



Cape Cod Bridges Program

Bourne, Massachusetts

Appendix 4.2
Traffic Engineering Technical Report

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
CFR	Code of Federal Regulations
EB	eastbound
FHWA	Federal Highway Administration
HCM	Highway Capacity Manual
HCS	Highway Capacity Software
LOS	Level of Service
MassDOT	Massachusetts Department of Transportation
MEPA	Massachusetts Environmental Policy Act
MRER/EA	Major Rehabilitation Evaluation Report/Environmental Assessment
NB	northbound
O-D	origin-destination
Program	Cape Cod Bridges Program
SB	southbound
SUP	share-use path
USACE	U.S. Army Corps of Engineers
WB	westbound

1 Introduction

This Traffic Engineering Technical Report has been prepared in support of the Draft Environmental Impact Report for the Cape Cod Bridges Program (Program), in accordance with the following federal and state statutes, regulations, and guidance:

- Certificate of the Secretary of the Office of Energy and Environmental Affairs on the Environmental Notification Form for the Cape Cod Bridges Program (July 7, 2023).
- Massachusetts Environmental Policy Act (MEPA) regulations, 301 Code of Massachusetts Regulation (CMR) 11.00 (as amended, January 6, 2023).

2 Purpose and Need

In partnership with the Federal Highway Administration (FHWA) and the New England District of the U.S. Army Corps of Engineers (USACE), the Massachusetts Department of Transportation (MassDOT) proposes advancing the Program in the town of Bourne, Barnstable County, Massachusetts.

The purpose of the Program is to improve cross-canal mobility and accessibility between Cape Cod and mainland Massachusetts for all road users and to address the increasing maintenance needs and functional obsolescence of the aging Sagamore and Bourne Bridges, which the USACE owns, operates, and maintains as part of the Cape Cod Canal Federal Navigation Project.

The needs for the Program are as follows:

- Address the deteriorating structural condition and escalating maintenance demands of the Sagamore and Bourne Bridges.
- Address the substandard design elements of the Sagamore and Bourne Bridges, the immediate mainline approaches, and their adjacent interchanges and intersections.
- Improve vehicular traffic operations.
- Improve accommodations for pedestrians and bicyclists.

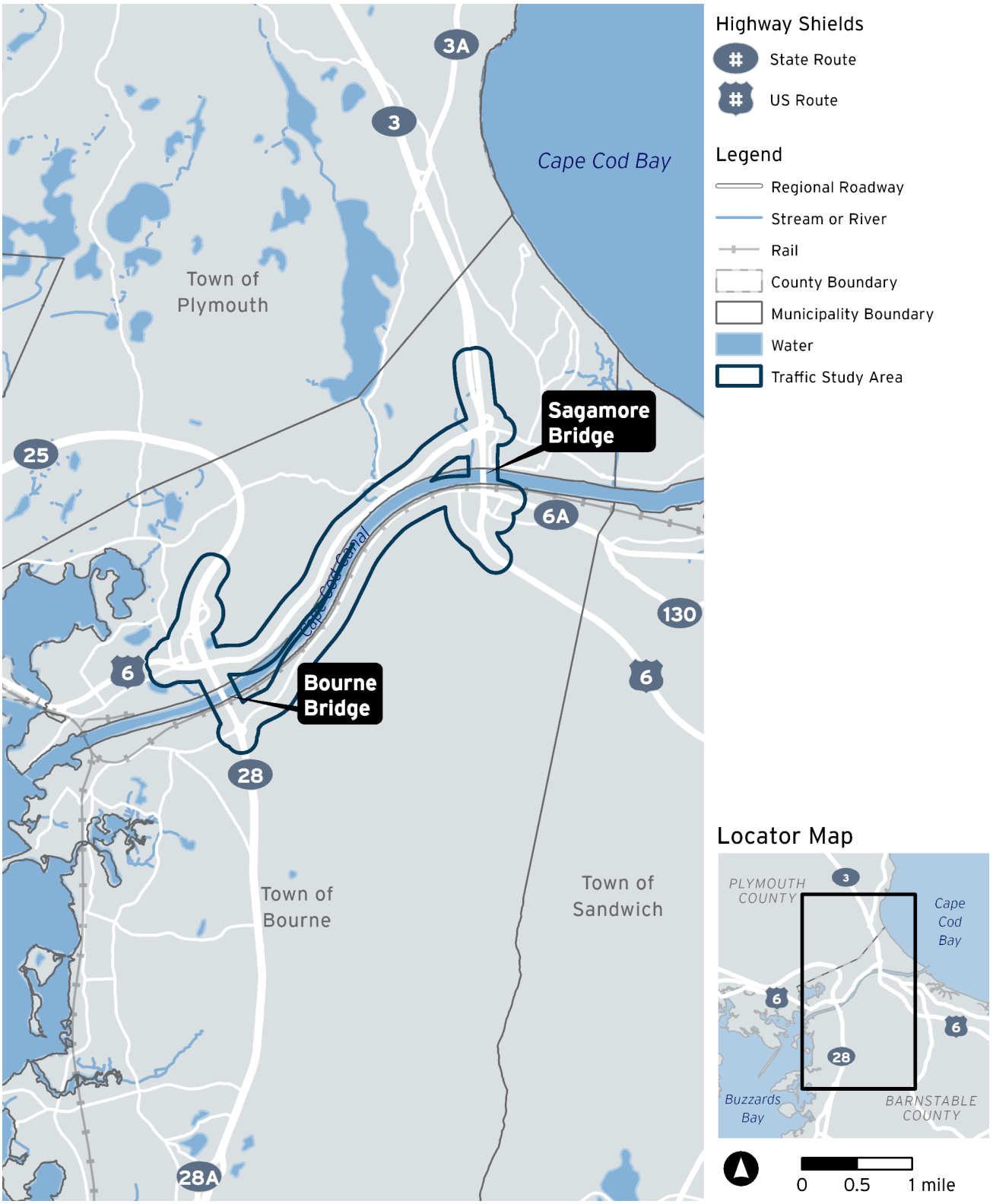
3 Study Area

The overall traffic Study Area includes major regional roadways, interchanges, and intersections within Plymouth, Wareham, Bourne, and Sandwich that are affected by traffic crossing Cape Cod Canal. The overall limits along State Route 3 begin at Interchange 3 (Herring Pond Road) north of Sagamore Bridge and extend to Interchange 61 (Quaker Meetinghouse Road) along U.S. Route 6 located southeast of Sagamore Bridge. The overall limits along State Route 25 begin at Interchange 3 (Maple Springs Road/Glen Charlie Road) northwest of Bourne Bridge and extend to the interchange between State Route 28 and State Route 151 located south of Bourne Bridge.

The Study Area (**Figure 3-1**) represents the area selected for detailed traffic operations analysis within the 2-mile area centered around Sagamore and Bourne Bridges. Critical roadways in the Study Area include the following:

- State Route 25
- State Route 28
- Main Street
- Buzzards Bay Bypass
- Scenic Highway
- Sandwich Road
- Trowbridge Road
- State Route 3
- U.S. Route 6
- State Road
- Cranberry Highway

Figure 3-1. Study Area



Source: Massachusetts Department of Transportation, 2024

4 Alternatives

4.1 No Build Alternative

The Sagamore and Bourne Bridges, as components of the Cape Cod Canal Federal Navigation Project, are federal assets that are managed by the USACE's New England District. The Commonwealth of Massachusetts owns the connecting major highway corridors at the bridges, which consist of the State Route 3/U.S. Route 6 corridor at Sagamore Bridge and the State Route 25/State Route 28 corridor at Bourne Bridge.

In the No Build Alternative, the Sagamore and Bourne Bridges would retain their current configuration of four 10-foot-wide travel lanes (two in each direction) with one 6-foot sidewalk and a 2-foot safety curb. The USACE would continue to own the Sagamore and Bourne Bridges and would implement a maintenance and repair program as needed to maintain bridge operations and public safety. MassDOT would continue to own, operate, and maintain the state highway interchange approach networks at the two bridges.

The No Build Alternative would include recently completed and proposed transportation improvements projects identified in the Federal Fiscal Year 2025-2029 Transportation Improvement Program for the Cape Cod Metropolitan Planning Organization.[1] **Table 4-1** identifies the Transportation Improvement Program projects within and near the Program to be incorporated in the No Build Alternative.

Table 4-1. Transportation Improvement Program Projects, 2025-2029

Project Number	Year	Transportation Project	Project Description	Status
606900	2020	Belmont Circle Traffic and Multimodal Improvements	Traffic and multimodal improvements at Belmont Circle at U.S. Route 6 and State Route 25 and State Route 28	Completed
608422	2022	Trail Improvements – Sandwich	Shared-use path on Service Road (State Route 130 to Chase Road)	Underway
610542	2023	Bourne Rotary Improvements	• Restriping Bourne Rotary to two lanes and adding a channelized right-turn lane from State Route 28 northbound to Sandwich Road eastbound • Adding signs at Bourne Rotary • Installing flashing beacons at the Bourne Rotary approaches	Underway

[1] The Transportation Improvement Program was endorsed on May 20, 2024, with subsequent amendments on November 18, 2024; December 16, 2024; February 24, 2025; and an adjustment on March 24, 2025

Project Number	Year	Transportation Project	Project Description	Status
613195	2024	Bridge Systematic Maintenance	Bridge deck replacement of the Quaker Meetinghouse Road Bridge over U.S. Route 6/Mid-Cape Highway as part of an overall bridge preservation strategy	Programmed
609262	2025	Bourne Rail Trail, Phase 1	First phase of four planned phases of the Bourne Rail Trail connection to the Shining Sea Bikeway to the south in Falmouth and to the Cape Cod Canal path (Canal Service Road) in the town of Bourne; Phase 1 is approximately one-half mile long within the existing right-of-way of the Old Colony Railroad (Woods Hole branch line) from the Canal Service Road to Monument Neck Road.	Programmed
610673	—	Bourne Rail Trail, Phase 2	Phase 2 of four planned phases of the Bourne Rail Trail connection to Shining Sea Bikeway to the south in Falmouth and to the Cape Cod Canal path (Canal Service Road) in the town of Bourne; Phase 2 is approximately 2 miles long from Monument Neck Road to Monk's Park/ Valley Bars Road.	Not Programmed
---	—	Bourne Rail Trail, Phase 3 and Phase 4A	Phase 3 and Phase 4A of four planned phases of the Bourne Rail Trail connection to Shining Sea Bikeway to the south in Falmouth	Not Programmed
607394/ 611998	—	Bourne Rail Trail, Phase 4B	Phase 4B of four planned phases of the Bourne Rail Trail connection to the Shining Sea Bikeway to the south in Falmouth and to the Cape Cod Canal path (Canal Service Road) in the town of Bourne; Phase 4B is approximately 1 mile long, extending the Shining Sea Bikeway from its current terminus in North Falmouth into the town of Bourne.	Not Programmed
606082	2025–2028	U.S. Route 6 Scenic Highway Median Installation	• Resurfacing • Safety improvements, including a raised center median and expanded shoulders to separate eastbound and westbound travel lanes • Drainage improvements • Traffic signal improvements at two intersections • Shared-use path	Programmed

Project Number	Year	Transportation Project	Project Description	Status
612053	2025	Bourne/Sandwich, Resurfacing and Related Work on U.S. Route 6	Improvements to pavement serviceability, condition, and roadway safety on U.S. Route 6 from Sagamore Bridge to the Sandwich town line (8.55 miles)	Programmed
613200	2026	Chase Road over U.S. Route 6 Bridge	Bridge deck replacement of Chase Road over U.S. Route 6 (Mid-Cape Highway) bridge structure in the town of Sandwich	Programmed
612063	2028	State Route 28 Resurfacing and Related Work	Improvements to pavement serviceability, condition, and roadway safety on MacArthur Boulevard (State Route 28) from Bourne Rotary to Otis Rotary	Programmed
613199	2028	U.S. Route 6 over State Route 130 Bridge	Bridge deck replacement of U.S. Route 6 (Mid-Cape Highway) bridge structure over State Route 130 in the town of Sandwich	Programmed
613271	—	Shared-use path, State Route 130 to Canal Service Road	Shared-use path from State Route 130 to Canal Service Road in the town of Sandwich	Not Programmed

The No Build Alternative represents the "Fix as Fails" Base Condition of the USACE's Major Rehabilitation Evaluation Report and Environmental Assessment (MRER/EA). In the No Build Alternative, the USACE would implement an ongoing program of continued inspections and maintenance and repair of both existing bridges as needed to maintain safety. No major rehabilitation efforts involving extensive repairs and replacement of major bridge components would occur. Structural components would be repaired, and critical elements would be replaced only when inspections indicate unsatisfactory reliability ratings. The MRER/EA indicates that both the Sagamore and Bourne Bridges are in deteriorated condition and well beyond the state in which actions and funding from the USACE's operations and maintenance program could correct the deficiencies and restore and sustain reliability. The USACE has indicated that as the bridges continue to age, routine maintenance and minor component replacement would result in an unacceptable structural condition. As a result, it is likely that lower vehicle weights, traffic volume restrictions, and speed limits would be required and posted to maintain continued bridge safety.

The No Build Alternative would not meet any of the Program's identified needs:

- It would not address the deteriorating structural condition and escalating maintenance demands of the existing bridges.
- It would not address the substandard design elements of the bridges, the immediate mainline approaches, and their adjacent interchanges and intersections.
- It would not improve vehicular traffic operations.

- It would not improve accommodations for pedestrians and bicyclists.

Per MEPA requirements, the No Build Alternative is included in the MEPA document as the base condition against which the Build Alternative is compared and evaluated. In accordance with MEPA, the No Build Alternative is the alternative of not undertaking a project, for the purpose of establishing a future baseline in relation to which a project can be described and analyzed, and its potential environmental impacts and mitigation measures can be assessed.[2]

4.2 Program Impacts

The Program's Build Alternative would incorporate the USACE's MRER/EA preferred alternative of replacing both highway bridges with new bridges, each with four through-travel lanes and two auxiliary lanes (in-kind bridge replacement that would be updated to comply with federal and state highway and design safety standards). The Build Alternative proposes to replace the Sagamore and Bourne Bridges with parallel, twin tied-arch bridge structures that would be supported on delta frames with an approximate 700-foot mainline span length. At both the bridge crossings, the replacement mainline alignment locations would be offline and inboard of the existing bridges on the side of the canal between the bridges. The Build Alternative would reconfigure the highway interchange approach networks north and south of Cape Cod Canal to align with the replacement bridges. The replacement bridges and their interchange approaches would accommodate shared-use pedestrian and bicycle paths that would connect to the local roadway network on both sides of Cape Cod Canal in the town of Bourne.

Table 4-2 presents a description of the Program elements/design parameters of the recommended Build Alternative: Replacement Highway Bridges Built to Modern Design Standards.

Table 4-2. Description of Design Parameters of the Recommended Build Alternative

Program Element/ Program Design Parameter	Description
Highway Bridges	Both the Sagamore and Bourne Bridges would be replaced with new bridges, with each comprising four through-travel lanes and two auxiliary lanes (i.e., an in-kind bridge replacement that would comply with federal and state highway and design safety standards).
Bridge Highway Cross-Section and Shared-Use Path	Each replacement bridge would provide four 12-foot-wide through-traffic lanes (two in each direction), two 12-foot-wide entrance/exit (auxiliary) lanes, a 4-foot-wide left shoulder, and a 10-foot-wide right shoulder. Right and left barriers would be offset an additional 2 feet beyond the limits of the shoulders.

[2] 310 CMR 11.07(6)(f).

Program Element/ Program Design Parameter	Description
	Each crossing location would include one bidirectional pedestrian and bicycle shared-use path (SUP), separated from vehicular traffic by the shoulder and barrier. The usable width of the SUP would be 14 feet wide on the bridge main span, 20 feet wide on the interchange approaches, and 12 feet wide on the connecting roadways.
Bridge Clearances	The replacement bridges would maintain the existing vertical clearance of 135 feet above mean high water and account for 3 feet of future sea level rise, for a total vertical clearance of 138 feet above mean high water. The replacement bridges would provide a minimum 500 feet of horizontal channel width to be consistent with existing conditions.
Main Span Length and Bridge Pier Location	The replacement bridges would have a main span length of approximately 700 feet, which would locate the bridge piers at the waterline adjacent to the service road (shoreline piers) into the riprap slope but above the low tide line.
Bridge Deck Configuration	Each replacement bridge would have two separate decks (twin structures).
Mainline Alignment	The mainline alignment locations at both crossings would be offline inboard: the main spans of each replacement bridge would be located outside the footprint of the existing bridge, approximately 10 feet apart and parallel to each other and on the side of the canal between the existing Sagamore Bridge and Bourne Bridge. At the Sagamore crossing, the replacement main spans would be west of the existing Sagamore Bridge toward Buzzards Bay. At the Bourne crossing, the replacement main spans would be east of the existing Bourne Bridge toward Cape Cod Bay.
Bridge Type	The replacement bridges would be twin tied-arch bridges with delta frames supporting an approximate 700-foot mainline span.
Interchange Approach Network: Sagamore North Quadrant	**Sagamore North Quadrant: Direct Connection to State Road (Option SN-8A).** This option would provide a single exit point from a relocated U.S. Route 6/ State Route 3. It would remove the Sagamore Bridge northbound off-ramp connection to Scenic Highway/Meetinghouse Lane eastbound and instead would connect to State Road, north of Scenic Highway/Meetinghouse Lane. The remaining ramp connections would remain similar to existing conditions. Signalized intersections along Scenic Highway and Meetinghouse Lane would be modified for new lane configurations. The intersection of State Road at State Route 3 northbound on-ramp would be modified to accommodate the addition of the new State Route 3 northbound off-ramp with installation of a traffic signal. This option would provide a SUP on the U.S. Route 6 eastbound main span that would provide connections to the south side of Scenic Highway, Canal Street, and Canal Service Road. This option would provide SUPs along the southern side of Scenic Highway and Meetinghouse Lane and along the eastern side of State Road to Homestead Avenue.

Program Element/ Program Design Parameter	Description
Interchange Approach Network: Sagamore South Quadrant	**Sagamore South Quadrant: Westbound On-Ramp Under U.S. Route 6 with Sandwich Road Extension (Option SS-3.1A).** This option would include Cranberry Highway Extension and would relocate the westbound on-ramp, so it would share the same entrance point as the eastbound on-ramp off Mid-Cape Connector. It would remove the Cranberry Highway to Sagamore Bridge westbound ramp, and it would provide a new westbound on-ramp connection from Mid-Cape Connector to Sagamore Bridge westbound. Modifications to lane arrangements at the intersections of Mid-Cape Connector with Sandwich Road and Cranberry Highway Extension would accommodate the revised traffic patterns resulting from the extension of Cranberry Highway and relocation of access to Scenic Highway eastbound, including modifications to the existing traffic signals. There would be a connection from Cranberry Highway Extension to Sandwich Road east of the new mainline bridge structure (Sandwich Road Extension). Intersection control would be provided at the intersection of the U.S. Route 6 westbound off-ramp with Cranberry Highway Extension. There would be modified access to Market Basket (Factory Outlet Road) and an access driveway to the former Christmas Tree Shops area. This option would include a SUP on the U.S. Route 6 eastbound main span that would provide connections to Factory Outlet Road, Sandwich Road, and Canal Service Road. Bicycle and pedestrian improvements would also be included on Cranberry Highway. This option would add a new connection through Cranberry Highway Extension to Mid-Cape Connector.

Program Element/ Program Design Parameter	Description
Interchange Approach Network: Bourne North Quadrant	**Bourne North Quadrant: Directional Interchange (Option BN-14.4b).** This option would provide a combination of direct connection ramps between State Route 25 and U.S. Route 6 (Scenic Highway). The ramp connecting State Route 25 eastbound to Scenic Highway would be a direct connect ramp, allowing access to Scenic Highway eastbound only. The new flyover ramp connecting Scenic Highway to State Route 25 would allow vehicles to bypass Belmont Circle and would not require an additional traffic signal. This ramp would utilize one of the travel lanes on Scenic Highway and would be a free-flowing movement to reduce congestion. The existing interchange ramp over the State Route 25 bridge would be relocated to lengthen the bridge to allow for this new southbound to eastbound ramp movement. The existing southbound off-ramp would be revised to be an option lane, improving the geometry and decision sight distance for drivers. The intersection control at Scenic Highway/Nightingale Road/Andy Oliva Drive would be a single-lane roundabout. The new flyover ramp over Scenic Highway would provide a SUP and a grade-separated crossing for pedestrians and bicyclists. The Scenic Highway lane configuration would be reduced from four lanes to three lanes, which would provide additional space for multimodal accommodations. It would provide one continuous 12-foot-wide SUP along the south side of Scenic Highway connecting to Belmont Circle and a 6-foot-wide sidewalk along the north side of Scenic Highway.
Interchange Approach Network: Bourne South Quadrant	**Bourne South Quadrant: Diamond Interchange (Option BS-2).** This option would eliminate Bourne Rotary and replace it with a grade-separated diamond interchange, which would allow through movements on State Route 28 to bypass the intersections with the non-mainline roadways. Both intersections within the diamond interchange would require a roundabout for intersection control (a single-lane dogbone-shaped roundabout). Changes to the Trowbridge Road and Sandwich Road underpass in this option would consist of a roundabout at a relocated Upper Cape Cod Regional Technical High School Driveway entrance. This option's SUP improvements would include providing connections to Trowbridge Road, Cape Cod Canal Service Road, and Bourne Recreation Area.

5 Analysis Procedures

5.1 Travel Demand Modeling Methodology

Due to the COVID-19 pandemic, the collection of traffic counts between 2020 and 2022 were restricted because travel patterns shifted during this period. Therefore, a travel demand model was developed utilizing 2014 count data, 2019 count data at select locations, and INRIX origin-destination data.

MassDOT developed a travel demand model for the future 2050 design year based on demographic projections (population, households, and employment) for the Cape Cod communities (prepared by

the UMass Donohue Institute for MassDOT's Office of Transportation Planning) and future growth projections specific to visitor trips. This demand model was used to develop the traffic volume projections for the 2050 No Build Alternative and 2050 Build Alternative scenarios.

5.2 Traffic Operations Analysis Methodology

- MassDOT chose the Fall Weekday PM period as the design time period in which to evaluate traffic operations. Through a review of the permanent count stations on the bridges, the Program team determined that the Fall Weekday PM period represents the 85th percentile traffic volumes. This means that 85% of the year, traffic volumes within the Study Area are equal to or lower than the Fall Weekday PM period. It is standard practice to use this method to determine the design period.
- MassDOT also analyzed the Summer Saturday Midday period to understand potential peak-season operations. However, traffic operations analysis conducted for this time period was not used as the basis for the development of the 2050 Build Alternative.
- This document summarizes only the Fall Weekday PM period for the 2050 Build Alternative traffic analysis.
- MassDOT analyzed traffic operations using the following software applications in accordance with applicable Highway Capacity Manual[3] and FHWA standards:[4]
  - Synchro: analysis software used to analyze unsignalized and signalized intersections along the local and arterial roadways.
  - Sidra: analysis software used to analyze traffic circles along the local and arterial roadways.
  - Highway Capacity Software (HCS): analysis software used to analyze multilane freeway segments, weaving segments and merge/diverge segments.
  - VISSIM: microsimulation software used to analyze the entire roadway network including roadways of differing functional classifications.

