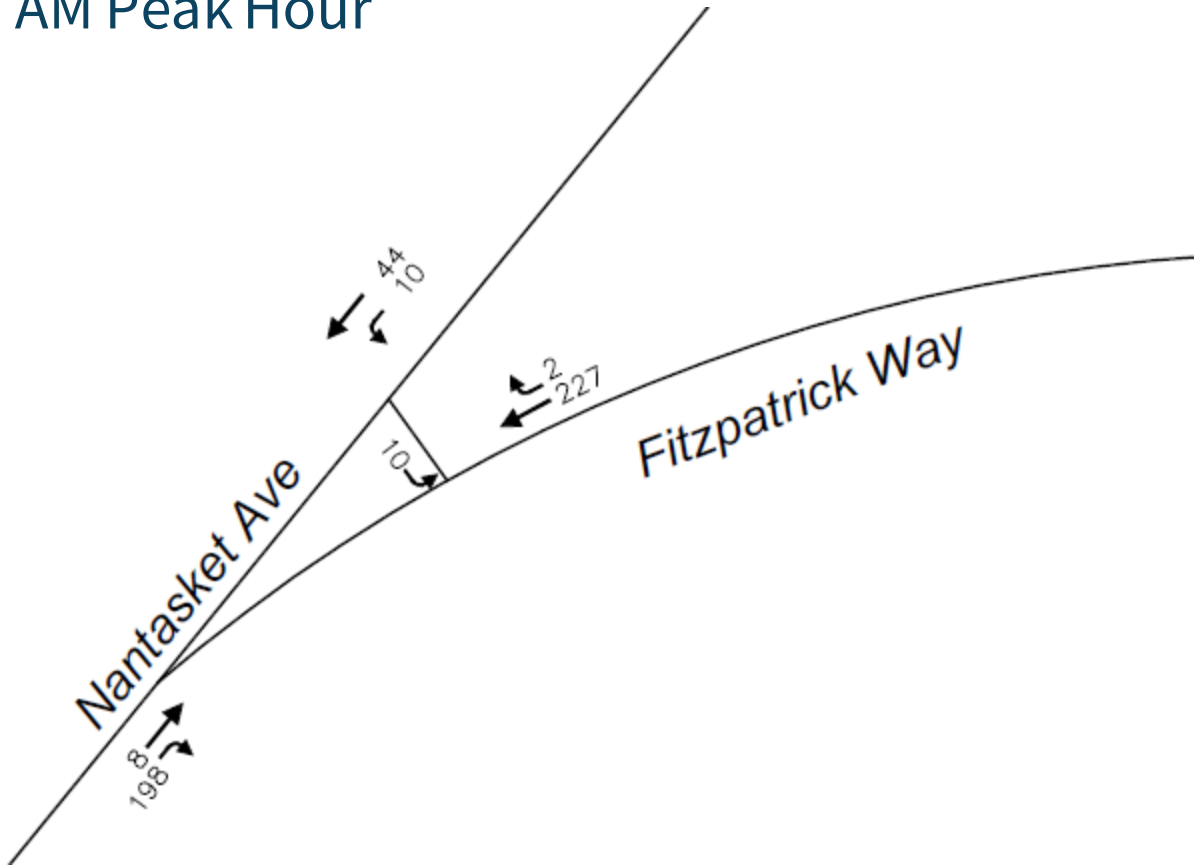
Abbreviations:
 vpd = vehicles per day
 vph = vehicles per hour

K-Factor = Percentage of daily traffic that occurs during the peak hour
 Dir. Dist. = Directional Distribution