5.3 Traffic Operations Analysis Performance Measures

Existing capacity analyses assign a qualitative level of service (LOS) letter grade to traffic facilities during various peak hours. The concept of LOS is defined as a qualitative measure based on quantitative model outputs that describe operational conditions within a traffic stream and their perception by the traveling public. LOS is identified based on average delay per vehicle (measured in seconds per vehicle) at local signalized and unsignalized intersections and based on densities on freeway sections and at merge-diverge points (measured in vehicles per mile per lane). LOS is represented using letter grades "A" through "F", with LOS A representing very low delays and free-flow

[3] National Academies of Sciences, Engineering, and Medicine. 2016. Highway Capacity Manual 6th Edition: A Guide for Multimodal Mobility Analysis. https://doi.org/10.17226/24798

[4] Federal Highway Administration. 2019. Traffic Analysis Toolbox Volume III: Guidelines for Applying Traffic Microsimulation Modeling Software. https://ops.fhwa.dot.gov/publications/fhwahop18036/index.htm

conditions and LOS F representing unacceptable conditions for most drivers and conditions in which vehicle demand generally exceeds roadway capacity. LOS A, LOS B, and LOS C are generally considered acceptable conditions; LOS D is generally considered marginally acceptable conditions; and LOS E and LOS F are generally considered unacceptable to most drivers.

The levels of service for individual traffic movements at signalized and unsignalized intersections within the Study Area were determined based on criteria set forth in the Transportation Research Board's Highway Capacity Manual (HCM) 6th Edition. **Table 5-1** summarizes the delay criteria for each LOS letter grade at unsignalized and signalized intersections.

Table 5-1. Intersection Level of Service Criteria

LOS	Delay (seconds per vehicle)	
	Unsignalized	Signalized
A	≤10	≤10
B	>10 and ≤15	>10 and ≤20
C	>15 and ≤25	>20 and ≤35
D	>25 and ≤35	>35 and ≤55
E	>35 and ≤50	>55 and ≤80
F	>50	>80

Source: Highway Capacity Manual 6th Edition, Exhibits 19-8, 20-2, and 21-8

Table 5-2 summarizes the LOS criteria for traffic movements at traffic circles within the Study Area.

Table 5-2. Level of Service Criteria for Roundabouts

LOS	Delay (seconds per vehicle)
A	≤10
B	>10 and ≤15
C	>15 and ≤25
D	>25 and ≤35
E	>35 and ≤50
F	>50

Source: Highway Capacity Manual 6th Edition, Exhibit 22-8

The levels of service for multilane highways and/or freeways are based on vehicle density per mile of roadway segment and are measured in passenger cars per mile per lane (pc/mi/ln). Levels of service for the Study Area freeway segments and freeway merges/diverges were calculated using HCS 7 software, which is based on the HCM, 6th Edition. **Table 5-3** summarizes the LOS criteria for freeway segments. **Table 5-4** summarizes the LOS criteria for freeway merging and diverging segments.

Table 5-3. Level of Service Criteria for Freeway Segments

LOS	Density (pc/mi/ln)
A	≤11
B	>11-18
C	>18-26
D	>26-35
E	>35-45
F	Demand exceeds capacity OR density > 45

Source: Highway Capacity Manual 6th Edition, Exhibit 12-15
pc/mi/ln = passenger cars per mile per lane

Table 5-4. Level of Service Criteria for Freeway Merges and Diverges

LOS	Density (pc/mi/ln)
A	≤10
B	>10-20
C	>20-28
D	>28-35
E	>35
F	Demand exceeds capacity

Source: Highway Capacity Manual 6th Edition, Exhibit 14-3
pc/mi/ln = passenger cars per mile per lane

MassDOT summarized traffic operations in VISSIM for the 2019 Base Year in terms of LOS as well as on a network-wide basis to understand overall conditions within the Study Area transportation network. MassDOT recorded traffic operations in VISSIM for No Build Alternative and Build Alternative conditions on a network-wide basis only. The network-wide evaluation metrics included the following:

- Processed Vehicles – the total number of vehicles that have entered the network and reached their destination before the end of the simulation.
- Average Delay per Vehicle – the Total Network Delay averaged over the total number of vehicles that have been processed and those that are still in the network at the end of the simulation. Delay is an estimate of the extra time that a driver spends traveling compared to free-flow conditions.
- Total Travel Time – serves as a crucial performance metric, offering a direct indication of system efficiency and user experience. Decreased travel times signify improved mobility, enhanced accessibility, and potentially reduced road user costs. Conversely, prolonged travel times can signal

congestion, routing or infrastructure inefficiencies, and potential network bottlenecks. To assess the effectiveness of the analysis, travel-time evaluation was conducted in two facets:

- Network-wide Assessment – This analysis focused on evaluating performance using network-wide travel-time data, providing a comprehensive insight into transportation system efficiency, congestion levels, and overall effectiveness.
- Major O-D Evaluation – By measuring travel time between origin and destination (O-D) points, MassDOT assessed the efficiency of travel along major routes, which included total travel time of vehicles within or exiting the network.

The Major O-D Evaluation performance measure is compared only between the No Build Alternative and Build Alternative.

6 2019 Base Year Traffic Analysis

The 2019 Base Year traffic models include 2019 Base Year traffic volumes. **Attachment 1** includes the 2019 Base Year traffic volume flow maps.

6.1 Synchro Analysis

MassDOT built existing local intersection traffic models using Synchro 10. **Attachment 2, 2019 Base Year Traffic Analysis**, are the LOS tables that summarize the results of the existing capacity and queue analyses performed in Synchro for all six peak hours at all Study Area intersections. **Attachment 2, Figures B-1 and B-2**, provide a graphical representation of the intersection levels of service.

During the three fall peak hours (Weekday AM – 7:00 to 8:00, Weekday PM – 4:00 to 5:00, and Saturday Midday – 12:00 PM to 1:00 PM), most of the intersections analyzed operate at overall intersection LOS D or better. The following locations within the focus area operate at LOS E or LOS F during one or more of the fall peak hours:

- Sandwich Road/County Road at Trowbridge Road/Shore Road (Weekday PM – LOS F)
- Sandwich Road at Bourne Rotary Connector (Weekday AM and PM – LOS F; Saturday Midday – LOS E)
- Sandwich Road at Upper Cape Cod Technical School (Weekday PM – LOS F)
- Meetinghouse Lane at State Road/Canal Street (Weekday PM – LOS E)
- Cranberry Highway at Sandwich Road/Regency Drive (Weekday AM – LOS E; Weekday PM and Saturday Midday – LOS F)

During the three summer peak hours (Weekday AM – 7:00 to 8:00, Weekday PM – 4:00 to 5:00, and Saturday Midday – 12:00 PM to 1:00PM), most of the intersections analyzed operate at overall intersection LOS D or better, with the following exceptions:

- Scenic Highway (U.S. Route 6) at Nightingale Road/Andy Oliva Drive (Weekday PM – LOS F)
- Sandwich Road/County Road at Trowbridge Road/Shore Road (Weekday PM – LOS F)

- Sandwich Road at Bourne Rotary Connector (All Peak Hours – LOS F)
- Meetinghouse Lane at State Road/Canal Street (Weekday PM – LOS E)
- Cranberry Highway at Sandwich Road/Regency Drive (Weekday AM and PM – LOS F)

6.2 Sidra Analysis

MassDOT analyzed unsignalized traffic circles and rotaries within the Study Area using Sidra 7 software. **Attachment 2, Tables B-1 and B-2**, are LOS tables that summarize the results of the Sidra analysis performed for all six peak hours. **Attachment 2, Figures B-1 and B-2**, are the graphical representation of the levels of service for each of these traffic circles are provided in, as well.

Bourne Rotary and Belmont Circle each operate at overall LOS F during all three peak hours (Weekday AM, Weekday PM, and Saturday Midday) analyzed for the fall and summer seasons. Buzzards Bay Rotary carries lower volumes than the other two traffic circles and operates at overall LOS A or LOS B during all six peak hours analyzed.

6.3 Highway Capacity Software 7 Analysis

The Program team used HCS 7 software to calculate levels of service for the Study Area freeway segments and freeway merges/diverges. The HCS analysis was performed for all six analysis periods at the immediate key locations north and south of Bourne Bridge and Sagamore Bridge. MassDOT calibrated the capacity adjustment factors and safety adjustment factors to reflect the existing operation conditions, which are tabulated in **Attachment 2, Tables B-7 and B-8**. **Attachment 2, Figures B-3 and B-4**, provide graphical representations of the LOS and density results of the freeway segments and merging/diverging segments.

Most freeway and merge/diverge segments throughout the Study Area operate at LOS C or better during all six peak hours analyzed. In general, sections closer to each of the bridges operate at unacceptable LOS E or LOS F during one or more peak hours. The following locations operate at LOS E or LOS F during one or more peak hours, consistent with field observations:

- State Route 25 Southbound (SB) approaching Exit 10 (Belmont Circle) – (Fall Weekday AM and Fall/Summer Saturday Midday – LOS E; Summer Weekday PM – LOS F)
- Bourne Bridge SB – (Summer Weekday AM, Fall Weekday PM, and Fall Saturday Midday – LOS E; Fall Weekday AM, Summer Weekday PM, and Summer Saturday Midday – LOS F)
- Bourne Bridge Northbound (NB) – (Fall Weekday PM – LOS E; Summer Weekday PM – LOS F)
- State Route 25 SB Exit 10 merge – (Summer Weekday PM and Summer Saturday Midday – LOS F)
- State Route 3 SB approaching Exit 1A (Scenic Highway) – (Fall Weekday PM and Summer Saturday Midday – LOS E; Summer Weekday PM and Fall Saturday Midday – LOS F)
- Sagamore Bridge SB – (Fall/Summer Weekday AM and Fall Saturday Midday – LOS E; Summer Weekday PM and Summer Saturday Midday – LOS F)

- Sagamore Bridge NB – (Fall/Summer Weekday AM and Fall Saturday Midday – LOS E; Fall/Summer Weekday PM and Summer Saturday Midday – LOS F)
- U.S. Route 6 SB south of Sagamore Bridge – (Summer Saturday Midday – LOS E)
- U.S. Route 6 NB south of Sagamore Bridge – (Fall Weekday PM – LOS F)
- State Route 3 SB Diverge to Exit 1A – (Summer Weekday PM – LOS F)
- U.S. Route 6 NB Merge from Cranberry Highway – (Summer Weekday PM – LOS F)

6.4 VISSIM 11 Analysis

Existing conditions were modeled for each of the six peak hours previously identified using PTV's VISSIM traffic microsimulation software for all key intersections, rotaries and traffic circles, and freeway segments within a 2-mile radius of the Sagamore and Bourne Bridges. **Attachment 2, Tables B-4 through B-6**, present the VISSIM model results.

MassDOT calibrated models to match existing conditions such as vehicle queueing and traffic volumes as well as travel-time information from INRIX. **Attachment 2, Table B-3**, presents a comparison of model outputs to real-world data. **Attachment 2, Table B-9**, presents the factors that MassDOT modified during the calibration process.

6.4.1 Level of Service

According to the VISSIM model simulations, congestion was observed along all major Study Area highways under all study peak periods. **Attachment 2, Tables B-4 through B-6**, present the model LOS results. **Attachment 2, Figures B-6 through B-8**, present graphical representations of the levels of service along the Study Area highways.

6.4.2 Processed Volumes

Processed volumes indicate the number of vehicles that were able to move through the Study Area in an hour, which is based on the demand and capacity. **Attachment 2, Table B-5**, provides a comparison between the VISSIM processed volumes and 2019 Base Year traffic volume flow maps. **Attachment 2, Table B-5**, highlights the locations in which the VISSIM model processes less than 80% of the expected volume based on 2019 Base Year traffic volume flow maps. Such differences could be expected in a microsimulation model of this size and could be attributed to the upward balancing of traffic volumes that are unable to be processed through congested intersections due to capacity constraints. **Table 6-1** summarizes the overall number of vehicles processed by the 2019 Base Year Fall PM VISSIM model, which serves as the design peak hour, as well as the percentage of vehicles processed compared to the vehicles input into the model. Overall, the VISSIM model processed slightly less than 80% of the expected volume.

Table 6-1. 2019 Base Year VISSIM Processed Vehicles

Alternative	Total Number of Processed Vehicles	Percentage of Processed Vehicles Compared to Vehicle Input
2019 Base Year	10,705	79.7

6.4.3 Travel Times

Table 6-2 provides a summary of the 2019 Base Year VISSIM model network travel-time results for the Fall Weekday PM peak hour. The network travel times are the summation of the travel times for all vehicles within the network.

Table 6-2. 2019 Base Year VISSIM Model Network Travel-Time Results

Metric	Fall Weekday PM Peak
Network Travel Times (vehicle-hours traveled)	2,397

7 2050 Design Year Traffic Analysis

MassDOT updated the existing conditions traffic models developed for the 2019 Base Year to include the projected 2050 Design Year traffic volumes. **Attachment 3** includes the 2050 No Build Alternative traffic volume flow maps. **Attachment 4** includes the 2050 Build Alternative traffic volume flow maps.

7.1.1 2050 Design Year Synchro Analysis

LOS tables summarizing the 2050 No Build Alternative and 2050 Build Alternative capacity and queue analyses performed in Synchro for Fall PM and Summer Saturday Midday at all Study Area intersections are provided in **Attachment 3, Table C-1**, for the 2050 No Build Alternative models, and **Attachment 4, Table D-1**, for the 2050 Build Alternative models. Graphical representations of the intersection levels of service are provided in **Attachment 3, Figure C-3**, for the 2050 No Build Alternative analysis and **Attachment 4, Figure D-3**, for the 2050 Build Alternative analysis.

During the Fall PM peak hour, most of the intersections analyzed operate at overall intersection LOS D or better. The following locations within the focus area operate at LOS E or F:

- Scenic Highway (U.S. Route 6) at Nightingale Road/Andy Oliva Drive (LOS E – 2050 No Build Alternative)
- Sandwich Road/County Road at Trowbridge Road/Shore Road (LOS F – 2050 No Build Alternative)
- Sandwich Road at Bourne Rotary Connector (LOS F – 2050 No Build and 2050 Build Alternatives)
- Sandwich Road at Upper Cape Cod Technical School (LOS F – 2050 No Build and 2050 Build Alternatives)
- Scenic Highway (U.S. Route 6) at State Route 3 SB Off-Ramp (LOS E – 2050 No Build Alternative)

- Meetinghouse Lane at State Road/Canal Street (LOS F – 2050 No Build Alternative)
- Cranberry Highway at Sandwich Road/Regency Drive (LOS F – 2050 No Build and 2050 Build Alternatives)

During the Summer Saturday Midday peak hour, most of the intersections analyzed operate at overall intersection LOS D or better, with the following exceptions:

- Scenic Highway (U.S. Route 6) at Nightingale Road/Andy Oliva Drive (LOS F – 2050 No Build Alternative)
- Sandwich Road/County Road at Trowbridge Road/Shore Road (LOS F – 2050 No Build Alternative)
- Sandwich Road at Bourne Rotary Connector (LOS E – 2050 Build Alternative; LOS F – 2050 No Build Alternative)
- Scenic Highway (U.S. Route 6) at Church Lane (LOS F – 2050 No Build Alternative)
- Scenic Highway (U.S. Route 6) at State Route 3 SB Off-Ramp (LOS E – 2050 No Build Alternative)
- Cranberry Highway at Sandwich Road/Regency Drive (LOS F – 2050 No Build Alternative)

Further design refinement will seek to improve estimated traffic operations at locations currently estimated to operate at LOS E or F.

7.1.2 2050 Design Year Sidra Analysis

LOS tables that summarize the results of the projected 2050 No Build Alternative and 2050 Build Alternative capacity and queue analyses performed in Sidra for Fall PM and Summer Saturday Midday peak hours, at all Study Area unsignalized traffic circles and rotaries can be found in **Attachment 3, Table C-1**, for the 2050 No Build Alternative analysis and **Attachment 4, Table D-1**, for the 2050 Build Alternative analysis. A graphical representation of the intersection levels of service is provided in **Attachment 3, Figure C-3**, for the 2050 No Build Alternative analysis and **Attachment 4, Figure D-3**, for the 2050 Build Alternative analysis.

Bourne Rotary, which was analyzed only under the 2050 No Build Alternative, and Belmont Circle each operate at overall LOS F during the peak hours analyzed for the fall and summer seasons. Heavy traffic volumes from all approaches combined with geometric constraints contribute to the poor levels of service at both intersections. Buzzards Bay Rotary carries lower volumes than the other two traffic circles and operates at overall LOS A or LOS B during Fall PM peak hour and LOS E or LOS F during the Summer Saturday Midday peak hour.

7.1.3 2050 Design Year Highway Capacity Software 7 Analysis

MassDOT performed HCS analysis for Fall PM and Summer Saturday Midday peak hours at the immediate key locations north and south of Bourne Bridge and Sagamore Bridge. A graphical representation of the LOS and density results of the freeway segments and merging-diverging

segments is provided in **Attachment 3, Figure C-4**, for the 2050 No Build Alternative and **Attachment 4, Figure D-4**, for the 2050 Build Alternative.

Most freeway and weave/merge/diverge sections throughout the Study Area operate at LOS C or better during both analysis periods. The following locations within the focus area operate at LOS E or LOS F during Fall PM peak hour:

- State Route 25 SB north of Bourne Bridge (LOS F – 2050 Build Alternative)
- Bourne Bridge SB – (LOS E – 2050 No Build Alternative)
- Bourne Bridge NB – (LOS E – 2050 No Build Alternative)
- State Route 3 SB north of Sagamore Bridge – (LOS E – 2050 No Build and 2050 Build Alternatives)
- Sagamore Bridge Westbound (WB) – (LOS F – 2050 No Build Alternative)
- U.S. Route 6 WB south of Sagamore Bridge (LOS F – 2050 Build Alternative)

The following locations within the focus area operate at LOS E or LOS F during Summer Saturday peak hour:

- State Route 25 SB north of Bourne Bridge – (LOS E – 2050 No Build Alternative; LOS F – 2050 Build Alternative)
- Bourne Bridge SB – (LOS F – 2050 No Build Alternative)
- State Route 25 SB Exit 10 merge – (LOS F – 2050 No Build Alternative)
- State Route 28 SB merge – (LOS F – 2050 Build Alternative)
- State Route 3 SB north of Sagamore Bridge – (LOS E – 2050 No Build Alternative; LOS F – 2050 Build Alternative)
- Sagamore Bridge Eastbound (EB) – (LOS F – 2050 No Build Alternative)
- Sagamore Bridge WB – (LOS F – 2050 No Build Alternative)
- U.S. Route 6 EB south of Sagamore Bridge – (LOS F – 2050 Build Alternative)
- U.S. Route 6 WB south of Sagamore Bridge – (LOS E – 2050 No Build and 2050 Build Alternatives)

Fewer freeway and weave/merge/diverge sections are anticipated to operate at LOS E or F during either analysis period under the 2050 Build Alternative.

7.1.4 2050 Design Year VISSIM 11 Analysis

The 2050 No Build Alternative and Build Alternative conditions are compared in VISSIM on a network-wide basis to understand overall benefits to the Sagamore and Bourne Bridges area transportation network.

The VISSIM model predicted vehicle queues are presented in **Attachment 3, Figure C-5**, for the 2050 No Build Alternative and **Attachment 4, Figure D-6**, for the 2050 Build Alternative.

7.1.4.1 Processed Vehicles

Table 7-1 depicts the total number of vehicles processed by the 2050 No Build Alternative and 2050 Build Alternative VISSIM models as well as the percentage of processed vehicles compared to the model vehicle input.

Table 7-1. 2050 Design Year VISSIM Processed Vehicles

Alternative	Total Number of Processed Vehicles	Percentage of Processed Vehicles Compared to Vehicle Input
2050 No Build Alternative	11,443	82.1%
2050 Build Alternative	12,402	85.9%

The data presented indicates that the 2050 Build Alternative model processes more vehicles than the 2050 No Build Alternative model. This suggests the 2050 Build Alternative network has a greater capacity to meet vehicle demands. Processed vehicles can also be a product of the number of vehicles input into the model. Relative to the vehicles input into each model, **Table 7-1** indicates that the 2050 Build Alternative also processes a greater percentage of the vehicles input into the model than the 2050 No Build Alternative.

7.1.4.2 Average Delay Per Vehicle Processed

Table 7-2 compares the average delay per vehicle processed (in minutes) of the 2050 No Build Alternative to the 2050 Build Alternative. The 2050 Build Alternative is estimated to reduce the average delay per vehicle processed from 4 minutes to 3.3 minutes. This metric indicates that vehicles in the 2050 Build Alternative model typically spend less time waiting or traveling slower than free-flow speed due to congestion than the 2050 No Build Alternative model.

Table 7-2. 2050 Design Year VISSIM Average Delay Per Vehicle (in minutes)

Alternative	Average Delay Per Vehicle (minutes)
2050 No Build Alternative	4.0
2050 Build Alternative	3.3

7.1.4.3 Travel Times

Total Network Travel Time

Table 7-3 compares the total network travel time for all vehicles that have processed through each network along with those vehicles active at the end of the simulation for the 2050 No Build Alternative and 2050 Build Alternative during the Fall Weekday PM peak hour. Despite processing more vehicles, the 2050 Build Alternative model recorded less total travel time (2,240 hours) in the network than the 2050 No Build Alternative (2,879 hours).

Table 7-3. 2050 Design Year VISSIM Travel Time (in hours)

Alternative	Total Network Travel Time (hours)
2050 No Build Alternative	2,879
2050 Build Alternative	2,240

Major Origin-Destination Evaluation

Travel time between O-D points along major routes within the Study Area was measured in VISSIM. The travel-time measurements presented in this technical report encompass both diagonal bridge crossings and through-bridge crossings.

Diagonal bridge crossings refer to vehicles entering into the Study Area from either the Bourne Bridge or Sagamore Bridge side, using Scenic Highway or Sandwich Road, and exiting via the Sagamore Bridge or Bourne Bridge side. Major diagonal crossing O-D routes include the following:

- State Route 25 EB to U.S. Route 6 EB
- State Route 28 NB to State Route 3 NB
- State Route 3 SB to State Route 28 SB
- U.S. Route 6 WB to State Route 25 WB

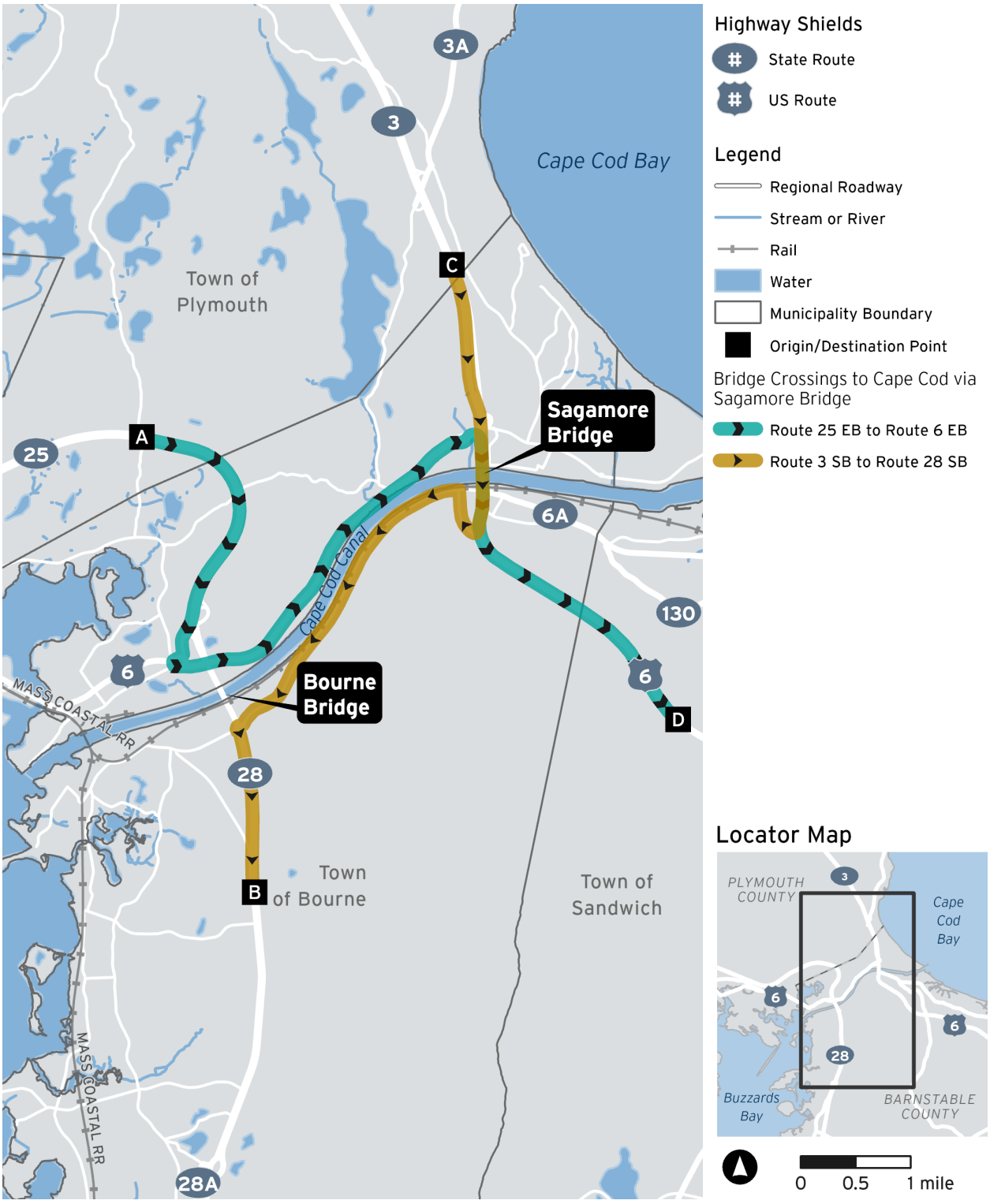
The State Route 25 EB to State Route 3 NB travel route is projected to be a major O-D route in the 2050 Design Year and is also discussed in the **Diagonal Bridge Crossings** section. **Figure 7-1** depicts the diagonal bridge crossings entering Cape Cod via Sagamore Bridge. **Figure 7-2** depicts the diagonal bridge crossings entering Cape Cod via Bourne Bridge. **Figure 7-3** depicts the diagonal bridge crossings exiting Cape Cod and should be noted are estimated to primarily use Sagamore Bridge.

Through-bridge crossings refer to direct passage through the Study Area along State Route 25/28 via Bourne Bridge or along State Route 3/U.S. Route 6 via Sagamore Bridge and are defined as follows:

- State Route 25 EB to State Route 28 SB
- State Route 28 NB to State Route 25 WB
- State Route 3 SB to U.S. Route 6 EB
- U.S. Route 6 WB to State Route 3 NB

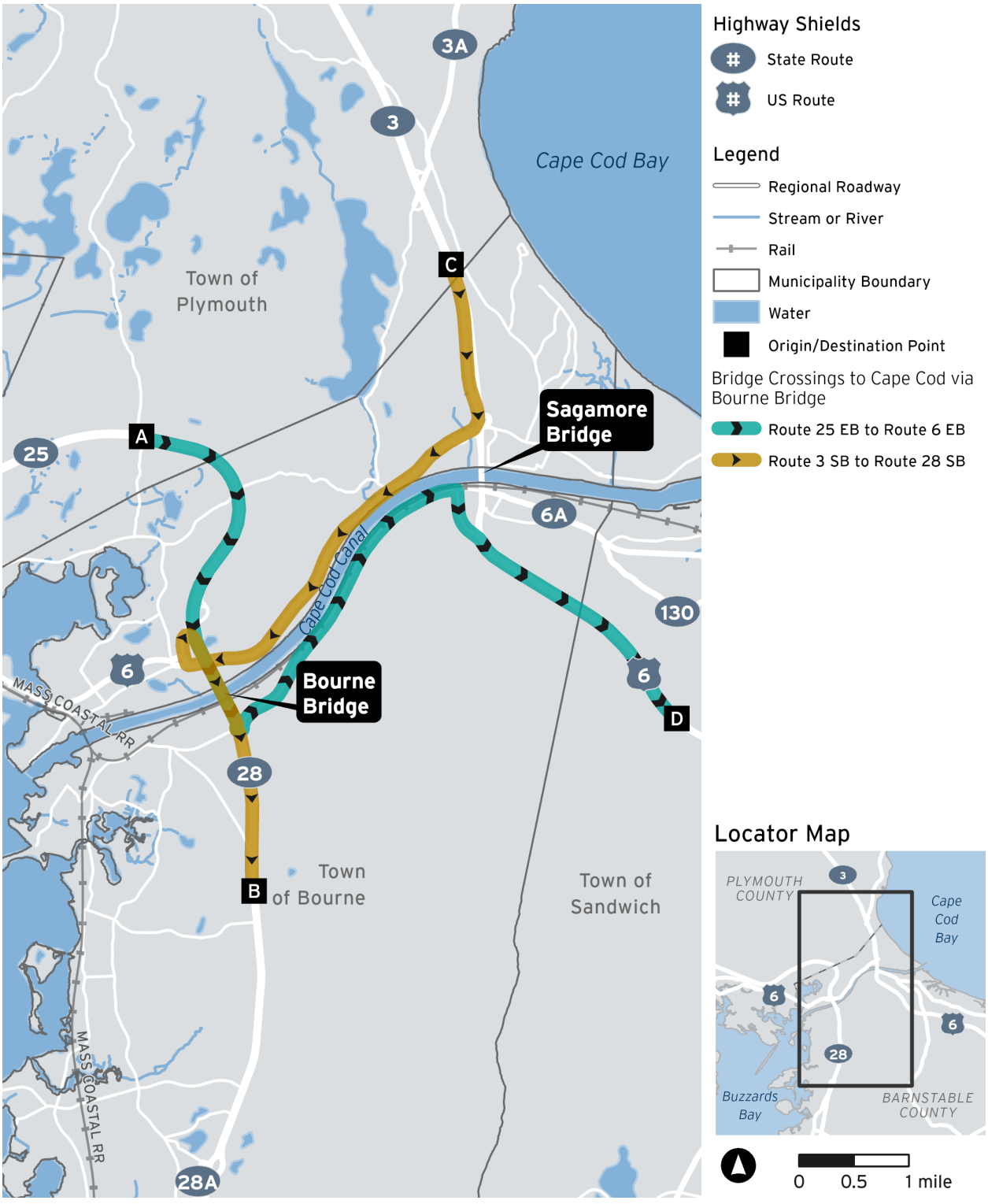
Figure 7-4 and **Figure 7-5** depict through-bridge crossings entering and exiting Cape Cod.

Figure 7-1. Diagonal Bridge Crossings from Mainland to Cape Cod via Sagamore Bridge



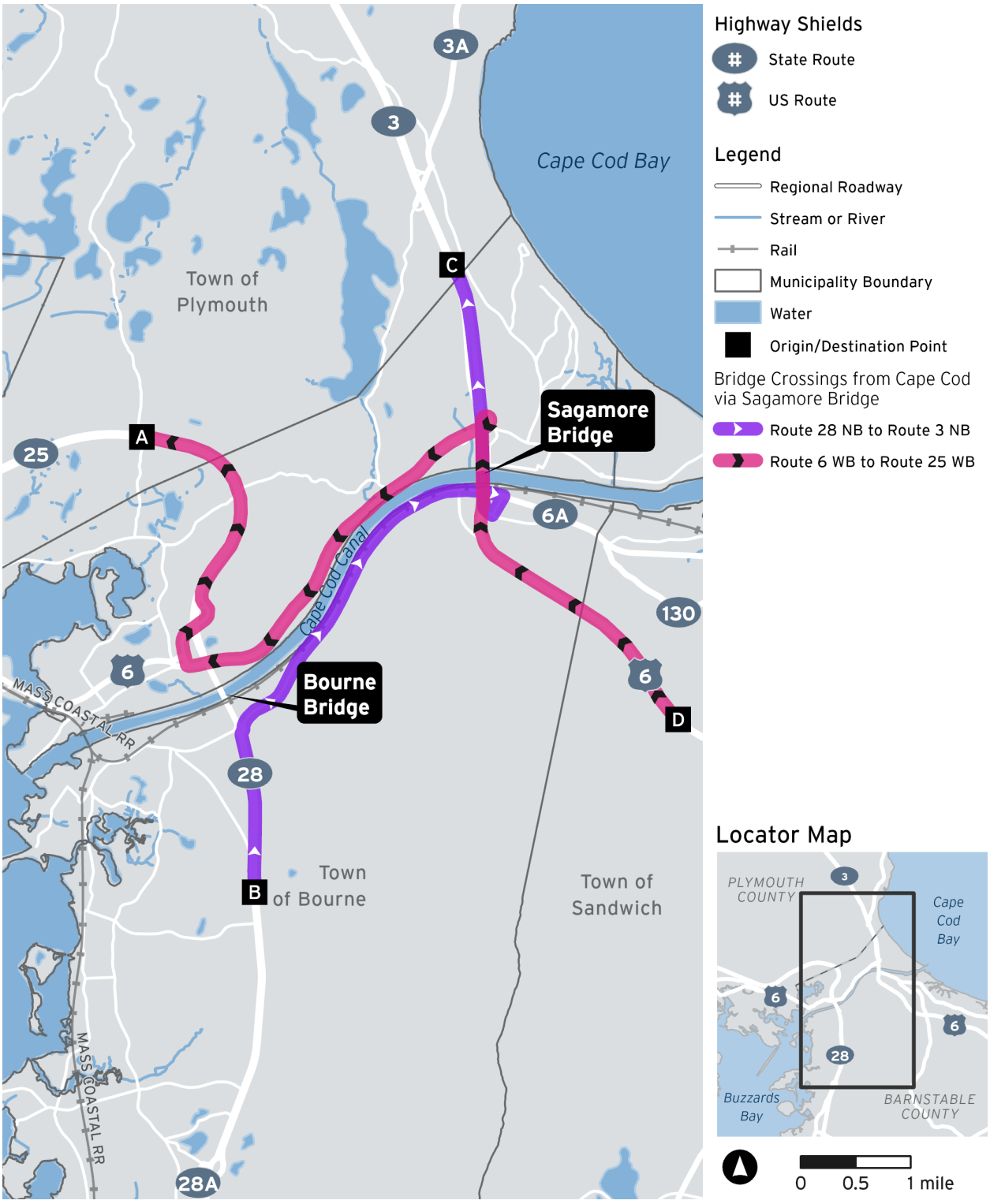
Source: Massachusetts Department of Transportation, 2024

Figure 7-2. Diagonal Bridge Crossings from Mainland to Cape Cod via Bourne Bridge



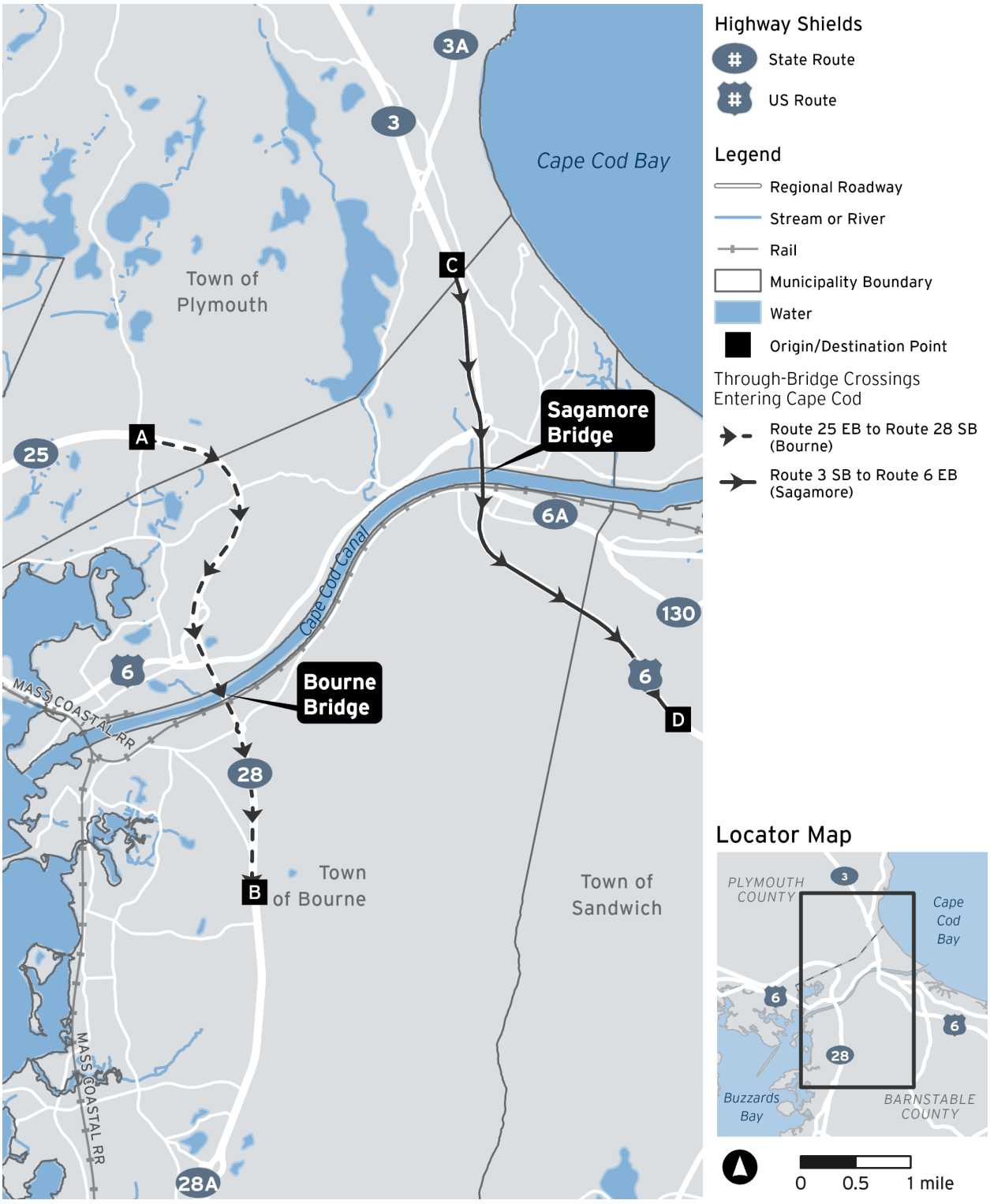
Source: Massachusetts Department of Transportation, 2024

Figure 7-3. Diagonal Bridge Crossings from Cape Cod to Mainland via Sagamore Bridge



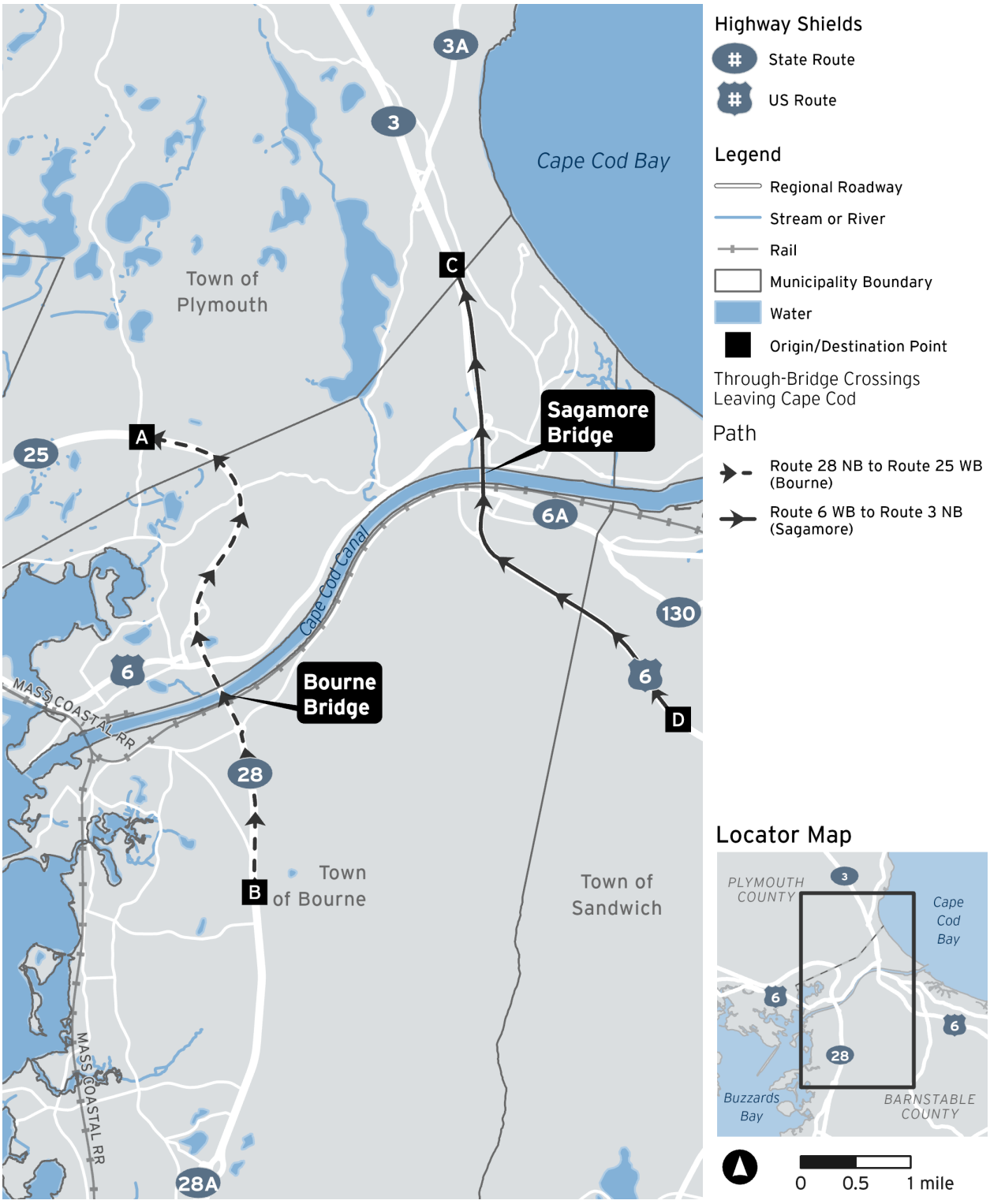
Source: Massachusetts Department of Transportation, 2024

Figure 7-4. Through-Bridge Crossings Entering Cape Cod



Source: Massachusetts Department of Transportation, 2024

Figure 7-5. Through-Bridge Crossings Exiting Cape Cod



Source: Massachusetts Department of Transportation, 2024

Diagonal Bridge Crossings

State Route 25 Eastbound to U.S. Route 6 Eastbound

According to the travel demand model O-D data, the primary access from State Route 25 EB to U.S. Route 6 EB is via Sandwich Road under the 2050 No Build Alternative but would shift to Scenic Highway under the 2050 Build Alternative. **Table 7-4** indicates that the travel time recorded along the route via Sandwich Road under the 2050 No Build Alternative is approximately 24.2 minutes. The travel time recorded along the preferred route of Scenic Highway under the 2050 Build Alternative is approximately 18.4 minutes (**Table 7-4**), offering a shorter duration trip than the 2050 No Build Alternative.

Table 7-4. State Route 25 Eastbound to U.S. Route 6 Eastbound Travel Time (in minutes)

Route	2050 No Build Alternative (minutes)	2050 Build Alternative (minutes)
Sandwich Road	24.2	14.9
Scenic Highway	20.6	18.4

State Route 28 Northbound to State Route 3 Northbound

Table 7-5 depicts the travel time from State Route 28 NB to State Route 3 NB via Sandwich Road. According to the O-D data, Sandwich Road is the primary route under both the 2050 No Build Alternative and the 2050 Build Alternative. The 2050 Build Alternative travel time along Sandwich Road (12.6 minutes) is more efficient than that recorded under the No Build Alternative (15.9 minutes).

Table 7-5. State Route 28 Northbound to State Route 3 Northbound Travel Time (in minutes)

Route	2050 No Build Alternative (minutes)	2050 Build Alternative (minutes)
Sandwich Road	15.9	12.6

State Route 3 Southbound to State Route 28 Southbound

Table 7-6 depicts the travel time from State Route 3 SB to State Route 28 SB via Sandwich Road or Scenic Highway. According to the O-D data, both routes are used under both the 2050 No Build Alternative and the 2050 Build Alternative. The 2050 Build Alternative travel time along Scenic Highway (13 minutes) is more efficient than that recorded under the 2050 No Build Alternative (21.5 minutes) due to improvements in access between Scenic Highway and State Route 25. Via Sandwich Road, the 2050 No Build Alternative was recorded to have a slightly shorter travel time (19.1 minutes) than that recorded under the 2050 Build Alternative (20.2 minutes). This discrepancy can be attributed to the conceptual nature of the intersection configurations and any associated traffic signal timing along the route. As design refinements of intersection control, configuration, and any associated traffic signal timing continue, the travel time for the 2050 Build Alternative is expected to improve.

Table 7-6. State Route 3 Southbound to State Route 28 Southbound Travel Time (in minutes)

Route	2050 No Build Alternative (minutes)	2050 Build Alternative (minutes)
Scenic Highway	21.5	13.0
Sandwich Road	19.1	20.2

U.S. Route 6 Westbound to State Route 25 Westbound

Table 7-7 compares the travel time from U.S. Route 6 WB to State Route 25 WB via Scenic Highway for the 2050 No Build Alternative and the 2050 Build Alternative. According to the O-D data, Scenic Highway is the primary route. The travel time recorded in the models for this route via Scenic Highway under the 2050 Build Alternative is 11.7 minutes compared to the recorded time of 22.9 minutes under the 2050 No Build Alternative.

Table 7-7. U.S. Route 6 Westbound to State Route 25 Westbound Travel Time (in minutes)

Route	2050 No Build Alternative (minutes)	2050 Build Alternative (minutes)
Scenic Highway	22.9	11.7

State Route 25 Eastbound to State Route 3 Northbound

With improvements in access between State Route 25 and Scenic Highway, the travel time from State Route 25 EB to State Route 3 NB via Scenic Highway is recorded to improve from the 2050 No Build Alternative (19.6 minutes) to the 2050 Build Alternative (12.1 minutes) per **Table 7-8**.

Table 7-8. State Route 25 Eastbound to State Route 3 Northbound Travel Time (in minutes)

Route	2050 No Build Alternative (minutes)	2050 Build Alternative (minutes)
Scenic Highway	19.6	12.1

Through-Bridge Crossings

Bourne Bridge

According to **Table 7-9**, which depicts travel times in each direction between State Route 25 and State Route 28 over Bourne Bridge, the 2050 Build Alternative model offers more efficient travel times in each direction over Bourne Bridge than the 2050 No Build Alternative model.

Table 7-9. State Route 25 Eastbound to State Route 28 Southbound and State Route 28 Northbound to State Route 25 Westbound Travel Time (in minutes)

Bridge Direction	2050 No Build Alternative (minutes)	2050 Build Alternative (minutes)
Southbound	10.4	5.5
Northbound	14.5	6.4

Sagamore Bridge

Similarly, according to **Table 7-10**, which depicts travel times in each direction between State Route 3 and U.S. Route 6 over Sagamore Bridge, the 2050 Build Alternative model offers more efficient travel times in each direction over Sagamore Bridge than the 2050 No Build Alternative model.

Table 7-10. State Route 3 Southbound to U.S. Route 6 Eastbound and U.S. Route 6 Westbound to State Route 3 Northbound Travel Time (in Minutes)

Bridge Direction	2050 No Build Alternative (minutes)	2050 Build Alternative (minutes)
Southbound	11.4	4.7
Northbound	8.5	5.1

8 Summary of Findings

The 2050 Build Alternative traffic analysis estimates improvements to traffic operations compared to the 2050 No Build Alternative. Study area intersections as well as expressway mainline and merging-diverging segments are expected to operate at improved levels of service during the Weekday Fall PM design peak hour analysis period. Critically, the 2050 Build Alternative is estimated to reduce vehicle delays and travel times compared to the 2050 No Build Alternative.