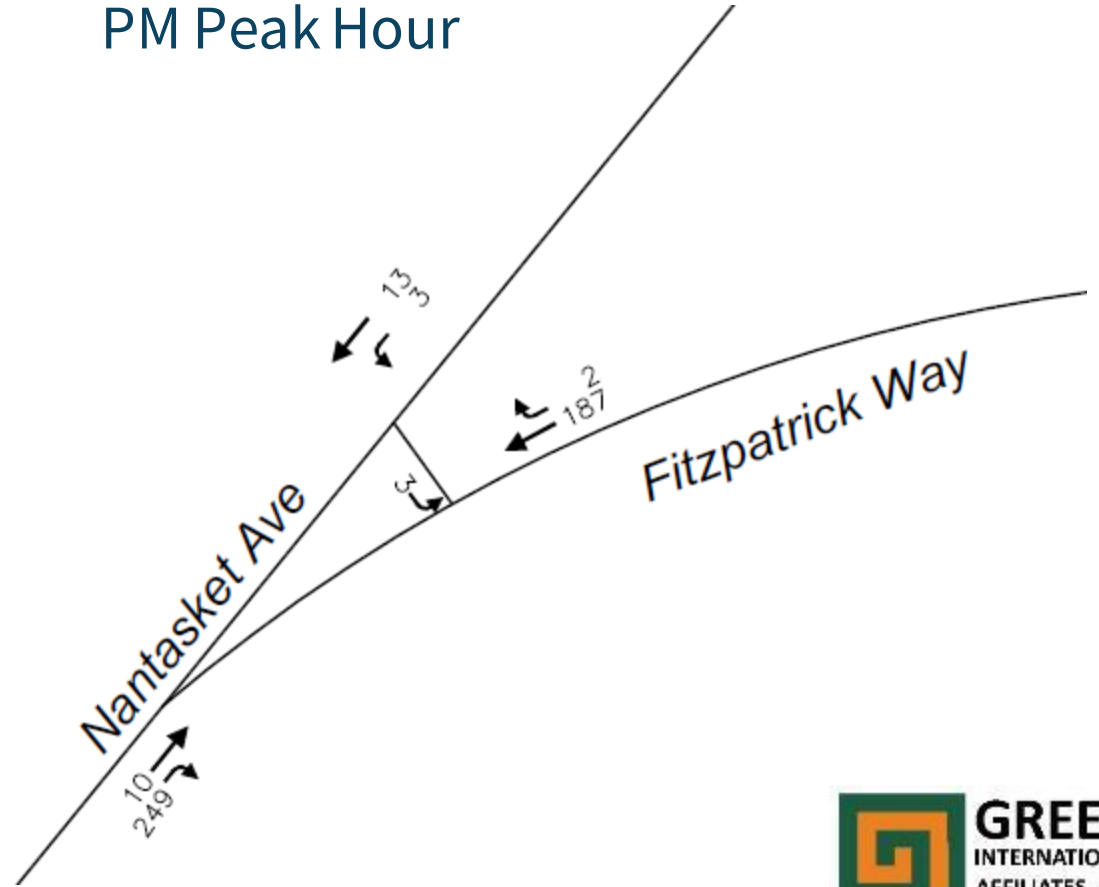


Turning Movements - Northwest

AM Peak Hour

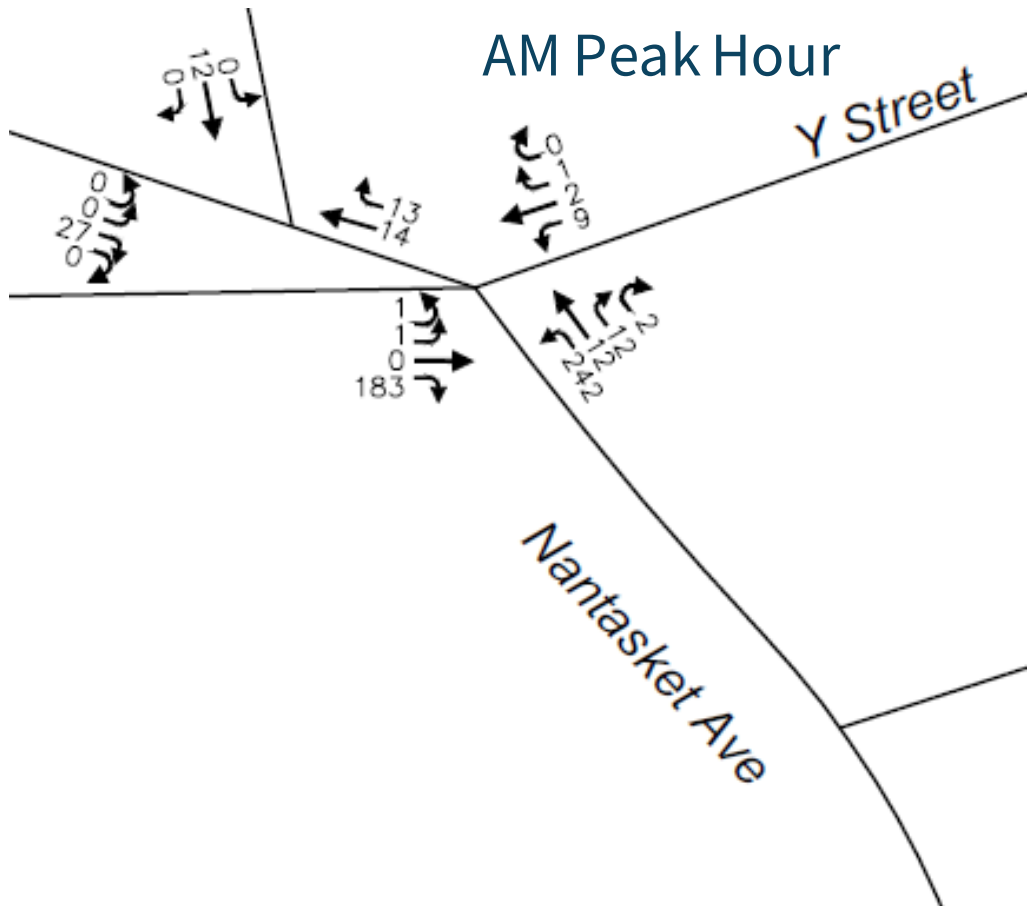


PM Peak Hour

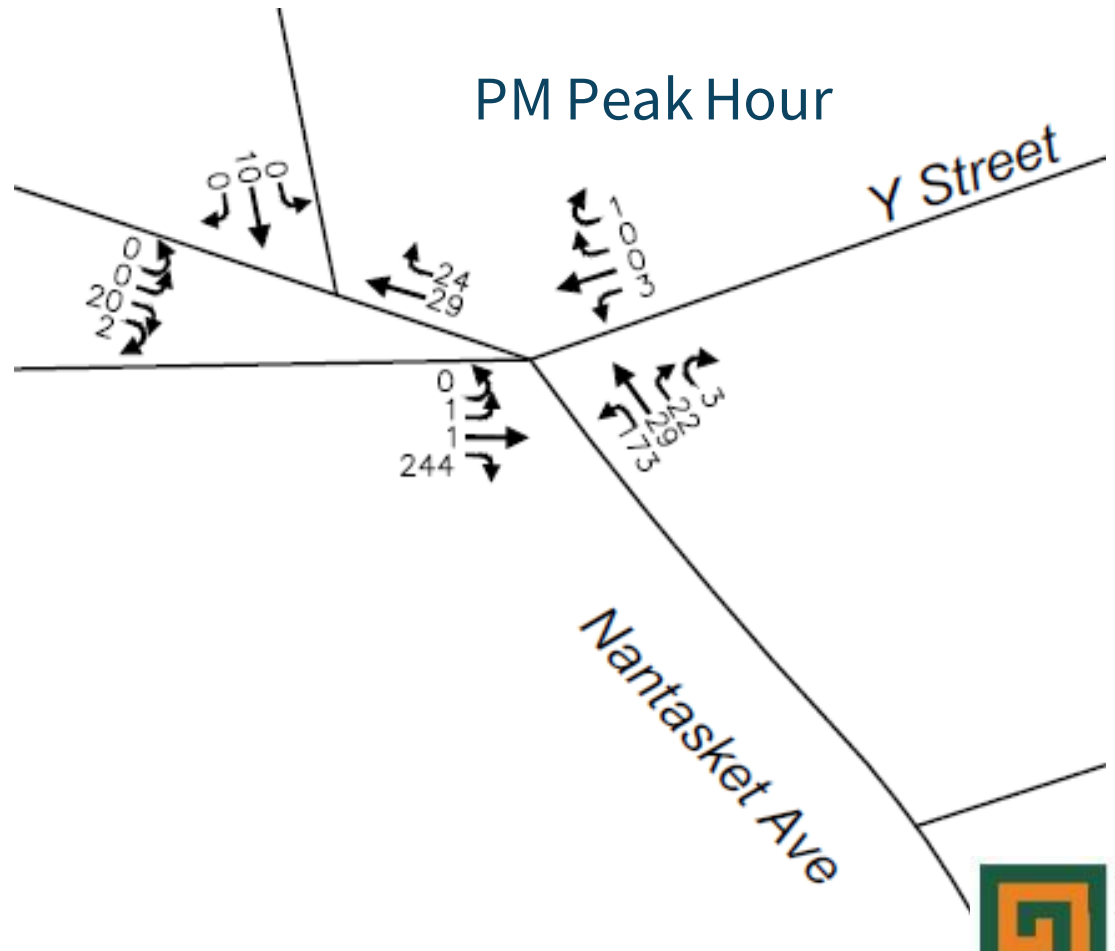


Turning Movements - Southeast

AM Peak Hour



PM Peak Hour



Crash History

	Nantasket Ave/Beacon Road and Fitzpatrick Way/Y Street			Nantasket Ave and Fitzpatrick Way		
	2021	2022	2023	2021	2022	2023
Severity						
Property Damage						1
Injury		2	1			
Collision Type						
Rear End			1			
Side Swipe		1				
Head On		1				
Other/Unknown						1
Totals	0	2	1	0	0	1
Annual Ave. Crashes	1.00			0.33		
Intersection Crash Rate	0.66			0.20		
MassDOT District 5 Average Crash Rate	0.57			0.57		



Stopping Sight Distance

Location	Sight Distance				
	Available	Posted Speed Limit		85th %-lie Speed	
	Measured (ft)	Minimum Required (ft)	Desirable (ft)	Minimum Required (ft)	Desirable (ft)
Stopping Sight Distance					