Overall network travel time under the 2050 Build Alternative is estimated to decrease to 2,240 hours of total travel time compared to the 2,879 hours of total travel time estimated under the 2050 No Build Alternative. This indicates that vehicular mobility within the Study Area under the 2050 Build Alternative is anticipated to be more efficient than the 2050 No Build Alternative.

Travel times along all major O-D routes within the Study Area are estimated to improve under the 2050 Build Alternative compared to the 2050 No Build Alternative. This includes cross-canal diagonal bridge crossings as well as cross-canal through-bridge crossings. These estimated reductions in travel times along O-D routes reflect improved accessibility within the Study Area under the 2050 Build Alternative.

The 2050 Build Alternative, therefore, meets the purpose of the Program defined in **Section 2** to improve cross-canal mobility and accessibility between Cape Cod and mainland Massachusetts.

9 Glossary of Terms

Table 9-1. Glossary of Terms

Term	Definition
Capacity	Maximum traffic flow that can be accommodated on a given roadway facility.
Delay	An estimate of the extra time that a driver spends traveling compared to free-flow conditions.
Density	Number of vehicles per unit length of a road at a given time.
Level of Service	A qualitative measurement that describes the operating conditions of a roadway based on factors like travel time, speed, delay, maneuverability, and safety.
Performance Measures	Quantitative estimates on the performance of a transportation facility, service, program, system, scenario or project with respect to policies, goals and objectives.
Microsimulation	The modeling of individual vehicle movements on a second or subsecond basis for the purpose of assessing the traffic performance of highway and street systems, transit, and pedestrians.
Origin-Destination	The movement through a geographic space from an origin to a destination.
Queue	The line of vehicles that backs up behind a signal or stop sign, or behind motorists who are forced to yield to other traffic or pedestrian movements.

10 Attachments

Attachment 1 – 2019 Base Year Traffic Volume Flowmaps

Attachment 2 – 2019 Base Year Traffic Analysis

Attachment 3 – 2050 Design Year No Build Alternative Conditions

Attachment 4 – 2050 Design Year Build Alternative Conditions

Attachment 1 – 2019 Base Year Traffic Volume Flowmaps

MassDOT

Cape Cod Canal Program Management

Fall Weekday PM Peak
2019 Existing Conditions



MassDOT

Cape Cod Canal Program Management

Summer SAT Peak
2019 Existing Conditions



Attachment 2 – 2019 Base Year Traffic Analysis

Table B-1 : Synchro and SIDRA Results Summary - 2019 Existing Fall

Intersection	2019 Existing Fall AM					2019 Existing Fall PM					2019 Existing Fall MID				
	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)
1:: Maple Springs Rd / Route 25 NB On-Ramp	A	0.3				A	0.2				A	0.1			
Maple Springs Rd NB (thru)	A	0.0	0.01	-	0	A	0.0	0.03	-	0	A	0.0	0.02	-	0
Maple Springs Rd NB (thru/right)	A	0.0	0.42	-	0	A	0.0	0.35	-	0	A	0.0	0.52	-	0
Maple Springs Rd SB (left/thru)	A	2.5	0.02	-	1	A	1.9	0.01	-	1	A	1.4	0.01	-	1
2:: Maple Springs Rd / Route 25 SB Off-Ramp	A	5.5				A	7.8				A	7.0			
Route 25 SB Off-Ramp EB (left)	B	11.7	0.04	-	87	B	10.7	0.03	-	131	B	12.5	0.05	-	148
Route 25 SB Off-Ramp EB (right)	B	13.0	0.54	-	87	B	14.8	0.66		131	C	16.1	0.68		148
Maple Springs Rd NB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Maple Springs Rd NB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Maple Springs Rd SB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
3:: Glen Charlie Road / Route 25 NB Off-Ramp	A	6.5				A	3.6				A	1.9			
Route 25 NB Off-Ramp EB (left)	B	14.1	0.02	-	97	C	16.2	0.20	-	27	C	17.3	0.05	-	21
Route 25 NB Off-Ramp EB (right)	C	20.1	0.60		97	B	11.6	0.27		27	B	12.9	0.22		21
Glen Charlie Rd NB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Glen Charlie Rd SB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
4:: Glen Charlie Road / Route 25 SB On-Ramp	A	1.4				A	0.4				A	0.5			
Glen Charlie Rd NB (thru)	A	0.0	0.12	-	0	A	0.0	0.26	-	0	A	0.0	0.24	-	0
Glen Charlie Rd NB (right)	A	0.0	0.17	-	0	A	0.0	0.06	-	0	A	0.0	0.06	-	0
Glen Charlie Rd SB (left/thru)	A	2.3	0.09	-	8	A	0.9	0.03	-	2	A	0.9	0.03	-	3
5:: Buzzards Bay Rotary	A	7.3				A	8.2				B	12.6			
Main Street (Route 6) EB (left)	A	8.1	0.42	-	42	A	7.0	0.33	-	30	A	9.1	0.48	-	55
Main Street (Route 6) EB (left/thru)	A	8.1	0.42	-	42	A	7.0	0.33	-	30	A	9.1	0.48	-	52
Main Street WB (thru/right)	A	6.9	0.26	-	20	A	9.0	0.45	-	43	C	20.3	0.77	-	158
Lincoln Avenue SB (left/thru/right)	A	6.1	0.12	-	7	A	8.5	0.18	-	12	A	9.7	0.23	-	16
Buzzards Bay Bypass (Route 6) SWB (left)	A	6.0	0.18	-	14	A	9.1	0.38	-	33	A	9.3	0.3	-	24
Buzzards Bay Bypass (Route 6) SWB (left/right)	A	5.9	0.18	-	13	A	9.0	0.38	-	31	A	9.0	0.3	-	23
6:: Scenic Highway (Route 6) / Main Street (Route 6) / Nightingale Road / Andy Olivia Drive	B	14.7				B	17.9				B	16.7			
Main Street (Route 6) EB (left/thru)	A	6.2	0.70	162	207	A	7.1	0.74	132	157	A	6.7	0.69	139	226
Main Street (Route 6) EB (thru/right)	A	6.2	0.70	162	207	A	7.1	0.74	132	157	A	6.7	0.69	139	226
Scenic Hwy (Route 6) WB (left/thru)	B	19.9	0.84	420	535	C	24.6	0.91	495	#677	C	21.6	0.85	394	#626
Scenic Hwy (Route 6) WB (thru/right)	B	19.9	0.84	420	535	C	24.6	0.91	495	#677	C	21.6	0.85	394	#626
Andy Olivia Dr NB (left/thru/right)	D	39.5	0.02	0	0	D	39.5	0.03	0	0	D	48.6	0.65	50	67
Nightingale Pond Rd SB (left/thru)	D	40.8	0.28	18	46	D	40.1	0.15	10	28	D	38.5	0.18	14	33
Nightingale Pond Rd SB (right)	D	39.5	0.05	0	14	D	39.5	0.03	0	0	D	37.8	0.06	0	13
7:: Sandwich Road / Trowbridge Road / County Road / Shore Road	B	12.0				F	254.9				B	10.7			
Shore Rd EB (left/thru/right)	A	7.8	0.07	-	6	A	8.3	0.05	-	4	A	7.9	0.07	-	6
Trowbridge Rd WB (left/thru/right)	A	7.8	0.04	-	3	A	8.0	0.09	-	7	A	7.7	0.03	-	2
County Rd NB (left/thru/right)	C	18.1	0.46	-	60	F	142.9	1.16	-	345	C	18.1	0.45	-	56
Sandwich Rd SB (left/thru/right)	D	31.0	0.57	-	91	F	1122.2	3.26	-	645	D	28.2	0.57	-	89
8:: Trowbridge Rd./Veterans Way	A	0.7				A	2.9				A	0.7			
Trowbridge Rd EB (left/thru/right)	A	8.0	0.01	-	0	A	7.9	0.02	-	1	A	8.6	0.01	-	1
Trowbridge Rd WB (left/thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Veterans Way NB (left/thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Driveway SB (left/thru/right)	B	13.4	0.09	-	7	C	18.4	0.32	-	34	C	17.1	0.12	-	10
9:: Bourne Rotary	F	521.0				F	419.8				F	762.5			
General MacArthur Boulevard NB (left/thru)	F	360.4	1.75	-	4706	F	597.7	2.28	-	6836	F	489.6	2.04	-	5755
General MacArthur Boulevard NB (right)	C	16.3	0.62	-	101	C	22.9	0.72	-	132	B	13.1	0.48	-	61
Sandwich Road WB (left/thru)	F	236.0	1.44	-	1849	C	23.0	0.66	-	98	F	117.7	1.16	-	904
Sandwich Road WB (right)	B	10.0	0.13	-	10	F	311.9	1.63	-	2831	B	14.2	0.41	-	43
Route 28 (Bourne Bridge) SB (left/thru)	F	941.9	3.05	-	11668	F	594.7	2.28	-	8618	F	1407.9	4.09	-	16858
Route 28 (Bourne Bridge) SB (right)	A	6.5	0.09	-	8	A	6.1	0.15	-	14	C	21.3	0.72	-	139
Trowbridge Road EB (left/thru/right)	F	136.4	1.18	-	810	F	206.2	1.36	-	1371	F	80.2	1	-	325

Table B-1 : Synchro and SIDRA Results Summary - 2019 Existing Fall

Intersection	2019 Existing Fall AM					2019 Existing Fall PM					2019 Existing Fall MID				
	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)
10:: Sandwich Road / Bourne Rotary Connector	F	103.7				F	352.0				E	79.6			
Sandwich Rd EB (left/right)	F	648.6	2.29	-	717	F	1996.4	5.25	-	Err	F	712.8	2.38	-	565
Bourne Rotary Connector NB (left/thru)	A	9.4	0.01	-	0	A	0.0	0.00	-	0	A	9.1	0.01	-	1
Sandwich Rd SB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
11:: Sandwich Road / Upper Cape Cod Technical School Driveway	D	42.5				F	181.3				A	0.4			
Cape Cod Technical School Driveway WB (left/right)	F	630.1	2.08	-	335	F	2709.6	6.44	-	Err	F	59.0	0.16	-	13
Sandwich Rd NB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Sandwich Rd SB (left)	B	12.3	0.22	-	21	B	13.5	0.13	-	11	B	12.3	0.01	-	1
Sandwich Rd SB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
12:: Sandwich Road / Harbor Lights Road	A	0.3				A	1.1				A	1.5			
Harbor Lights Rd WB (left/right)	E	40.4	0.12	-	10	F	175.6	0.48	-	41	F	95.7	0.48	-	49
Sandwich Rd NB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Sandwich Rd SB (left/thru)	B	10.3	0.01	-	1	B	12.4	0.01	-	1	B	12.1	0.00	-	1
13:: Sandwich Road / Jefferson Road (Tech Drive)	A	0.0				A	0.0				A	0.1			
Jefferson Rd (Tech Dr) WB (left/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	D	26.9	0.05	-	4
Sandwich Rd NB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Sandwich Rd SB (left/thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
14:: Sandwich Road / Jarvis Road	A	0.5				A	0.5				A	0.3			
Jarvis Rd WB (left/right)	F	70.7	0.19	-	15	F	99.5	0.25	-	20	D	28.1	0.11	-	9
Sandwich Rd NB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Sandwich Rd SB (left/thru)	B	10.5	0.01		1	B	12.4	0.01	-	1	B	12.3	0.01	-	1
15:: Sandwich Road (Route 6 Bypass) / Mid-Cape Connector	B	11.4				B	12.4				B	10.1			
Sandwich Rd EB (thru)	C	21.3	0.69	133	234	C	21.0	0.71	159	266	C	20.2	0.74	156	309
Sandwich Rd EB (right)	A	0.9	0.44	0	0	A	1.7	0.60	0	0	A	1.6	0.58	0	0
Sandwich Rd WB (left)	A	8.6	0.29	22	46	A	8.8	0.40	30	56	A	8.0	0.36	22	54
Sandwich Rd WB (thru)	A	9.0	0.48	106	180	B	14.0	0.78	234	360	A	6.9	0.45	87	186
Mid-Cape Connector NB (left)	C	24.2	0.72	118	#241	C	26.6	0.71	115	#265	C	23.1	0.59	78	169
Mid-Cape Connector NB (right)	B	10.9	0.16	0	29	B	14.4	0.41	33	118	B	14.2	0.32	22	77
16:: Mid-Cape Connector / Factory Outlet Way	B	11.1				B	15.2				B	14.5			
Factory Outlet Way (Market Basket Driveway) WB (left)	C	26.9	0.10	5	17	C	30.0	0.25	30	52	C	30.8	0.24	26	51
Factory Outlet Way (Market Basket Driveway) WB (left)	C	26.9	0.10	5	17	C	30.0	0.25	30	52	C	30.8	0.24	26	51
Factory Outlet Way (Market Basket Driveway) WB (right)	B	14.0	0.15	20	46	B	16.8	0.37	79	111	B	14.5	0.30	63	96
Mid-Cape Connector NB (thru)	B	17.1	0.68	170	303	C	21.8	0.65	207	#381	B	19.2	0.43	115	205
Mid-Cape Connector NB (right)	A	7.1	0.05	0	12	A	7.1	0.07	0	18	A	8.7	0.06	0	19
Mid-Cape Connector SB (left)	C	25.7	0.46	47	111	C	35.0	0.64	93	149	D	35.1	0.72	129	180
Mid-Cape Connector SB (thru)	A	3.4	0.31	47	79	A	5.4	0.36	84	113	A	5.0	0.36	82	95
Mid-Cape Connector SB (thru)	A	3.4	0.31	47	79	A	5.4	0.36	84	113	A	5.0	0.36	82	95
17:: Herring Pond Road / State Road	E	42.9				F	178.9				F	358.3			
Herring Pond Rd EB (left/right)	F	92.4	1.06	-	758	F	362.2	1.73	-	1316	F	625.0	2.33	-	Err
State Rd NB (left/thru)	A	7.9	0.12	-	10	A	7.8	0.08	-	7	A	8.0	0.10	-	8
State Rd SB (thru/right)	A	0.0	0.00		0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
18:: Herring Pond Road / Route 3 NB Ramps	A	7.4				B	12.0				F	56.8			
Route 3 NB Ramps EB (left/right)	E	45.3	0.75	-	175	F	53.8	0.87	-	257	F	455.1	1.82	-	426
Herring Pond Rd NB (left/thru)	A	9.0	0.18	-	16	A	8.3	0.05	-	4	A	8.7	0.14	-	12
Herring Pond Rd SB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Herring Pond Rd SB (right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
19:: Herring Pond Road / Route 3 SB Ramps	C	35.0				E	38.5				F	374.7			
Route 3 SB Ramps WB (left/right)	F	89.3	1.06	-	528	F	99.0	1.10	-	579	F	718.7	2.53	-	1945
Herring Pond Rd NB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Herring Pond Rd SB (left/thru)	A	8.2	0.18	-	17	A	8.1	0.15	-	13	A	8.5	0.17	-	15

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Intersection	2019 Existing Fall AM					2019 Existing Fall PM					2019 Existing Fall MID				
	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)
20:: Scenic Highway (Route 6) / Church Lane / Route 6 SB On-Ramp	C	22.1				C	20.7				C	23.3			
Scenic Hwy (Route 6) EB (left)	D	54.9	0.44	10	36	D	45.0	0.53	39	80	D	44.1	0.44	29	80
Scenic Hwy (Route 6) EB (thru)	C	26.6	0.97dr	304	#591	C	24.0	0.87dr	320	437	C	29.1	0.98dr	228	413
Scenic Hwy (Route 6) EB (thru/right)	C	26.6	0.97dr	304	#591	C	24.0	0.87dr	320	437	C	29.1	0.98dr	228	413
Scenic Hwy (Route 6) WB (left)	E	56.2	0.85	195	316	D	46.5	0.77	149	247	D	39.0	0.78	209	381
Scenic Hwy (Route 6) WB (thru)	A	8.9	0.85	126	305	B	11.3	0.55	209	313	B	11.9	0.50	189	285
Scenic Hwy (Route 6) WB (thru)	A	8.9	0.85	126	305	B	11.3	0.55	209	313	B	11.9	0.50	189	285
Scenic Hwy (Route 6) WB (thru/right)	A	8.9	0.51	126	305	B	11.3	0.55	209	313	B	11.9	0.50	189	285
Church Lane SB (left/thru/right)	D	52.4	0.66	76	151	D	43.7	0.56	56	99	D	42.4	0.61	80	126
21:: Scenic Highway (Route 6) & Route 3 SB Off-Ramp	C	29.5				D	38.6				C	26.2			
Scenic Hwy (Route 6) EB (thru)	B	10.7	0.44	176	247	B	13.6	0.57	236	319	B	12.5	0.39	129	183
Scenic Hwy (Route 6) WB (thru)	C	23.2	0.90	606	555	B	19.1	0.81	428	515	B	18.8	0.78	345	387
Scenic Hwy (Route 6) WB (thru)	C	23.2	0.90	606	555	B	19.1	0.81	428	515	B	18.8	0.78	345	387
Route 3 Off-Ramp SB (left/right)	F	82.3	0.98	~315	#529	F	124.2	1.14	~433	#693	E	56.9	0.95	285	#640
22:: Meetinghouse Lane / State Road / Canal Street	D	51.1				E	63.9				E	73.2			
Meetinghouse Ln EB (left)	C	27.5	0.69	199	#624	C	34.1	0.88	265	#807	D	54.0	0.90	180	#472
Meetinghouse Ln EB (thru)	B	19.2	0.23	74	202	C	21.7	0.50	121	#479	D	38.9	0.52	164	304
Meetinghouse Ln EB (right)	B	19.1	0.21	0	75	B	16.8	0.17	0	63	C	32.2	0.36	0	65
Meetinghouse Ln WB (left)	D	37.8	0.11	8	34	D	37.5	0.11	5	22	D	41.3	0.17	16	40
Meetinghouse Ln WB (thru/right)	F	141.0	1.13	249	#435	F	261.8	1.43	~222	#328	F	258.7	1.41	~337	#423
Canal St NB (left)	D	40.7	0.72	147	167	C	31.1	0.61	94	145	C	25.8	0.63	84	143
Canal St NB (thru/right)	D	40.9	0.53	156	187	C	34.8	0.37	82	138	C	24.6	0.29	111	190
State Rd SB (left)	D	44.5	0.18	18	38	D	36.4	0.16	18	36	C	22.4	0.10	21	45
State Rd SB (thru/right)	D	49.6	0.36	35	109	D	40.6	0.27	23	69	C	33.1	0.60	168	#323
23:: State Road / Route 3 NB On-Ramp	A	4.4				A	3.4				A	3.1			
State Rd NB (left)	A	9.0	0.33	-	37	A	8.7	0.29	-	31	B	10.2	0.34	-	38
State Rd NB (thru)	A	0.0	0.13	-	0	A	0.0	0.23	-	0	A	0.0	0.14	-	0
State Rd SB (thru)	A	0.0	0.13	-	0	A	0.0	0.13	-	0	A	0.0	0.31	-	0
State Rd SB (right)	A	0.0	0.01	-	0	A	0.0	0.01	-	0	A	0.0	0.01	-	0
24:: Cranberry Highway / Adams Street	A	4.4				A	3.6				A	5.2			
Cranberry Highway EB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Cranberry Highway EB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Cranberry Highway WB (left/thru)	A	7.6	0.00	-	0	A	8.9	0.01	-	0	A	0.0	0.00	-	0
Cranberry Highway WB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Adams Street NB [left/thru/right]	B	10.6	0.07	-	6	C	15.0	0.06	-	7	A	9.6	0.04	-	3
Adams Street SB [left/thru/right]	B	11.0	0.30	-	32	B	13.2	0.43	-	55	C	17.1	0.58	-	93
25:: Sandwich Road / Adams Street	A	0.3				A	0.6				A	0.5			
Sandwich Rd EB (thru/right)	A	0.0	0.37	-	0	A	0.0	0.50	-	0	A	0.0	0.48	-	0
Sandwich Rd WB (left/thru)	A	0.7	0.03	-	2	A	1.0	0.03	-	2	A	1.0	0.04	-	3
26:: Cranberry Highway / Sandwich Road / Regency Drive	E	75.4				F	855.0				F	2370.9			
Sandwich Rd EB (left/thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	8.5	0.01	-	0
Sandwich Rd WB (left/thru/right)	A	8.5	0.16	-	14	B	10.1	0.28	-	28	B	12.0	0.51	-	74
Cranberry Highway NB (left/thru)	F	403.7	1.68	-	368	F	3111.5	7.65	-	Err	F	$12,573.2	27.78	-	Err
Cranberry Highway NB (right)	B	10.6	0.09	-	7	B	13.3	0.13	-	11	B	12.3	0.10	-	8
Regency Dr SB (left/thru/right)	A	0.0	0.00	-	0	F	78.7	0.11	-	8	B	11.8	0.02	-	1
27:: Old King's Highway (Route 6A) / Main Street (Route 130) / Tupper Road	B	10.7				E	38.0				F	363.3			
Old King's Hwy (Route 6A) EB (left/thru/right)	A	8.1	0.06	-	5	A	8.4	0.09	-	8	A	8.8	0.12	-	10
Old King's Hwy (Route 6A) WB (left/thru/right)	A	7.7	0.00	-	0	A	8.0	0.01	-	0	A	7.9	0.00	-	0
Main St (Route 130) NB (left/thru/right)	E	47.2	0.71	-	138	F	322.5	1.47	-	317	F	1686.4	4.51	-	Err
Tupper Rd SB (left/thru/right)	B	11.2	0.18	-	17	B	12.8	0.29	-	30	C	18.2	0.48	-	65
28:: Old King's Highway (Route 6A) / Tupper Road	C	31.9				E	58.6				F	215.5			
Old King's Hwy (Route 6A) EB (left)	C	23.0	0.03	2	13	C	23.1	0.03	2	12	B	19.7	0.05	4	19
Old King's Hwy (Route 6A) EB (thru/right)	C	26.5	0.46	75	171	D	40.2	0.82	191	299	C	25.3	0.54	168	317
Old King's Hwy (Route 6A) WB (left/thru)	C	33.9	0.73	132	253	F	106.9	1.07	~140	#323	D	41.6	0.85	222	#509
Old King's Hwy (Route 6A) WB (right)	C	23.9	0.16	12	55	C	23.8	0.12	6	47	C	21.5	0.25	39	119
Tupper Rd NB (left/thru/right)	D	37.0	0.77	121	#348	D	51.0	0.86	142	#358	F	476.0	1.94	~551	#696
Tupper Rd SB (left)	D	39.9	0.65	35	#149	F	93.1	0.96	76	#281	F	522.3	2.00	~210	#414
Tupper Rd SB (thru/right)	C	26.7	0.23	32	102	C	28.4	0.25	42	123	D	37.3	0.39	74	154