Nantasket Ave at W St					
Nantasket Ave Northbound	530	200	-	305	-
Nantasket Ave Southbound	367	200	-	305	-
Nantasket Ave/Beacon Rd at Fitzpatrick Way/Y St					
Fitzpatrick Way southbound	630	250	-	305	-
Nantasket Ave Northbound	420	200	-	305	-
Nantasket Ave at Fitzpatrick Way					
Fitzpatrick Way Eastbound	590	250	-	305	-
Fitzpatrick Way Westbound	530	250	-	305	-



Stopping Sight Distance

Location	Sight Distance				
	Available	Posted Speed Limit		85th %-lie Speed	
	Measured (ft)	Minimum Required (ft)	Desirable (ft)	Minimum Required (ft)	Desirable (ft)
Stopping Sight Distance					
Nantasket Ave at W St					
Nantasket Ave Northbound	530	200	-	305	-
Nantasket Ave Southbound	367	200	-	305	-
Nantasket Ave/Beacon Rd at Fitzpatrick Way/Y St					
Fitzpatrick Way southbound	630	250	-	305	-
Nantasket Ave Northbound	420	200	-	305	-
Nantasket Ave at Fitzpatrick Way					
Fitzpatrick Way Eastbound	590	250	-	305	-
Fitzpatrick Way Westbound	530	250	-	305	-



Intersection Sight Distance

Location	Sight Distance				
	Available	Posted Speed Limit		85th %-lie Speed	
	Measured (ft)	Minimum Required (ft)	Desirable (ft)	Minimum Required (ft)	Desirable (ft)
Intersection Sight Distance					
Nantasket Ave at W St					
W Street Looking Left	530	200	335	200	445
W Street Looking Right	367	200	335	200	445
Nantasket Ave/Beacon Rd at Fitzpatrick Way/Y St					
Y Street Looking Left	640	250	335	250	445
Y Street Looking Right	670	250	335	250	445
Nantasket Ave (North Leg) Looking Left	652	250	335	250	445
Nantasket Ave (North Leg) Looking Right	595	250	335	250	445
Beacon Road Looking Left	652	250	335	250	445
Beacon Road Looking Right	170	250	335	250	445
Nantasket Ave at Fitzpatrick Way					
Nantasket Ave Looking Left	490	250	390	250	445
Nantasket Ave Looking Right	595	250	390	250	445