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29:: Water Street (Route 130) / Beale Avenue	A	5.7				A	1.5				B	13.2			
Beale Ave WB (left/right)	D	32.6	0.62	-	98	C	18.5	0.21	-	19	F	123.8	1.00	-	196
Water St (Route 130) NB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Water St (Route 130) SB (left/thru)	A	8.6	0.01	-	1	A	8.3	0.01	-	1	B	10.6	0.05	-	4
30:: Main Street / Beale Avenue	A	5.9				A	4.9				A	7.4			
Main St EB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Main St WB (left/thru)	A	7.7	0.09	-	7	A	7.5	0.03	-	3	A	7.7	0.11	-	9
Beale Ave NB (left/right)	B	10.6	0.17	-	15	A	9.5	0.13	-	11	B	12.9	0.38	-	45
31:: Old King's Highway (Route 6A) / Main Street / Old Main Street	A	3.2				A	2.7				A	4.4			
Main St EB (left)	C	24.7	0.07	-	5	C	18.1	0.02	-	2	F	63.2	0.29	-	25
Main St EB (thru/right)	B	11.9	0.18	-	16	B	11.9	0.20	-	18	C	17.2	0.42	-	50
Old Main St WB (left/thru/right)	C	15.8	0.05	-	4	C	16.5	0.04	-	3	B	13.0	0.01	-	1
Old King's Hwy (Route 6A) NB (left/thru/right)	A	8.3	0.10	-	9	A	8.1	0.05	-	4	A	9.0	0.16	-	14
Old King's Hwy (Route 6A) SB (left/thru/right)	A	0.0	0.00	-	0	A	7.9	0.00	-	0	A	8.7	0.00	-	0
32:: Forestdale Road (Route 130) / Route 6 EB Ramps	C	21.0				E	63.7				F	104.0			
Route 6 EB Ramps EB (left)	C	24.1	0.17	15	35	C	24.2	0.14	18	43	C	24.4	0.41	22	#56
Route 6 EB Ramps EB (right)	D	38.7	0.76	34	#129	F	161.5	1.29	~303	#487	F	430.4	1.84	~139	#305
Forestdale Rd (Route 130) NB (left)	A	6.6	0.33	16	33	A	7.9	0.36	14	28	B	11.4	0.32	6	13
Forestdale Rd (Route 130) NB (thru)	B	12.6	0.81	248	#525	B	18.4	0.84	233	92	A	8.6	0.76	165	261
Forestdale Rd (Route 130) SB (thru/right)	B	19.6	0.67	106	m164	C	21.6	0.85	92	m#364	D	38.8	0.99	~330	#438
33:: Water Street (Route 130) / Route 6 WB Ramps	C	26.2				C	28.7				F	332.4			
Route 6 WB Ramps EB (left)	D	35.4	0.71	59	105	D	47.6	0.86	101	#197	F	873.3	2.87	~590	#733
Route 6 WB Ramps EB (right)	A	0.1	0.10	0	0	A	0.1	0.10	0	0	A	0.1	0.08	0	0
Forestdale Rd (Route 130) NB (left)	C	33.6	0.86	157	m#210	D	37.3	0.93	143	m#218	C	23.1	0.60	61	94
Forestdale Rd (Route 130) NB (left)	C	33.6	0.86	157	m#210	D	37.3	0.93	143	m#218	C	23.1	0.60	61	94
Forestdale Rd (Route 130) NB (thru)	A	5.8	0.27	71	m115	A	8.3	0.28	69	m116	A	7.2	0.56	115	181
Forestdale Rd (Route 130) SB (thru)	D	36.9	0.88	~227	#276	C	31.0	0.83	192	#328	F	167.2	1.30	~370	#509
Forestdale Rd (Route 130) SB (right)	A	0.0	0.03	0	0	A	0.0	0.01	0	0	A	0.0	0.03	0	0
34:: Quaker Meeting House Road / Route 6 EB Ramps	F	134.6				B	12.1				C	22.0			
Route 6 EB Ramps EB (left/right)	F	1865.4	4.51	-	331	F	77.7	0.87	-	218	F	132.8	1.07	-	266
Quaker Meetinghouse Rd NB (left/thru)	B	11.7	0.49	-	69	B	10.3	0.27	-	28	A	9.8	0.24	-	24
Quaker Meetinghouse Rd SB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
35:: Quaker Meeting House Road / Route 6 WB Ramps	E	42.6				F	60.9				A	7.5			
Route 6 WB Ramps WB (left/right)	F	180.8	1.26	-	421	F	152.8	1.23	-	508	D	28.8	0.63	-	120
Quaker Meetinghouse Rd NB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Quaker Meetinghouse Rd SB (left/thru)	A	8.7	0.08	-	7	A	7.9	0.05	-	4	A	8.0	0.05	-	4
36:: Route 130 / Cotuit Rd	C	17.3				B	13.8				C	17.0			
Cotuit Rd WB (left)	A	0.0	0.00	-	0	F	1764.0	1.42	-	41	F	133.3	0.16	-	12
Cotuid Rd WB (right)	E	49.5	0.94	-	309	D	26.6	0.71	-	143	F	57.4	0.96	-	313
Route 130 NB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Route 130 SB (left)	A	9.9	0.31	-	33	C	16.1	0.69	-	147	B	11.6	0.47	-	64
Route 130 SB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
37:: Nathan Ellis Highway (Route 151) / Route 28 NB Ramps	A	1.8				F	67.5				A	9.4			
Nathan Ellis Hwy (Route 151) EB (left/thru)	A	9.0	0.12	-	10	A	8.8	0.14	-	12	A	8.2	0.07	-	5
Nathan Ellis Hwy (Route 151) WB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Nathan Ellis Hwy (Route 151) WB (right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Route 28 NB Ramps SB (left/right)	D	29.8	0.32	-	38	F	663.2	2.27	-	464	F	83.4	0.93	-	231

Table B-1 : Synchro and SIDRA Results Summary - 2019 Existing Fall

Intersection	2019 Existing Fall AM					2019 Existing Fall PM					2019 Existing Fall MID				
	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)
38:: Nathan Ellis Highway (Route 151) / Route 28 SB Ramps	A	8.8				F	139.0				A	7.4			
Nathan Ellis Hwy (Route 151) EB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Nathan Ellis Hwy (Route 151) EB (right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Nathan Ellis Hwy (Route 151) WB (left/thru)	A	9.0	0.17	-	15	A	8.7	0.09	-	7	A	8.2	0.06	-	5
Route 28 SB Ramps NB (left/right)	D	26.4	0.74	-	500	F	337.7	1.69	-	1295	C	20.7	0.72	-	372
39:: Belmont Circle	F	274.1				F	315.9				F	301.2			
Buzzards Bay Bypass (Route 6) EB (left/thru/right)	B	13.1	0.32	-	24	C	16.8	0.60	-	66	D	30.9	0.74	-	88
Main Street (Route 6) WB (left/thru)	A	9.3	0.35	-	29	C	21.9	0.72	-	109	C	17.8	0.61	-	72
Main Street (Route 6) WB (right)	F	472.0	2.01	-	6334	F	420.1	1.89	-	5143	F	464.6	1.98	-	5236
Old Bridge Road NB (left/thru/right)	B	10.1	0.02	-	1	A	9.1	0.01	-	1	B	10.7	0.02	-	1
Route 28/25 Ramps SB (left/thru/right)	F	241.7	1.49	-	151	F	490.3	2.05	-	6322	F	394.8	1.84	-	5797
Main Street NEB (left/thru/right)	F	226.5	1.43	-	2032	F	268.6	1.54	-	2963	F	256.1	1.5	-	2100
Head of the Bay Road SEB (left/thru/right)	F	74.5	1.03	-	425	C	18.0	0.57	-	57	F	101.6	1.11	-	672

Legend

~ : Volume exceeds capacity

$: Delay exceeds 300s

+ : Computation not defined

* : All major volume in platoon

: 95th percentile volume exceeds capacity; queue may be longer

m : Volume for 95th percentile queue is metered by upstream signal

Err : Error

dr : Defacto right lane

Table B-2 : Synchro and SIDRA Results Summary - 2019 Existing Summer

Intersection	2019 Existing Summer AM					2019 Existing Summer PM					2019 Existing Summer MID				
	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)
1:: Maple Springs Rd / Route 25 NB On-Ramp	A	0.1				A	0.0				A	0.2			
Maple Springs Rd NB (thru)	A	0.0	0.01	-	0	A	0.0	0.02	-	0	A	0.0	0.02	-	0
Maple Springs Rd NB (thru/right)	A	0.0	0.45	-	0	A	0.0	0.52	-	0	A	0.0	0.55	-	0
Maple Springs Rd SB (left/thru)	A	1.9	0.01	-	1	A	1.0	0.00	-	0	A	2.5	0.01	-	1
2:: Maple Springs Rd / Route 25 SB Off-Ramp	A	5.1				C	15.7				F	119.8			
Route 25 SB Off-Ramp EB (left)	B	11.3	0.01	-	83	B	12.4	0.02	-	363	B	12.6	0.01	-	1600
Route 25 SB Off-Ramp EB (right)	B	12.7	0.53	-	83	D	31.8	0.92		363	F	207.7	1.42		1600
Maple Springs Rd NB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Maple Springs Rd NB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Maple Springs Rd SB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
3:: Glen Charlie Road / Route 25 NB Off-Ramp	A	3.8				A	4.8				A	2.0			
Route 25 NB Off-Ramp EB (left)	B	13.5	0.05	-	40	C	24.7	0.30	-	67	C	18.6	0.06	-	26
Route 25 NB Off-Ramp EB (right)	B	14.7	0.36		40	C	16.5	0.49		67	B	13.2	0.26		26
Glen Charlie Rd NB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Glen Charlie Rd SB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
4:: Glen Charlie Road / Route 25 SB On-Ramp	A	0.8				A	0.6				A	0.5			
Glen Charlie Rd NB (thru)	A	0.0	0.08	-	0	A	0.0	0.32	-	0	A	0.0	0.32	-	0
Glen Charlie Rd NB (right)	A	0.0	0.06	-	0	A	0.0	0.11	-	0	A	0.0	0.07	-	0
Glen Charlie Rd SB (left/thru)	A	1.1	0.04	-	3	A	1.2	0.05	-	4	A	1.1	0.04	-	3
5:: Buzzards Bay Rotary	A	6.6				A	10.1				B				
Main Street (Route 6) EB (left)	A	7.0	0.34	-	31	A	9.2	0.49	-	56	B	13.2	0.66	-	106
Main Street (Route 6) EB (left/thru)	A	6.9	0.34	-	31	A	9.1	0.49	-	56	B	13.2	0.66	-	106
Main Street WB (thru/right)	A	6.7	0.28	-	22	A	12.6	0.59	-	74	C	16.8	0.69	-	105
Lincoln Avenue SB (left/thru/right)	A	6.1	0.11	-	7	A	8.7	0.16	-	11	A	8.2	0.21	-	15
Buzzards Bay Bypass (Route 6) SWB (left)	A	6.1	0.18	-	14	A	10.0	0.37	-	33	A	7.8	0.23	-	17
Buzzards Bay Bypass (Route 6) SWB (left/right)	A	6.0	0.18	-	13	A	9.8	0.37	-	31	A	7.5	0.23	-	17
6:: Scenic Highway (Route 6) / Main Street (Route 6) / Nightingale Road / Andy Olivia Drive	D	37.1				F	84.4				C	32.1			
Main Street (Route 6) EB (left/thru)	A	5.9	0.68	132	160	B	13.0	0.87	152	#321	A	8.9	0.67	134	171
Main Street (Route 6) EB (thru/right)	A	5.9	0.68	132	160	B	13.0	0.87	152	#321	A	8.9	0.67	134	171
Scenic Hwy (Route 6) WB (left/thru)	E	57.9	1.06	~667	#808	F	132.0	1.24	~917	#1106	D	44.7	1.00	~566	#748
Scenic Hwy (Route 6) WB (thru/right)	E	57.9	1.06	~667	#808	F	132.0	1.24	~917	#1106	D	44.7	1.00	~566	#748
Andy Olivia Dr NB (left/thru/right)	D	38.5	0.06	0	4	D	42.4	0.51	36	60	D	52.7	0.75	91	#150
Nightingale Pond Rd SB (left/thru)	D	39.4	0.26	18	39	D	39.8	0.14	9	30	D	35.5	0.06	6	22
Nightingale Pond Rd SB (right)	D	38.4	0.06	0	17	D	39.3	0.05	0	11	D	35.3	0.04	0	2
7:: Sandwich Road / Trowbridge Road / County Road / Shore Road	B	12.7				F	281.4				B	14.0			
Shore Rd EB (left/thru/right)	A	7.9	0.10		8	A	8.7	0.13	-	11	A	8.0	0.09	-	8
Trowbridge Rd WB (left/thru/right)	A	7.9	0.04		3	A	8.0	0.09	-	7	A	7.7	0.05	-	3
County Rd NB (left/thru/right)	D	29.7	0.62		97	F	969.9	3.03	-	1170	D	29.9	0.65	-	109
Sandwich Rd SB (left/thru/right)	D	33.8	0.52		70	F	Err	Err	-	Err	D	29.9	0.58	-	90
8:: Trowbridge Rd./Veterans Way	A	1.7				A	8.2				A	0.8			
Trowbridge Rd EB (left/thru/right)	A	7.7	0.04	-	3	A	7.9	0.05	-	4	A	7.8	0.00	-	0
Trowbridge Rd WB (left/thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Veterans Way NB (left/thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Driveway SB (left/thru/right)	B	13.1	0.09	-	7	D	34.1	0.66	-	107	B	11.8	0.06	-	5
9:: Bourne Rotary	F	491.7				F	579.5				F	787			
General MacArthur Boulevard NB (left/thru)	F	291.8	1.60	-	3671	F	814.3	2.76	-	8786	F	464.9	1.99	-	6148
General MacArthur Boulevard NB (right)	F	36.3	0.88	-	265	D	26.8	0.76	-	151	C	20.3	0.72	-	150
Sandwich Road WB (left/thru)	F	260.9	1.50	-	2140	C	18.2	0.54	-	67	F	83.2	1.03	-	463
Sandwich Road WB (right)	E	49.3	0.88	-	218	F	154.5	1.26	-	1358	F	188.9	1.34	-	1533
Route 28 (Bourne Bridge) SB (left/thru)	F	981.9	3.14	-	11966	F	774.2	2.68	-	11862	F	1442.5	4.17	-	17421
Route 28 (Bourne Bridge) SB (right)	A	6.2	0.03	-	2	A	4.7	0.04	-	3	A	6	0.05	-	4
Trowbridge Road EB (left/thru/right)	F	82.9	1.00	-	327	F	422.8	1.87	-	3287	E	40.9	0.8	-	129

Table B-2 : Synchro and SIDRA Results Summary - 2019 Existing Summer

Intersection	2019 Existing Summer AM					2019 Existing Summer PM					2019 Existing Summer MID				
	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)
10:: Sandwich Road / Bourne Rotary Connector	F	86.0				F	568.8				F	147.7			
Sandwich Rd EB (left/right)	F	819.2	2.61	-	604	F	2553.5	6.50	-	Err	F	1540.8	4.12	-	Err
Bourne Rotary Connector NB (left/thru)	B	10.2	0.01	-	1	B	10.3	0.01	-	1	B	10.8	0.03	-	2
Sandwich Rd SB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
11:: Sandwich Road / Upper Cape Cod Technical School Driveway	A	3.7				A	1.1				A	0.5			
Cape Cod Technical School Driveway WB (left/right)	F	171.1	0.81	-	91	F	115.1	0.38	-	33	F	90.7	0.23	-	19
Sandwich Rd NB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Sandwich Rd SB (left)	B	11.9	0.03	-	2	C	15.2	0.14	-	12	B	12.2	0.01	-	1
Sandwich Rd SB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
12:: Sandwich Road / Harbor Lights Road	A	0.5				A	0.6				A	0.5			
Harbor Lights Rd WB (left/right)	F	80.0	0.23	-	19	F	94.5	0.27	-	22	F	91.2	0.267	-	22
Sandwich Rd NB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Sandwich Rd SB (left/thru)	B	11.8	0.01	-	1	B	12.3	0.01	-	1	A	0.0	0.00	-	0
13:: Sandwich Road / Jefferson Road (Tech Drive)	A	0.1				A	0.1				A	1.1			
Jefferson Rd (Tech Dr) WB (left/right)	D	26.2	0.06	-	4	D	26.1	0.06	-	5	E	38.5	0.42	-	48
Sandwich Rd NB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Sandwich Rd SB (left/thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
14:: Sandwich Road / Jarvis Road	A	0.1				A	0.1				A	0.0			
Jarvis Rd WB (left/right)	D	27.1	0.04	-	3	D	26.0	0.04	-	3	A	0.0	0.00	-	0
Sandwich Rd NB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Sandwich Rd SB (left/thru)	B	12.5	0.01	-	1	A	0.0	0.00	-	0	B	12.3	0.01	-	1
15:: Sandwich Road (Route 6 Bypass) / Mid-Cape Connector	B	10.8				B	11.2				A	7.9			
Sandwich Rd EB (thru)	B	18.1	0.68	134	251	B	19.2	0.69	138	267	B	12.4	0.49	81	166
Sandwich Rd EB (right)	A	1.2	0.52	0	0	A	1.6	0.59	0	0	A	2.2	0.67	0	0
Sandwich Rd WB (left)	A	6.9	0.07	4	14	A	7.3	0.16	10	27	A	4.2	0.11	7	22
Sandwich Rd WB (thru)	B	11.6	0.72	175	321	B	11.6	0.72	180	354	A	8.2	0.71	156	346
Mid-Cape Connector NB (left)	C	23.2	0.65	88	213	C	23.8	0.67	94	222	C	21.4	0.52	38	116
Mid-Cape Connector NB (right)	B	12.8	0.14	0	40	B	14.5	0.43	32	123	B	14.0	0.30	5	65
16:: Mid-Cape Connector / Factory Outlet Way	B	10.4				B	10.2				A	8.5			
Factory Outlet Way (Market Basket Driveway) WB (left)	C	21.1	0.36	28	38	C	33.6	0.17	13	28	D	35.2	0.26	17	34
Factory Outlet Way (Market Basket Driveway) WB (left)	C	21.1	0.36	28	38	C	33.6	0.17	13	28	D	35.2	0.26	17	34
Factory Outlet Way (Market Basket Driveway) WB (right)	B	12.0	0.07	7	17	C	23.1	0.21	32	58	C	23.5	0.16	24	47
Mid-Cape Connector NB (thru)	B	14.7	0.64	141	247	B	14.4	0.65	232	421	B	10.9	0.49	152	237
Mid-Cape Connector NB (right)	A	4.9	0.05	0	9	A	4.4	0.04	0	9	A	4.5	0.04	0	8
Mid-Cape Connector SB (left)	C	25.1	0.17	7	28	D	35.6	0.34	26	58	D	35.6	0.38	29	63
Mid-Cape Connector SB (thru)	A	5.6	0.41	63	105	A	3.8	0.38	75	119	A	3.4	0.39	77	109
Mid-Cape Connector SB (thru)	A	5.6	0.41	63	105	A	3.8	0.38	75	119	A	3.4	0.39	77	109
17:: Herring Pond Road / State Road	D	33.4				F	432.8				F	302.8			
Herring Pond Rd EB (left/right)	F	69.4	0.99	-	691	F	905.0	2.93	-	Err	F	635.8	2.34	-	Err
State Rd NB (left/thru)	A	7.8	0.10	-	8	A	8.2	0.15	-	13	A	8.7	0.15	-	13
State Rd SB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
18:: Herring Pond Road / Route 3 NB Ramps	A	3.9				F	61.3				C	17.3			
Route 3 NB Ramps EB (left/right)	C	23.0	0.48	-	89	F	378.4	1.69	-	498	F	181.6	1.14	-	205
Herring Pond Rd NB (left/thru)	A	8.7	0.13	-	11	A	9.1	0.13	-	11	A	8.5	0.15	-	13
Herring Pond Rd SB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Herring Pond Rd SB (right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
19:: Herring Pond Road / Route 3 SB Ramps	A	6.6				F	173.3				F	84.1			
Route 3 SB Ramps WB (left/right)	C	15.9	0.48	-	177	F	478.6	1.98	-	1133	F	154.2	1.27	-	1129
Herring Pond Rd NB (thru/right)	A	0.0	0.00	-	0	A	CO	0.00	-	0	A	0.0	0.00	-	0
Herring Pond Rd SB (left/thru)	A	8.7	0.26	-	26	A	8.5	0.12	-	10	A	8.0	0.08	-	6

Table B-2 : Synchro and SIDRA Results Summary - 2019 Existing Summer

Intersection	2019 Existing Summer AM					2019 Existing Summer PM					2019 Existing Summer MID				
	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)
20:: Scenic Highway (Route 6) / Church Lane / Route 6 SB On-Ramp	C	20.3				B	19.4				D	51.5			
Scenic Hwy (Route 6) EB (left)	D	51.7	0.42	11	35	D	48.5	0.53	25	73	E	63.2	0.45	33	71
Scenic Hwy (Route 6) EB (thru)	C	24.1	0.89dr	262	441	C	23.9	0.73	250	458	E	61.3	1.31dr	473	#648
Scenic Hwy (Route 6) EB (thru/right)	C	24.1	0.89dr	262	441	C	23.9	0.73	250	458	E	61.3	1.31dr	473	#648
Scenic Hwy (Route 6) WB (left)	D	50.1	0.83	188	307	D	41.5	0.76	172	315	F	113.1	1.12	~725	#1004
Scenic Hwy (Route 6) WB (thru)	A	7.9	0.45	97	244	B	11.8	0.67	290	436	A	9.9	0.43	204	273
Scenic Hwy (Route 6) WB (thru)	A	7.9	0.45	97	244	B	11.8	0.67	290	436	A	9.9	0.43	204	273
Scenic Hwy (Route 6) WB (thru/right)	A	7.9	0.45	97	244	B	11.8	0.67	290	436	A	9.9	0.43	204	273
Church Lane SB (left/thru/right)	D	47.1	0.58	57	106	D	42.4	0.53	55	119	E	72.9	0.79	143	148
21:: Scenic Highway (Route 6) & Route 3 SB Off-Ramp	B	16.4				D	40.8				C	20.3			
Scenic Hwy (Route 6) EB (thru)	B	9.1	0.46	146	238	B	10.7	0.47	206	285	A	7.9	0.31	110	153
Scenic Hwy (Route 6) WB (thru)	B	13.9	0.77	333	482	C	29.2	0.95	777	801	B	17.5	0.85	566	736
Scenic Hwy (Route 6) WB (thru)	B	13.9	0.77	333	482	C	29.2	0.95	777	801	B	17.5	0.85	566	736
Route 3 Off-Ramp SB (left/right)	D	41.0	0.76	154	#331	F	135.0	1.14	~413	#623	D	52.6	0.81	223	#352
22:: Meetinghouse Lane / State Road / Canal Street	D	46.4				E	78.0				D	49.1			
Meetinghouse Ln EB (left)	C	27.2	0.64	165	#501	E	67.8	1.01	283	#754	D	52.7	0.83	130	#209
Meetinghouse Ln EB (thru)	B	19.5	0.26	82	217	C	31.7	0.68	230	#574	E	64.6	0.86	271	#408
Meetinghouse Ln EB (right)	B	19.3	0.23	0	77	C	20.3	0.05	0	0	D	38.2	0.16	0	54
Meetinghouse Ln WB (left)	C	33.7	0.09	8	34	D	35.6	0.15	8	31	D	41.7	0.26	19	41
Meetinghouse Ln WB (thru/right)	F	105.3	1.04	259	#522	F	271.0	1.45	~236	#400	F	124.7	1.06	213	#324
Canal St NB (left)	D	41.4	0.74	160	181	C	34.0	0.77	127	#186	C	21.4	0.62	74	176
Canal St NB (thru/right)	D	43.9	0.64	187	218	C	29.7	0.43	115	165	B	19.8	0.29	101	233
State Rd SB (left)	D	45.1	0.13	13	29	C	32.8	0.14	14	34	B	18.3	0.11	19	58
State Rd SB (thru/right)	D	49.4	0.25	17	80	D	43.1	0.64	93	159	C	30.9	0.67	230	#645
23:: State Road / Route 3 NB On-Ramp	A	4.3				A	3.7				A	3.1			
State Rd NB (left)	A	8.9	0.31	-	33	A	9.5	0.37	-	100	B	10.9	0.34	-	38
State Rd NB (thru)	A	0.0	0.13	-	0	A	0.0	0.24	-	0	A	0.0	0.08	-	0
State Rd SB (thru)	A	0.0	0.12	-	0	A	0.0	0.18	-	0	A	0.0	0.39	-	0
State Rd SB (right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.01	-	0
24:: Cranberry Highway / Adams Street	A	3.2				A	3.5				A	2.5			
Cranberry Highway EB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Cranberry Highway EB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Cranberry Highway WB (left/thru)	A	9.2	0.01	-	0	A	8.5	0.01	-	0	A	7.9	0.00	-	0
Cranberry Highway WB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Adams Street NB [left/thru/right]	A	0.0	0.00	-	0	B	10.0	0.02	-	1	B	12.5	0.06	-	5
Adams Street SB [left/thru/right]	B	11.3	0.32	-	35	B	13.6	0.43	-	54	B	12.5	0.28	-	28
25:: Sandwich Road / Adams Street	A	0.3				A	0.2				A	0.3			
Sandwich Rd EB (thru/right)	A	0.0	0.42	-	0	A	0.0	0.52	-	0	A	0.0	0.41	-	0
Sandwich Rd WB (left/thru)	A	0.5	0.02	-	2	A	0.4	0.01	-	1	A	0.6	0.02	-	1
26:: Cranberry Highway / Sandwich Road / Regency Drive	F	498.4				F	1019.7				A	4.4			
Sandwich Rd EB (left/thru/right)	A	7.7	0.00	-	0	A	8.2	0.01	-	0	A	8.8	0.01	-	0
Sandwich Rd WB (left/thru/right)	A	9.8	0.33	-	36	B	10.5	0.38	-	44	C	15.2	0.65	-	127
Cranberry Highway NB (left/thru)	F	1863.3	4.91	-	Err	F	4523.4	10.63	-	Err	A	0.0	0.00	-	Err
Cranberry Highway NB (right)	B	11.1	0.05	-	4	B	13.1	0.18	-	16	B	13.2	0.13	-	11
Regency Dr SB (left/thru/right)	D	29.5	0.08	-	7	A	0.0	0.00	-	0	A	0.0	0.00	-	1
27:: Old King's Highway (Route 6A) / Main Street (Route 130) / Tupper Road	F	91.1				A	5.1				F	2211.3			
Old King's Hwy (Route 6A) EB (left/thru/right)	A	9.1	0.30	-	31	A	8.5	0.11	-	9	B	10.0	0.15	-	13
Old King's Hwy (Route 6A) WB (left/thru/right)	A	7.5	0.00	-	0	A	8.1	0.01	-	1	A	8.0	0.01	-	0
Main St (Route 130) NB (left/thru/right)	F	635.8	2.13	-	393	C	15.4	0.16	-	15	F	13382.0	29.39	-	Err
Tupper Rd SB (left/thru/right)	B	12.6	0.23	-	21	C	17.3	0.47	-	63	F	68.8	0.94	-	241
28:: Old King's Highway (Route 6A) / Tupper Road	D	39.4				F	239.7				F	143.9			
Old King's Hwy (Route 6A) EB (left)	C	25.3	0.05	2	12	B	19.7	0.02	2	12	C	20.4	0.11	6	28
Old King's Hwy (Route 6A) EB (thru/right)	C	32.6	0.64	102	191	C	29.4	0.69	225	436	C	30.2	0.72	245	#493
Old King's Hwy (Route 6A) WB (left/thru)	D	41.7	0.79	111	234	C	33.4	0.75	184	#416	F	162.8	1.25	~409	#767
Old King's Hwy (Route 6A) WB (right)	C	25.9	0.15	6	57	C	22.0	0.27	37	123	C	24.7	0.51	106	263
Tupper Rd NB (left/thru/right)	D	54.9	0.91	140	#380	F	480.1	1.95	~568	#949	F	208.6	1.32	~302	#601
Tupper Rd SB (left)	D	37.8	0.67	43	#165	F	858.5	2.74	~217	#424	F	548.0	2.06	~227	#449
Tupper Rd SB (thru/right)	C	24.5	0.20	31	94	D	37.7	0.50	98	200	D	39.0	0.52	102	207

Table B-2 : Synchro and SIDRA Results Summary - 2019 Existing Summer

Intersection	2019 Existing Summer AM					2019 Existing Summer PM					2019 Existing Summer MID				
	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)
29:: Water Street (Route 130) / Beale Avenue	A	3.1				A	1.8				A	4.8			
Beale Ave WB (left/right)	C	23.1	0.41	-	48	C	21.6	0.29	-	29	F	71.5	0.70	-	100
Water St (Route 130) NB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Water St (Route 130) SB (left/thru)	A	8.7	0.01	-	0	A	8.7	0.01	-	1	A	9.9	0.02	-	2
30:: Main Street / Beale Avenue	A	5.1				A	4.6				A	3.7			
Main St EB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Main St WB (left/thru)	A	7.5	0.06	-	5	A	7.5	0.03	-	3	A	7.6	0.06	-	4
Beale Ave NB (left/right)	A	9.7	0.08	-	7	A	9.5	0.12	-	10	B	10.4	0.14	-	12
31:: Old King's Highway (Route 6A) / Main Street / Old Main Street	A	2.4				A	2.8				A	4.8			
Main St EB (left)	C	20.3	0.03	-	2	E	37.9	0.10	-	7	F	198.6	0.64	-	51
Main St EB (thru/right)	B	10.0	0.10	-	8	C	17.7	0.32	-	34	C	15.4	0.30	-	32
Old Main St WB (left/thru/right)	B	14.5	0.04	-	4	C	21.6	0.05	-	4	E	40.5	0.16	-	11
Old King's Hwy (Route 6A) NB (left/thru/right)	A	7.9	0.07	-	6	A	9.3	0.08	-	7	A	9.4	0.14	-	12
Old King's Hwy (Route 6A) SB (left/thru/right)	A	8.1	0.01	-	0	A	8.3	0.00	-	0	A	0.0	0.00	-	0
32:: Forestdale Road (Route 130) / Route 6 EB Ramps	C	21.4				D	54.6				B	13.9			
Route 6 EB Ramps EB (left)	C	24.8	0.25	22	45	C	21.7	0.21	26	53	C	22.3	0.38	19	51
Route 6 EB Ramps EB (right)	D	35.4	0.72	33	#119	F	155.2	1.23	~199	#295	C	22.1	0.33	0	#76
Forestdale Rd (Route 130) NB (left)	A	6.5	0.22	11	23	B	11.0	0.42	13	28	A	4.0	0.16	7	15
Forestdale Rd (Route 130) NB (thru)	B	18.0	0.89	318	#601	B	15.4	0.83	229	390	B	11.8	0.83	183	336
Forestdale Rd (Route 130) SB (thru/right)	B	16.8	0.69	99	195	C	22.1	0.89	105	m126	A	9.2	0.48	82	144
33:: Water Street (Route 130) / Route 6 WB Ramps	C	19.3				C	34.6				B	19.5			
Route 6 WB Ramps EB (left)	D	36.9	0.71	53	103	E	60.1	0.92	99	#216	D	35.8	0.82	97	#220
Route 6 WB Ramps EB (right)	A	0.1	0.09	0	0	A	0.0	0.04	0	0	A	0.0	0.02	0	0
Forestdale Rd (Route 130) NB (left)	C	26.8	0.81	137	m156	C	34.2	0.89	130	m#193	C	22.0	0.58	63	93
Forestdale Rd (Route 130) NB (left)	C	26.8	0.81	137	m156	C	34.2	0.89	130	m#193	C	22.0	0.58	63	93
Forestdale Rd (Route 130) NB (thru)	A	6.5	0.38	121	m145	A	7.1	0.31	74	m130	A	9.3	0.68	150	221
Forestdale Rd (Route 130) SB (thru)	C	24.0	0.70	168	#305	D	46.5	0.96	251	#440	C	26.8	0.82	142	#275
Forestdale Rd (Route 130) SB (right)	A	0.0	0.02	0	0	A	0.0	0.02	0	0	A	0.0	0.02	0	0
34:: Quaker Meeting House Road / Route 6 EB Ramps	F	191.7				F	67.3				E	46.9			
Route 6 EB Ramps EB (left/right)	F	611.1	2.24	-	873	F	426.8	1.76	-	435	F	275.1	1.44	-	411
Quaker Meetinghouse Rd NB (left/thru)	A	9.1	0.33	-	36	B	11.0	0.36	-	41	B	10.1	0.25	-	24
Quaker Meetinghouse Rd SB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
35:: Quaker Meeting House Road / Route 6 WB Ramps	A	2.4				E	45.8				E	47.6			
Route 6 WB Ramps WB (left/right)	B	12.3	0.21	-	29	F	131.8	1.16	-	413	F	125.0	1.16	-	498
Quaker Meetinghouse Rd NB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Quaker Meetinghouse Rd SB (left/thru)	A	8.2	0.03	-	3	A	7.9	0.04	-	3	A	8.1	0.02	-	1
36:: Route 130 / Cotuit Rd	C	22.5				F	54.1				D	30.5			
Cotuit Rd WB (left)	F	63.0	0.09	-	7	F	2225.1	4.30	-	Err	F	98.8	0.23	-	19
Cotuid Rd WB (right)	F	74.8	1.02	-	364	F	52.3	0.92	-	271	F	104.3	1.11	-	432
Route 130 NB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Route 130 SB (left)	B	10.8	0.35	-	39	C	15.2	0.64	-	121	B	11.8	0.43	-	56
Route 130 SB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
37:: Nathan Ellis Highway (Route 151) / Route 28 NB Ramps	A	2.0				F	458.3				F	65.8			
Nathan Ellis Hwy (Route 151) EB (left/thru)	A	8.9	0.11	-	9	A	9.3	0.17	-	15	A	9.5	0.16	-	14
Nathan Ellis Hwy (Route 151) WB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Nathan Ellis Hwy (Route 151) WB (right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Route 28 NB Ramps SB (left/right)	C	20.5	0.35	-	60	F	4153.4	9.70	-	Err	F	$685.2	2.29	-	433

Table B-2 : Synchro and SIDRA Results Summary - 2019 Existing Summer

Intersection	2019 Existing Summer AM					2019 Existing Summer PM					2019 Existing Summer MID				
	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)
38:: Nathan Ellis Highway (Route 151) / Route 28 SB Ramps	A	5.6				F	324.9				F	93.1			
Nathan Ellis Hwy (Route 151) EB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Nathan Ellis Hwy (Route 151) EB (right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Nathan Ellis Hwy (Route 151) WB (left/thru)	A	8.6	0.13	-	11	A	9.6	0.10	-	9	A	9.0	0.09	-	7
Route 28 SB Ramps NB (left/right)	C	19.7	0.61	-	293	F	888.7	2.90	-	1999	F	343.3	1.67	-	1023
39:: Belmont Circle	F	274.9				F	401.3				F	223.7			
Buzzards Bay Bypass (Route 6) EB (left/thru/right)	B	13.7	0.41	-	34	C	17.2	0.57	-	58	F	180.9	1.31	-	1262
Main Street (Route 6) WB (left/thru)	C	18.4	0.70	-	112	D	25.5	0.83	-	196	D	28.4	0.83	-	179
Main Street (Route 6) WB (right)	F	389.0	1.82	-	5539	F	481.5	2.03	-	7396	F	279.8	1.57	-	3757
Old Bridge Road NB (left/thru/right)	A	0.0	0.01	-	1	A	8.0	0.01	-	1	A	8.2	0.01	-	1
Route 28/25 Ramps SB (left/thru/right)	F	359.0	1.75	-	4645	F	711.4	2.54	-	8095	F	113.5	1.17	-	1242
Main Street NEB (left/thru/right)	F	243.7	1.49	-	3359	F	228.8	1.46	-	3360	F	379.7	1.8	-	5277
Head of the Bay Road SEB (left/thru/right)	B	12.5	0.31	-	23	B	11.7	0.27	-	19	C	18.6	0.51	-	45

Legend

~ : Volume exceeds capacity

$: Delay exceeds 300s

+ : Computation not defined

* : All major volume in platoon

: 95th percentile volume exceeds capacity; queue may be longer

m : Volume for 95th percentile queue is metered by upstream signal

Err : Error

dr : Defacto right lane

Table B-3: INRIX vs. VISSIM Travel Time Comparison

					Travel Time (min)											
					Fall						Summer					
	From	To	Start Point	End point	Weekday AM		Weekday PM		Saturday MID		Weekday AM		Weekday PM		Saturday MID	
					INRIX	*VISSIM*	*INRIX*	*VISSIM*	*INRIX*	*VISSIM*	*INRIX*	*VISSIM*	*INRIX*	*VISSIM*	*INRIX*	*VISSIM*
Bourne Bridge	Route 25 SB	Route 28	Route 25 SB at Plymouth Lane Overpass	Route 28 SB at Clay Pond Road	10.9	7.3	14.6	10.1	10.4	7.5	10.9	6.0	18.8	13.9	24.1	19.5
		Scenic Highway (Route 6)		Scenic Highway at Off-Ramp to Sagamore Bridge	11.8	8.7	15.2	11.6	12.0	8.9	11.6	7.5	24.5	16.2	28.0	18.4
		Bourne Bridge		End of Bourne Bridge SB	8.7	4.6	12.6	7.5	8.3	4.8	8.8	3.9	16.8	10.9	21.9	16.1
		Sagamore Bridge		End of Sagamore Bridge SB (via Scenic Highway)	13.0	10.5	16.5	13.3	13.3	10.7	12.9	9.2	27.7	19.0	31.4	23.3
	Route 28 NB	Belmont Circle Off-Ramp	Route 28 NB at Clay Pond Road	End of the Route 25/28 Off Ramp	5.2	5.7	14.7	12.9	6.8	8.7	4.6	5.6	11.4	11.3	7.1	7.6
		Sandwich Road		Sandwich Road at Mid-Cape Connector	7.7	6.5	17.6	14.4	9.0	9.4	6.5	6.2	14.7	13.7	10.3	11.0
		Sagamore Bridge		End of Sagamore Bridge NB (via Sandwich Road)	9.6	9.0	19.5	17.1	10.9	12.1	8.4	8.8	16.6	16.5	12.5	16.1
		Route 25		Route 25 NB at Plymouth Lane Overpass	10.1	6.4	19.5	15.7	11.3	9.4	9.3	6.9	16.0	12.0	11.6	7.9
		Bourne Bridge		End of Bourne Bridge NB	4.0	3.7	13.5	10.6	5.6	6.6	3.4	3.5	10.2	9.2	5.9	5.1
Sagamore Bridge	Route 3 SB	Off-Ramp to Scenic Highway	Route 3 SB south of Herring Pond Road	End of Off-Ramp to Scenic Highway	2.7	3.4	2.7	2.5	3.9	3.4	2.7	2.6	11.2	5.9	12.1	5.8
		Off-Ramp to Mid-Cape Connector		End of Off-Ramp to Mid-Cape Connector	4.0	6.5	4.1	4.9	5.2	6.6	4.0	4.8	12.9	12.1	14.2	10.9
		Route 6		Route 6 E SB north of Route 130	6.8	8.4	6.8	6.7	8.0	8.6	6.8	6.4	16.0	15.5	17.8	14.5
		Bourne Bridge		End of Bourne Bridge SB (via Scenic Highway)	10.9	11.4	11.5	10.2	10.9	11.7	10.6	10.8	27.4	19.3	29.2	19.4
		Sagamore Bridge		End of Sagamore Bridge SB	3.0	5.5	3.0	3.7	4.2	5.6	3.0	3.9	11.7	10.7	12.8	9.6
	Route 6 E NB	Off-Ramp to Cranberry Highway	Route 6 E NB north of Route 130	End of Off-Ramp to Cranberry Highway	3.8	3.1	5.0	3.5	3.6	3.1	3.8	3.4	3.7	3.6	8.0	5.6
		Off-Ramp to Scenic Highway WB		End of Off-Ramp to Scenic Highway	4.5	4.8	5.8	5.5	4.3	4.8	4.5	5.3	4.5	5.6	9.4	9.6
		Route 3		Route 3 NB south of Herring Pond Road	6.4	6.2	7.6	6.8	6.1	6.2	6.4	7.0	6.3	7.3	11.3	10.6

Note: Route 6 E = Route 6 east/south of Sagamore Bridge

Table B-4: VISSIM Speed Summary

Name	Start Point	End Point	Speed (mph)					
			Fall			Summer		
			Weekday AM	Weekday PM	Saturday MID	Weekday AM	Weekday PM	Saturday MID
Route 25 SB	Route 25 SB at Plymouth Lane Overpass	Off-Ramp diverge to Belmont Circle	50	23	50	60	16	12
Route 25 NB	On-Ramp merge from Belmont Circle	Route 25 NB at Plymouth Lane Overpass	60	27	60	46	60	60
Bourne Bridge SB	On-Ramp merge from Belmont Circle	Bourne Rotary	25	26	23	28	17	13
Bourne Bridge NB	Bourne Rotary	Off-Ramp diverge to Belmont Circle	42	37	42	43	42	42
Route 28 SB	Bourne Rotary	Route 28 SB at Clay Pond Road	41	42	42	54	37	33
Route 28 NB	Route 28 NB at Clay Pond Road	Bourne Rotary	41	12	21	42	13	28
Scenic Highway EB	Belmont Circle	Off-Ramp to Sagamore Bridge	37	38	37	43	29	28
Scenic Highway WB	Off-Ramp to Sagamore Bridge	Belmont Circle	36	38	35	33	23	28
Sandwich Road EB	Bourne Rotary	Mid-Cape Connector	43	33	44	46	35	30
Sandwich Road WB	Mid-Cape Connector	Bourne Rotary	30	20	30	31	32	16
Route 3 SB	Route 3 SB south of Herring Pond Road	Off-Ramp diverge to Scenic Highway	28	38	28	38	15	15
Route 3 NB	On-Ramp merge from State Road	Route 3 NB south of Herring Pond Road	50	51	51	42	42	42
Sagamore Bridge SB	On-Ramp merge from Scenic Highway	Off-Ramp diverge to Mid-Cape Connector	32	36	32	35	18	18
Sagamore Bridge NB	On-Ramp merge from Cranberry Highway	Off-Ramp diverge to Meetinghouse Lane	36	32	36	33	31	20
Route 6 E SB	On-Ramp merge from Mid Cape Connector	Route 6 E SB north of Route 130	44	43	42	49	26	25
Route 6 E NB	Route 6 E NB north of Route 130	Off-Ramp diverge to Cranberry Highway	41	35	41	37	35	21

Table B-5: VISSIM Processed Volumes Summary and Comparison with Volumes from Flow Maps

From	Location/Movement	Processed Volume																	
		Fall									Summer								
		Weekday AM			Weekday PM			Saturday MID			Weekday AM			Weekday PM			Saturday MID		
		Flow Maps	VISSIM	% Processed	Flow Maps	VISSIM	% Processed	Flow Maps	VISSIM	% Processed	Flow Maps	VISSIM	% Processed	Flow Maps	VISSIM	% Processed	Flow Maps	VISSIM	% Processed
Buzzards Bay Rotary																			
Main Street (Route 6) EB	Approach west of BB Rotary	675	673	99.8%	580	577	99.6%	880	1025	116.5%	640	689	107.6%	970	964	99.4%	1310	1309	99.9%
Main Street (Route 6) WB	West of BB Rotary	430	412	95.7%	755	748	99.1%	905	744	82.3%	495	461	93.1%	920	843	91.6%	760	647	85.1%
Main Street WB	Approach east of BB Rotary	180	159	88.2%	340	308	90.6%	625	432	69.1%	220	189	86.0%	475	426	89.7%	485	423	87.1%
Buzzards Bay Bypass (Route 6) SWB		285	292	102.5%	520	566	108.8%	365	388	106.3%	295	299	101.3%	485	468	96.6%	315	251	79.5%
Lincoln Avenue SB		65	67	102.7%	65	67	102.7%	105	107	102.0%	70	73	103.6%	80	82	103.0%	120	123	102.6%
Belmont Circle																			
Buzzards Bay Bypass (Route 6) EB		135	183	135.7%	340	372	109.5%	310	351	113.2%	195	194	99.4%	295	302	102.3%	440	358	81.3%
Belmont Circle WB	Thru	240	292	121.7%	550	566	102.8%	405	388	95.8%	305	299	98.0%	500	468	93.7%	255	251	98.3%
Route 25/28 Ramps SB		1185	1136	95.8%	1350	1279	94.7%	1365	1310	96.0%	1165	1127	96.7%	1480	1399	94.6%	1080	973	90.1%
Belmont Circle NB	Thru to the ramps	1915	1813	94.7%	1770	1657	93.6%	1925	1789	93.0%	1795	1734	96.6%	1950	1687	86.5%	1850	1471	79.5%
Main Street (Route 6) WB		1605	1501	93.5%	1630	1496	91.7%	1495	1383	92.5%	1815	1705	93.9%	2195	1903	86.7%	1740	1486	85.4%
Main Street NEB	Thru	700	726	103.7%	895	904	101.0%	665	732	110.0%	1060	1180	111.3%	1095	1062	97.0%	1075	1059	98.5%
Belmont Circle EB	Thru	1290	1294	100.3%	1135	1120	98.7%	1275	1208	94.8%	1115	1183	106.1%	1335	1264	94.7%	1050	904	86.1%
North of Bourne Bridge - Route 25 Ramps																			
Route 25 SB	Approach before Exit 10	1845	1831	99.2%	1755	1721	98.1%	1915	2059	107.5%	1880	1871	99.5%	2370	2592	109.4%	2285	2786	121.9%
Route 25 SB Off-Ramp to Belmont Circle		715	695	97.2%	700	659	94.1%	760	791	104.0%	650	632	97.2%	780	811	104.0%	685	592	86.4%
Route 25 SB On-Ramp from Belmont Circle		760	714	93.9%	700	651	93.0%	1025	832	81.1%	700	673	96.2%	595	512	86.1%	1040	822	79.0%
Route 25 NB Off-Ramp to Belmont Circle		470	445	94.6%	650	630	96.9%	605	526	87.0%	515	501	97.3%	700	597	85.2%	395	392	99.3%
Route 25 NB On-Ramp from Belmont Circle		1155	1090	94.4%	1070	999	93.4%	900	950	105.6%	1095	1055	96.3%	1355	1163	85.8%	810	638	78.7%
Route 25 NB	After On-Ramp from Belmont Circle	1910	1787	93.6%	2230	2054	92.1%	1820	1729	95.0%	1935	1837	94.9%	2645	2224	84.1%	2260	2049	90.7%
Bourne Bridge																			
Bourne Bridge SB		1890	1804	95.4%	1755	1639	93.4%	2180	2048	94.0%	1930	1871	96.9%	2185	2123	97.2%	2640	2353	89.1%
Bourne Bridge NB		1225	1178	96.1%	1810	1755	97.0%	1525	1328	87.1%	1355	1325	97.8%	1990	1689	84.9%	1845	1839	99.6%
South of Bourne Bridge - Bourne Rotary																			
Bourne Bridge SB		1890	1804	95.4%	1755	1639	93.4%	2180	2048	94.0%	1930	1871	96.9%	2185	2123	97.2%	2640	2353	89.1%
Trowbridge Road EB		350	338	96.5%	415	422	101.7%	305	296	97.0%	295	281	95.4%	510	412	80.7%	230	237	103.1%
Trowbridge Road WB	West of Bourne Rotary	285	261	91.6%	215	181	84.2%	455	403	88.5%	145	138	95.3%	235	204	86.6%	265	211	79.5%
Route 28 NB		1435	1410	98.2%	1305	1503	115.2%	1545	1475	95.5%	1325	1310	98.9%	1580	1537	97.3%	1680	1838	109.4%
Route 28 SB	South of Bourne Rotary	1890	1753	92.7%	1335	1198	89.7%	1560	1479	94.8%	1925	1837	95.4%	1610	1464	90.9%	2195	1892	86.2%
Sandwich Road WB		670	633	94.4%	970	776	79.9%	725	783	107.9%	1050	1056	100.6%	845	785	92.9%	1005	825	82.1%
Sandwich Road EB	East of Bourne Rotary	945	897	95.0%	1085	980	90.3%	1215	1084	89.2%	1175	1127	95.9%	1285	1091	84.9%	1250	1116	89.3%
Between Bourne and Sagamore Bridges																			
Scenic Highway EB		1270	1248	98.2%	1060	1027	96.9%	1190	1115	93.7%	1090	1141	104.7%	1215	1123	92.4%	930	788	84.7%
Scenic Highway WB		1550	1450	93.6%	1520	1493	98.2%	1330	1324	99.6%	1405	1637	116.5%	1885	1950	103.4%	1425	1381	96.9%
Sandwich Road EB		940	1031	109.6%	1085	1054	97.1%	1205	1162	96.4%	1170	1198	102.4%	1280	1227	95.9%	1235	1192	96.5%
Sandwich Road WB		775	774	99.9%	1030	1126	109.3%	680	810	119.1%	935	1038	111.0%	1035	1039	100.4%	935	983	105.1%
Scenic Highway (Route 6) / Church Lane																			
Scenic Highway (Route 6) EB	Thru	435	421	96.7%	520	496	95.3%	330	320	96.9%	415	425	102.5%	475	451	94.9%	275	226	82.1%
Scenic Highway (Route 6) EB	Right	865	828	95.7%	630	597	94.7%	745	727	97.6%	680	699	102.8%	630	597	94.8%	805	649	80.7%
Scenic Highway (Route 6) WB	Left	296	302	102.0%	245	250	101.9%	340	350	103.0%	290	293	100.9%	290	290	100.2%	725	601	82.9%
Scenic Highway (Route 6) WB	Thru	1500	1433	95.6%	1485	1414	95.2%	1285	1237	96.3%	1345	1310	97.4%	1860	1780	95.7%	1410	1227	87.0%
Scenic Highway (Route 6) / Route 3 SB Off-Ramp																			
Route 3 SB Off-Ramp SB	Left	115	114	99.1%	160	156	97.5%	120	115	96.0%	75	74	99.0%	60	61	101.5%	65	82	126.1%
Route 3 SB Off-Ramp SB	Right	265	253	95.6%	310	294	94.9%	380	356	93.7%	220	213	96.7%	355	364	102.4%	235	294	125.3%

Table B-5: VISSIM Processed Volumes Summary and Comparison with Volumes from Flow Maps

From	Location/Movement	Processed Volume																	
		Fall									Summer								
		Weekday AM			Weekday PM			Saturday MID			Weekday AM			Weekday PM			Saturday MID		
		Flow Maps	VISSIM	% Processed	Flow Maps	VISSIM	% Processed	Flow Maps	VISSIM	% Processed	Flow Maps	VISSIM	% Processed	Flow Maps	VISSIM	% Processed	Flow Maps	VISSIM	% Processed
Meetinghouse Lane / State Road / Canal Street																			
Meetinghouse Lane WB	Approach east of intersection	325	316	97.4%	275	267	97.1%	325	316	97.4%	360	354	98.3%	330	322	97.6%	270	264	97.6%
Meetinghouse Lane EB	East of intersection	255	239	93.8%	440	418	95.0%	340	320	94.1%	275	267	97.0%	525	484	92.2%	440	384	87.4%
North of Sagamore Bridge - Route 3 Ramps																			
Route 3 SB	Approach before Exit 1A	1510	1460	96.7%	1510	1464	97.0%	1670	1713	102.6%	1680	1630	97.0%	1855	1953	105.3%	1380	1707	123.7%
Route 3 SB Off-Ramp to Scenic Highway	Exit 1A-B	380	372	97.8%	470	455	96.8%	500	476	95.3%	295	289	98.0%	415	429	103.3%	300	381	127.2%
Route 3 SB On-Ramp from Scenic Highway		1180	1125	95.3%	895	840	93.8%	1120	1072	95.8%	985	986	100.1%	940	885	94.1%	1585	1200	75.7%
Route 3 NB Off-Ramp to Meetinghouse Lane	Exit 1A	290	277	95.4%	475	453	95.3%	310	293	94.7%	340	329	96.7%	515	483	93.8%	330	286	86.5%
Route 3 NB Off-Ramp to Scenic Highway WB	Exit 1B	1015	976	96.2%	1050	1004	95.7%	565	538	95.1%	865	853	98.7%	1305	1237	94.8%	1105	925	83.7%
Route 3 NB On-Ramp from State Road		435	424	97.4%	395	368	93.2%	325	313	96.2%	375	342	91.2%	425	403	94.8%	300	271	90.4%
Route 3 NB	After On-Ramp from State Road	1130	1077	95.3%	1570	1480	94.3%	1710	1642	96.0%	1530	1473	96.3%	1955	1813	92.8%	2155	1841	85.4%
Sagamore Bridge																			
Sagamore Bridge SB		2310	2167	93.8%	1935	1820	94.1%	2290	2256	98.5%	2370	2292	96.7%	2380	2176	91.4%	2665	2396	89.9%
Sagamore Bridge NB		2000	1938	96.9%	2700	2605	96.5%	2260	2199	97.3%	2360	2347	99.5%	3350	3182	95.0%	3290	2938	89.3%
South of Sagamore Bridge - Route 6 E Ramps																			
Route 6 E SB Off-Ramp to Mid-Cape Connector	Exit 1C	530	498	93.9%	605	573	94.7%	380	378	99.5%	520	506	97.3%	680	623	91.6%	510	462	90.6%
Route 6 E SB On-Ramp from Mid-Cape Connector		680	594	87.4%	925	796	86.1%	885	795	89.8%	895	838	93.7%	965	767	79.5%	1115	920	82.5%
Route 6 E SB	After On-Ramp from Mid-Cape Connector	2460	2207	89.7%	2255	2001	88.7%	2795	2615	93.6%	2745	2573	93.7%	2665	2238	84.0%	3270	2766	84.6%
Route 6 E NB	Approach before Exit 1C	1840	1818	98.8%	2670	2638	98.8%	1855	1833	98.8%	2345	2313	98.7%	3215	3177	98.8%	2865	2926	102.1%
Route 6 E NB Off-Ramp to Cranberry Highway	Exit 1C	305	290	95.0%	635	605	95.2%	530	507	95.7%	495	474	95.8%	515	497	96.5%	430	377	87.6%
Route 6 E NB On-Ramp from Cranberry Highway		465	443	95.4%	665	633	95.2%	935	913	97.6%	510	551	108.1%	650	573	88.1%	855	613	71.7%
Sandwich Road (Route 6A) / Cranberry Highway																			
Sandwich Road (Route 6A) WB	Approach east of intersection	480	474	98.7%	580	591	101.9%	920	933	101.4%	515	536	104.0%	725	631	87.0%	1210	1141	94.3%
Sandwich Road (Route 6A) EB	East of intersection	330	405	122.7%	535	539	100.8%	495	451	91.1%	405	413	101.9%	555	556	100.2%	575	529	92.0%

Table B-6: VISSIM Density and LOS Summary

Name	Start Point	End Point	Fall						Summer					
			Weekday AM		Weekday PM		Saturday MID		Weekday AM		Weekday PM		Saturday MID	
			Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS
Route 25 SB	Route 25 SB at Plymouth Lane Overpass	On-Ramp merge from Belmont Circle	36	E	68	F	41	E	31	D	149	F	252	F
Route 25 NB	Off-Ramp diverge to Belmont Circle	Route 25 NB at Plymouth Lane Overpass	27	D	66	F	27	D	36	E	35	D	34	D
Belmont Circle Off-Ramp	Off-Ramps merge	Belmont Circle	46	F	52	F	54	F	45	E	60	F	69	F
SB Off-Ramp to Belmont Circle	Route 25 SB	Off-Ramps merge	21	C	26	C	28	C	16	B	52	F	44	E
NB Off-Ramp to Belmont Circle	Route 25 NB	Off-Ramps merge	13	B	24	C	15	B	15	B	18	B	12	B
Belmont Circle On-Ramp	Belmont Circle	On-Ramps diverge	71	F	54	F	64	F	59	F	58	F	89	F
On-Ramp to Route 25 SB	On-Ramps diverge	Route 25 SB	19	B	17	B	22	C	18	B	14	B	60	F
On-Ramp to Route 25 NB	On-Ramps diverge	Route 25 NB	30	D	27	C	26	C	29	D	32	D	17	B
Bourne Bridge SB	On-Ramp merge from Belmont Circle	Bourne Rotary	72	F	62	F	93	F	67	F	125	F	175	F
Bourne Bridge NB	Bourne Rotary	Off-Ramp diverge to Belmont Circle	30	D	61	F	34	D	33	D	43	E	47	F
Route 28 SB	Bourne Rotary	Route 28 SB at Clay Pond Road	42	E	28	D	36	E	34	D	39	E	57	F
Route 28 NB	Route 28 NB at Clay Pond Road	Bourne Rotary	35	D	131	F	74	F	31	D	131	F	67	F
Route 3 SB	Route 3 SB south of Herring Pond Road	On-Ramp merge from Scenic Highway	58	F	38	E	68	F	44	E	152	F	118	F
Route 3 NB	Off-Ramp diverge to Meetinghouse Lane	Route 3 NB south of Herring Pond Road	25	C	34	D	35	D	37	E	48	F	64	F
Route 3 SB Off-Ramp to Scenic Highway	Route 3 SB	Scenic Highway	13	B	13	B	17	B	9	A	16	B	15	B
Scenic Highway On-Ramp to Sagamore Bridge SB	Scenic Highway EB	Sagamore Bridge SB	45	E	31	D	42	E	38	E	44	E	159	F
Route 3 NB Off-Ramp to Scenic Highway EB	Route 3 NB	Scenic Highway EB	8	A	13	B	8	A	9	A	18	C	8	A
Route 3 NB Off-Ramp to Scenic Highway WB	Route 3 NB	Scenic Highway WB	28	C	29	D	15	B	24	C	36	E	77	F
State Road On-Ramp to Route 3 NB	State Road	Route 3 NB	14	B	12	B	10	A	11	B	13	B	9	A
Sagamore Bridge SB	On-Ramp merge from Scenic Highway	Off-Ramp diverge to Mid-Cape Connector	66	F	51	F	69	F	65	F	121	F	134	F
Sagamore Bridge NB	On-Ramp merge from Cranberry Highway	Off-Ramp diverge to Meetinghouse Lane	54	F	83	F	62	F	73	F	104	F	151	F
Route 6 E SB	Off-Ramp diverge to Mid-Cape Connector	Route 6 E SB north of Route 130	50	F	45	F	61	F	51	F	84	F	105	F
Route 6 E NB	Route 6 E NB north of Route 130	On-Ramp merge from Cranberry Highway	48	F	79	F	48	F	67	F	98	F	149	F
Route 6 E SB Off-Ramp to Mid-Cape Connector	Route 6 E SB	Mid-Cape Connector	17	B	20	B	13	B	17	B	22	C	16	B
Mid-Cape Connector On-Ramp to Route 6 E SB	Mid-Cape Connector	Route 6 E SB	16	B	25	C	23	C	22	C	22	C	36	E
Route 6 E NB Off-Ramp to Cranberry Highway	Route 6 E NB	Cranberry Highway	12	B	26	C	21	C	20	B	20	B	15	B
Cranberry Highway On-Ramp to Route 6 E NB	Cranberry Highway	Route 6 E NB	11	B	18	B	26	C	14	B	22	C	109	F

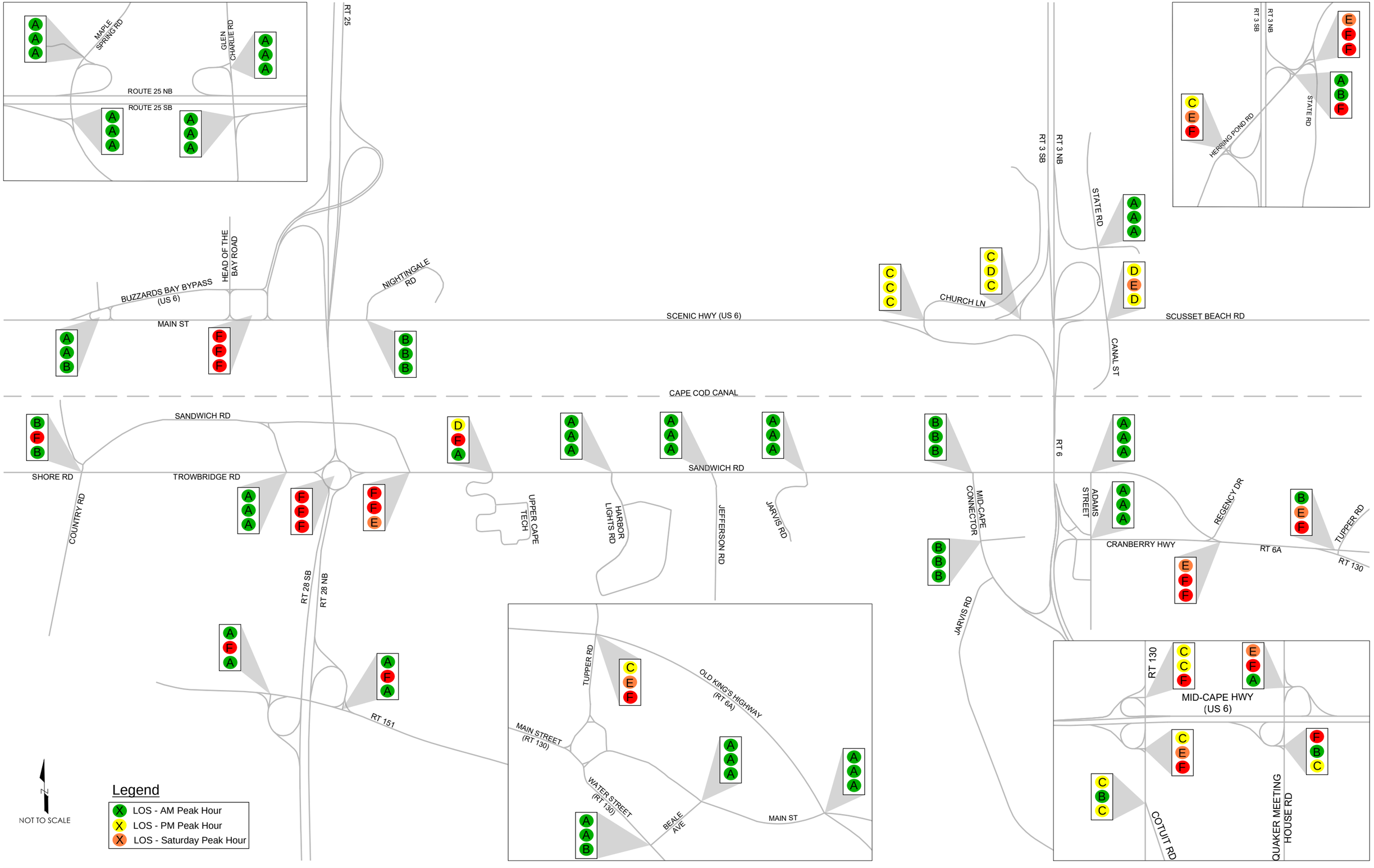


Figure B-1: Existing (2019) Intersection Level of Service Summary - Fall

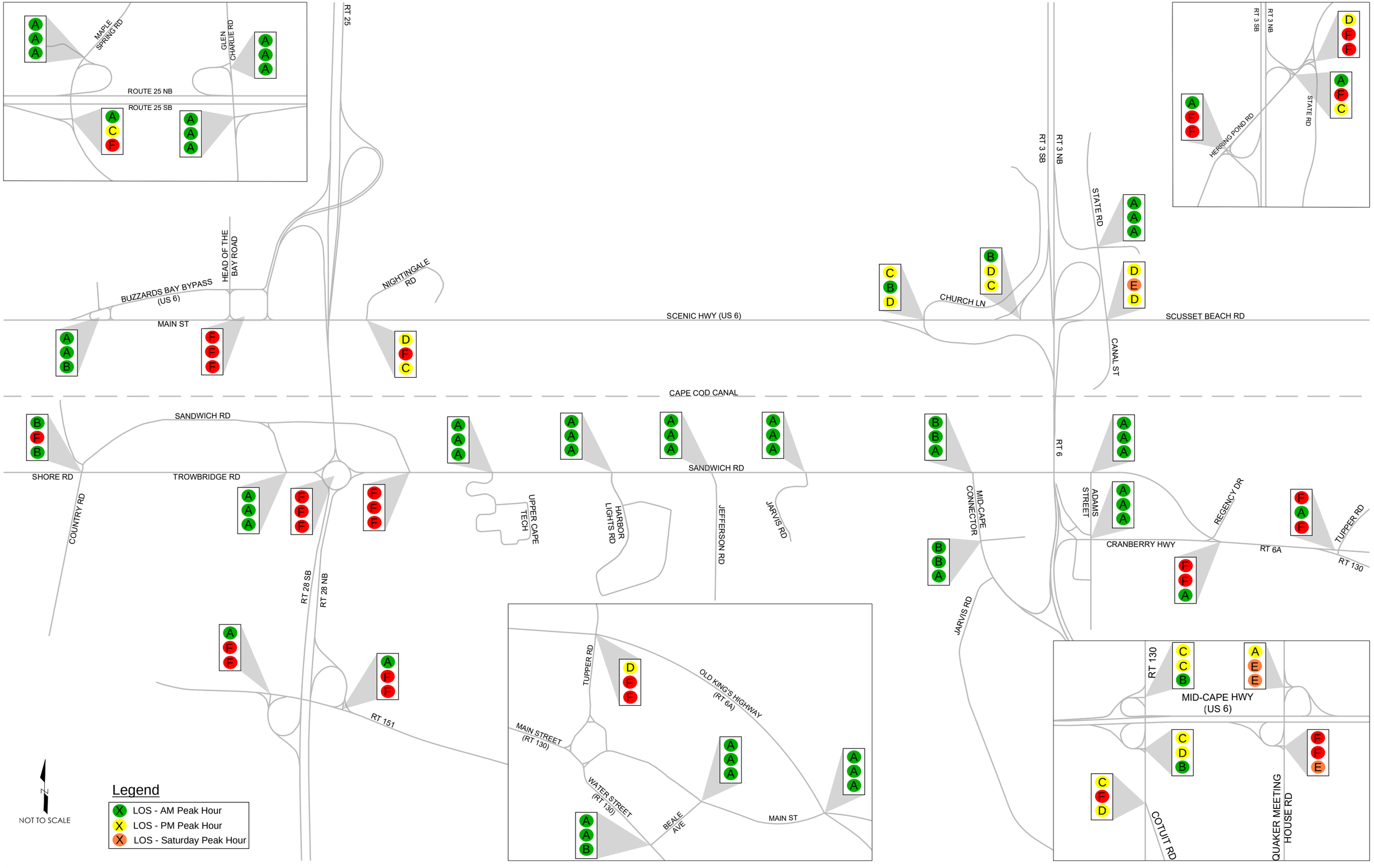


Figure B-2: Existing (2019) Intersection Level of Service Summary - Summer



Route 25 WB Exit 3 MERGE		
PERIOD	LOS	DENSITY
AM	B	16.2
PM	B	12.6
SAT	B	16.7

Route 25 WB Exit 3 DIVERGE		
PERIOD	LOS	DENSITY
AM	B	11.9
PM	B	12.3
SAT	B	11.6

Route 25 EB SEGMENT		
PERIOD	LOS	DENSITY
AM	E	36.6
PM	D	34.5
SAT	E	37.7

Route 25 WB SEGMENT		
PERIOD	LOS	DENSITY
AM	B	11.9
PM	B	13.5
SAT	A	11.0

Route 25 WB Exit 10 MERGE		
PERIOD	LOS	DENSITY
AM	B	17.3
PM	B	18.6
SAT	B	16.0

Route 25 EB Exit 10 DIVERGE		
PERIOD	LOS	DENSITY
AM	B	12.1
PM	B	15.9
SAT	B	17.1

Route 25 EB Exit 3 DIVERGE		
PERIOD	LOS	DENSITY
AM	B	10.9
PM	B	13.7
SAT	B	13.4

Route 25 EB Exit 3 MERGE		
PERIOD	LOS	DENSITY
AM	B	13.9
PM	B	15.9
SAT	B	13.4

Route 3 SB SEGMENT		
PERIOD	LOS	DENSITY
AM	D	29.2
PM	E	37.7
SAT	F	45.0

Route 3 NB SEGMENT		
PERIOD	LOS	DENSITY
AM	B	11.5
PM	B	16.0
SAT	B	17.4

Route 3 NB Exit 3 MERGE		
PERIOD	LOS	DENSITY
AM	B	16.3
PM	B	16.6
SAT	B	19.9

Route 3 SB Exit 3 DIVERGE		
PERIOD	LOS	DENSITY
AM	B	13.3
PM	B	13.3
SAT	B	14.9

Route 3 NB Exit 3 DIVERGE		
PERIOD	LOS	DENSITY
AM	B	12.5
PM	B	15.9
SAT	B	18.0

Route 3 NB Exit 1 MERGE		
PERIOD	LOS	DENSITY
AM	B	13.3
PM	B	17.1
SAT	B	18.4

Route 3 SB Exit 1A DIVERGE		
PERIOD	LOS	DENSITY
AM	B	11.5
PM	B	14.9
SAT	B	16.4

Route 3 NB Exit 1B DIVERGE		
PERIOD	LOS	DENSITY
AM	A	6.4
PM	C	21.2
SAT	B	18.5

Route 3 SB Exit 3 MERGE		
PERIOD	LOS	DENSITY
AM	B	16.7
PM	B	16.5
SAT	B	17.9

Route 25 WB Exit 10 DIVERGE		
PERIOD	LOS	DENSITY
AM	A	9.1
PM	B	16.2
SAT	B	14.3

Route 25 EB Exit 10 MERGE		
PERIOD	LOS	DENSITY
AM	C	20.7
PM	B	19.4
SAT	C	22.9

Route 28 NB Bridge SEGMENT		
PERIOD	LOS	DENSITY
AM	C	22.4
PM	E	41.1
SAT	D	27.4

Route 6 SB Bridge SEGMENT		
PERIOD	LOS	DENSITY
AM	E	41.4
PM	D	32.6
SAT	E	38.6

Route 6 NB Bridge SEGMENT		
PERIOD	LOS	DENSITY
AM	E	35.9
PM	F	45.0
SAT	E	40.5

Route 3 NB Exit 1A DIVERGE		
PERIOD	LOS	DENSITY
AM	B	17.1
PM	C	26.6
SAT	C	22.4

US 6 WB Exit 55 MERGE		
PERIOD	LOS	DENSITY
AM	C	22.4
PM	D	28.4
SAT	C	24.4

Route 28 SB Bridge SEGMENT		
PERIOD	LOS	DENSITY
AM	F	45.0
PM	E	36.2
SAT	E	38.4

Route 28 SB SEGMENT		
PERIOD	LOS	DENSITY
AM	C	20.3
PM	B	14.2
SAT	B	16.6

Route 28 NB SEGMENT		
PERIOD	LOS	DENSITY
AM	B	15.8
PM	B	14.0
SAT	B	16.6

US 6 EB Exit 55 DIVERGE		
PERIOD	LOS	DENSITY
AM	B	20.0
PM	C	21.1
SAT	C	24.4

US 6 WB Exit 55 DIVERGE		
PERIOD	LOS	DENSITY
AM	B	17.2
PM	D	28.2
SAT	C	20.3

US 6 WB Exit 59 MERGE		
PERIOD	LOS	DENSITY
AM	B	19.0
PM	C	26.3
SAT	B	19.3

US 6 WB Exit 61 MERGE		
PERIOD	LOS	DENSITY
AM	B	16.2
PM	C	24.1
SAT	C	23.9

Route 28 NB - Route 151 MERGE		
PERIOD	LOS	DENSITY
AM	C	20.3
PM	B	18.7
SAT	C	22.0

US 6 EB Exit 55 MERGE		
PERIOD	LOS	DENSITY
AM	C	24.3
PM	C	22.4
SAT	C	27.1

US 6 WB SEGMENT		
PERIOD	LOS	DENSITY
AM	C	20.5
PM	D	30.4
SAT	C	20.7

US 6 WB Exit 59 DIVERGE		
PERIOD	LOS	DENSITY
AM	B	11.8
PM	B	20.0
SAT	B	14.6

US 6 WB Exit 61 DIVERGE		
PERIOD	LOS	DENSITY
AM	B	16.1
PM	C	25.2
SAT	C	24.9

Route 28 SB - Route 151 DIVERGE		
PERIOD	LOS	DENSITY
AM	B	19.7
PM	B	14.3
SAT	B	16.4

US 6 EB SEGMENT		
PERIOD	LOS	DENSITY
AM	D	27.4
PM	C	23.7
SAT	D	31.6

US 6 EB Exit 59 DIVERGE		
PERIOD	LOS	DENSITY
AM	C	22.5
PM	B	18.4
SAT	C	25.8

US 6 EB Exit 61 DIVERGE		
PERIOD	LOS	DENSITY
AM	C	23.6
PM	B	17.8
SAT	C	24.6

US 6 EB Exit 61 MERGE		
PERIOD	LOS	DENSITY
AM	C	26.2
PM	B	19.2
SAT	C	25.4

Route 28 SB - Route 151 MERGE		
PERIOD	LOS	DENSITY
AM	C	22.7
PM	B	17.6
SAT	C	20.1

Route 28 NB - Route 151 DIVERGE		
PERIOD	LOS	DENSITY
AM	B	17.1
PM	B	15.5
SAT	B	17.8

US 6 EB Exit 59 MERGE		
PERIOD	LOS	DENSITY
AM	B	20.0
PM	B	15.2
SAT	C	21.4

Figure B-3: Freeway Level of Service Summary - Fall



Route 25 WB Exit 3 MERGE		
PERIOD	LOS	DENSITY
AM	B	16.7
PM	C	20.4
SAT	B	19.8

Route 25 WB Exit 3 DIVERGE		
PERIOD	LOS	DENSITY
AM	B	12.4
PM	B	15.8
SAT	B	14.3

Route 25 EB SEGMENT		
PERIOD	LOS	DENSITY
AM	C	21.6
PM	F	45.0
SAT	E	44.9

Route 25 WB SEGMENT		
PERIOD	LOS	DENSITY
AM	B	12.0
PM	B	16.0
SAT	B	13.6

Route 25 WB Exit 10 MERGE		
PERIOD	LOS	DENSITY
AM	B	17.3
PM	C	21.6
SAT	B	18.0

Route 25 EB Exit 10 DIVERGE		
PERIOD	LOS	DENSITY
AM	B	12.8
PM	B	15.1
SAT	B	14.9

Route 25 EB Exit 3 DIVERGE		
PERIOD	LOS	DENSITY
AM	B	12.6
PM	B	16.0
SAT	B	17.5

Route 25 EB Exit 3 MERGE		
PERIOD	LOS	DENSITY
AM	B	13.4
PM	B	16.1
SAT	B	15.4

Route 3 SB SEGMENT		
PERIOD	LOS	DENSITY
AM	D	32.5
PM	F	45.0
SAT	E	43.6

Route 3 NB SEGMENT		
PERIOD	LOS	DENSITY
AM	B	15.6
PM	C	19.9
SAT	C	21.9

Route 3 NB Exit 3 MERGE		
PERIOD	LOS	DENSITY
AM	B	18.0
PM	C	20.8
SAT	C	24.6

Route 3 SB Exit 3 DIVERGE		
PERIOD	LOS	DENSITY
AM	B	13.7
PM	B	17.0
SAT	B	13.2

Route 3 NB Exit 3 DIVERGE		
PERIOD	LOS	DENSITY
AM	B	16.4
PM	B	19.7
SAT	C	22.8

Route 3 NB Exit 1 MERGE		
PERIOD	LOS	DENSITY
AM	B	16.8
PM	C	20.5
SAT	C	22.3

Route 3 SB Exit 1A DIVERGE		
PERIOD	LOS	DENSITY
AM	B	14.0
PM	F	>45.0
SAT	B	10.9

Route 3 NB Exit 1B DIVERGE		
PERIOD	LOS	DENSITY
AM	B	10.9
PM	B	14.5
SAT	B	17.6

Route 3 SB Exit 3 MERGE		
PERIOD	LOS	DENSITY
AM	B	18.1
PM	B	19.5
SAT	B	15.4

Route 25 WB Exit 10 DIVERGE		
PERIOD	LOS	DENSITY
AM	B	12.6
PM	B	13.1
SAT	B	13.3

Route 25 EB Exit 10 MERGE		
PERIOD	LOS	DENSITY
AM	C	21.0
PM	F	>45.0
SAT	F	>45.0

Route 28 NB Bridge SEGMENT		
PERIOD	LOS	DENSITY
AM	C	24.8
PM	F	45.0
SAT	D	33.1

Route 6 SB Bridge SEGMENT		
PERIOD	LOS	DENSITY
AM	E	42.5
PM	F	>45.0
SAT	F	>45.0

Route 6 NB Bridge SEGMENT		
PERIOD	LOS	DENSITY
AM	E	42.3
PM	F	45.0
SAT	F	45.0

Route 3 NB Exit 1A DIVERGE		
PERIOD	LOS	DENSITY
AM	C	20.1
PM	C	27.9
SAT	D	29.1

US 6 WB Exit 55 MERGE		
PERIOD	LOS	DENSITY
AM	C	25.5
PM	F	>45.0
SAT	D	33.4

Route 28 SB Bridge SEGMENT		
PERIOD	LOS	DENSITY
AM	E	44.4
PM	F	45.0
SAT	F	45.0

Route 28 SB SEGMENT		
PERIOD	LOS	DENSITY
AM	C	20.7
PM	B	17.1
SAT	C	23.3

Route 28 NB SEGMENT		
PERIOD	LOS	DENSITY
AM	B	14.6
PM	B	16.9
SAT	B	18.0

US 6 EB Exit 55 DIVERGE		
PERIOD	LOS	DENSITY
AM	C	20.6
PM	B	18.9
SAT	C	23.2

US 6 WB Exit 55 DIVERGE		
PERIOD	LOS	DENSITY
AM	C	20.3
PM	D	28.4
SAT	C	25.9

US 6 WB Exit 59 MERGE		
PERIOD	LOS	DENSITY
AM	C	23.5
PM	D	31.1
SAT	D	28.2

US 6 WB Exit 61 MERGE		
PERIOD	LOS	DENSITY
AM	C	20.8
PM	D	28.4
SAT	C	27.6

Route 28 SB - Route 151 DIVERGE		
PERIOD	LOS	DENSITY
AM	C	20.1
PM	B	16.9
SAT	C	22.5

Route 28 NB - Route 151 MERGE		
PERIOD	LOS	DENSITY
AM	B	18.8
PM	C	21.5
SAT	C	21.8

US 6 EB Exit 55 MERGE		
PERIOD	LOS	DENSITY
AM	C	27.0
PM	C	25.9
SAT	D	31.0

US 6 WB SEGMENT		
PERIOD	LOS	DENSITY
AM	D	31.0
PM	D	29.5
SAT	E	41.1

US 6 WB Exit 59 DIVERGE		
PERIOD	LOS	DENSITY
AM	B	17.1
PM	C	25.3
SAT	C	24.4

US 6 WB Exit 61 DIVERGE		
PERIOD	LOS	DENSITY
AM	C	21.7
PM	D	30.0
SAT	D	29.5

US 6 EB SEGMENT		
PERIOD	LOS	DENSITY
AM	D	26.1
PM	F	45.0
SAT	D	33.8

US 6 EB Exit 59 DIVERGE		
PERIOD	LOS	DENSITY
AM	C	26.2
PM	C	23.9
SAT	D	30.6

US 6 EB Exit 59 MERGE		
PERIOD	LOS	DENSITY
AM	C	22.1
PM	B	19.9
SAT	C	25.8

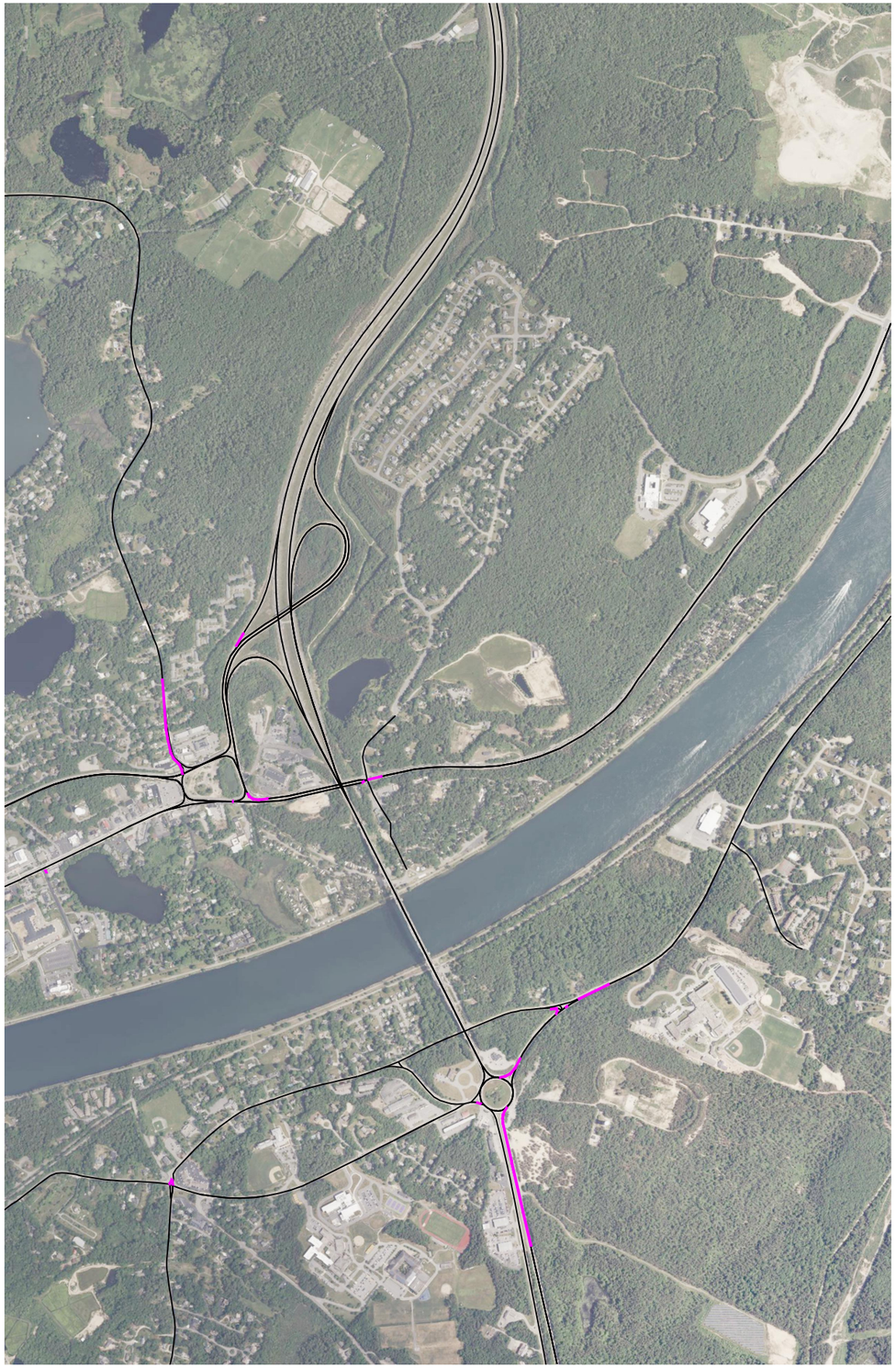
US 6 EB Exit 61 DIVERGE		
PERIOD	LOS	DENSITY
AM	C	23.5
PM	C	22.7
SAT	D	29.0

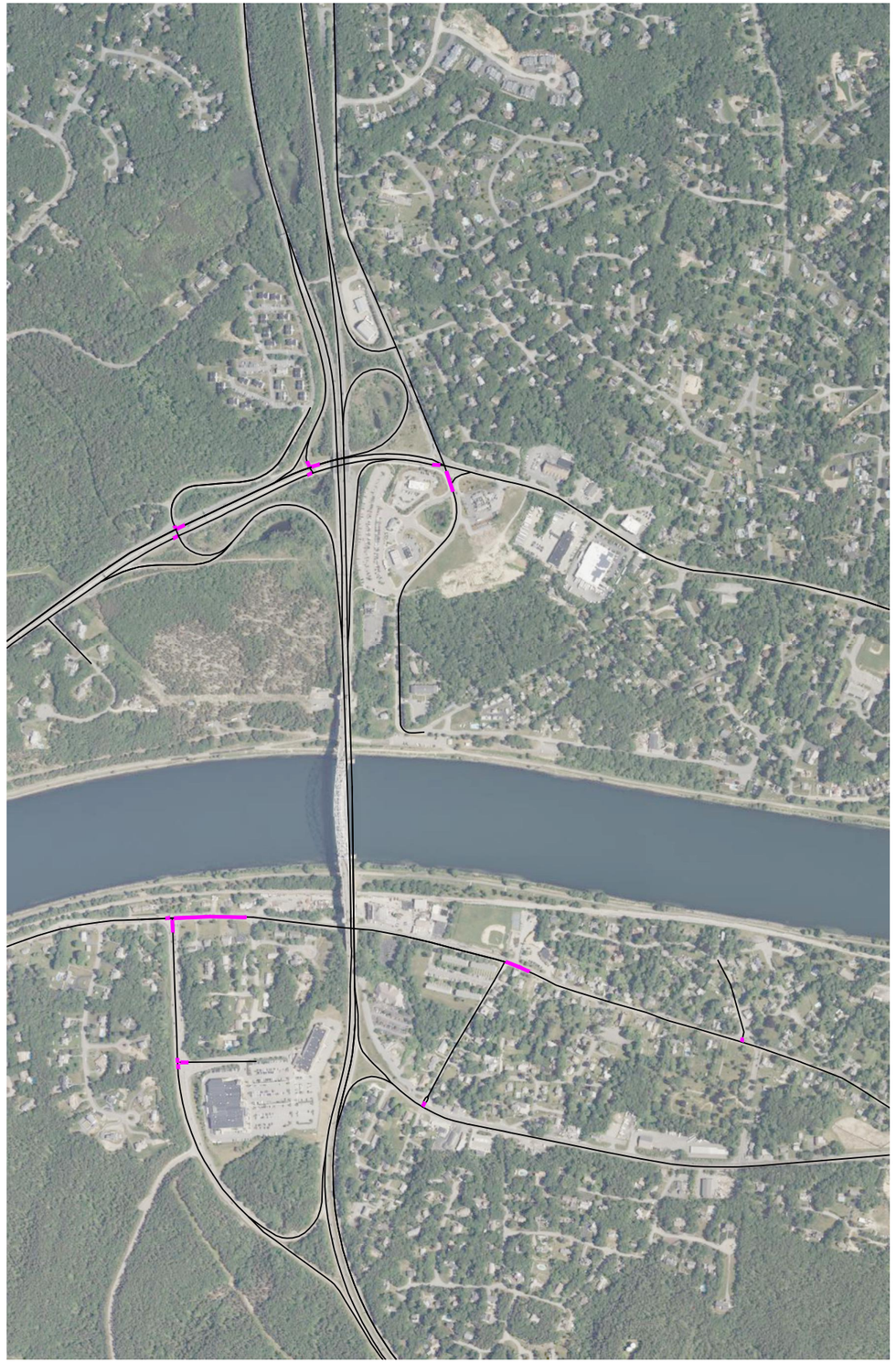
US 6 EB Exit 61 MERGE		
PERIOD	LOS	DENSITY
AM	C	25.8
PM	C	24.4
SAT	D	29.4

Route 28 SB - Route 151 MERGE		
PERIOD	LOS	DENSITY
AM	C	23.2
PM	B	20.0
SAT	C	25.4

Route 28 NB - Route 151 DIVERGE		
PERIOD	LOS	DENSITY
AM	B	16.0
PM	B	18.1
SAT	B	19.1

Figure B-4: Freeway Level of Service Summary - Fall





N

NAD 83

NOT TO SCALE

2019 Existing Condition

Note:

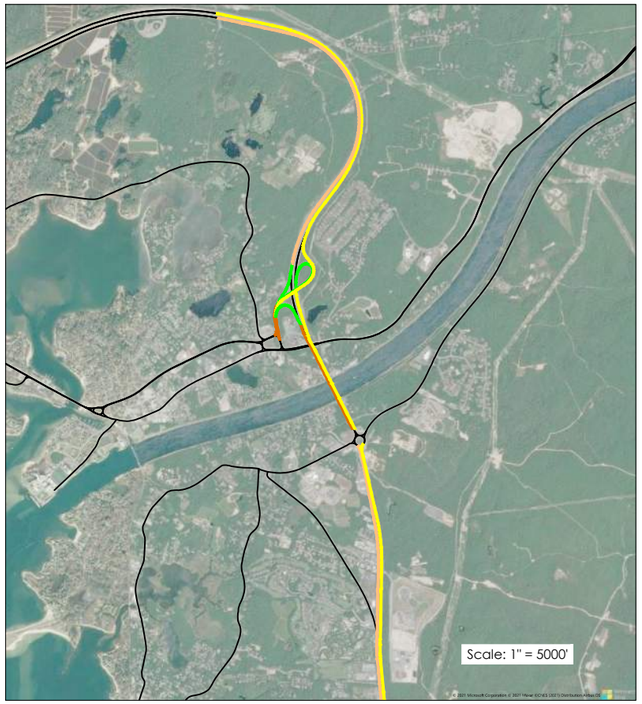
1. Figure only shows queues that are greater than or equal to 20 ft

Color	Description
	Avg Q's Fall PM

Figure B-5: Average Queues for Fall PM

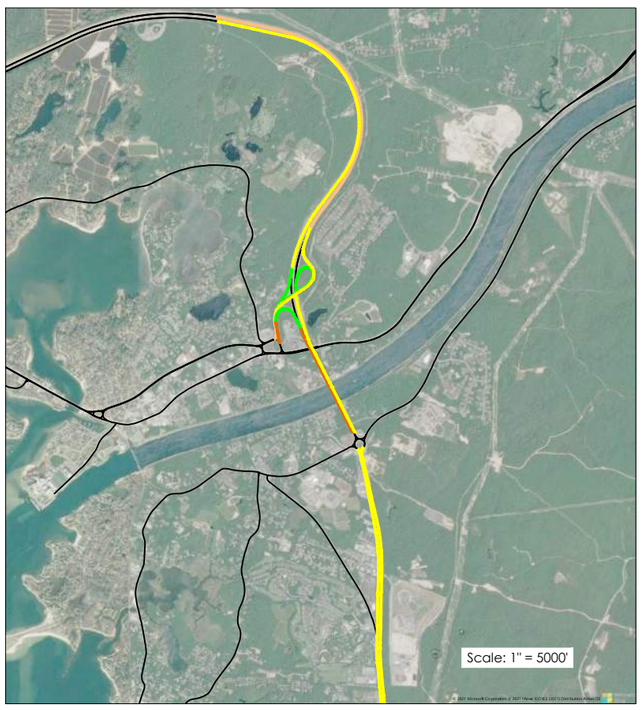
HNTB

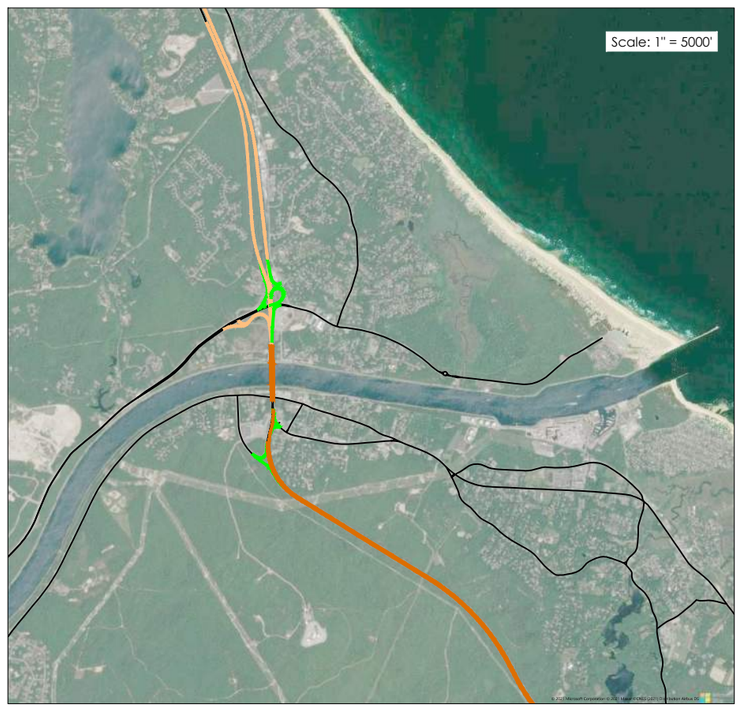
□A□□□□ □□□DA□□A.M.□□□A□□□UR





□UMM□R□□ □□□DA□□A.M.□□□A□□□UR





□

NAD 83

□□□ □□D

□□ □	D□□□□□□□□□□□□□□ □□□□□
A□B□C	□26□□r□□r□□□ □□ □28□□r□M□r□□-D□□□r□□
D	26□:35□□r□□r□□□ □□ 28□:35□□r□M□r□□-D□□□r□□
□	35-45
□	45-80
□	80-100
□	□100

Figure B-6

M□□□D□ □

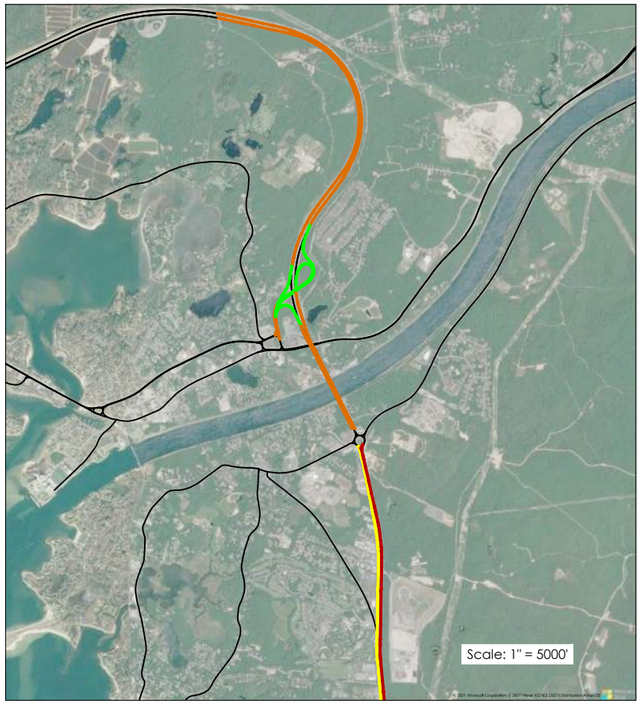
C□□□□C□d□C□□□□□r□□r□□ □M□□□□□□□ □□□□

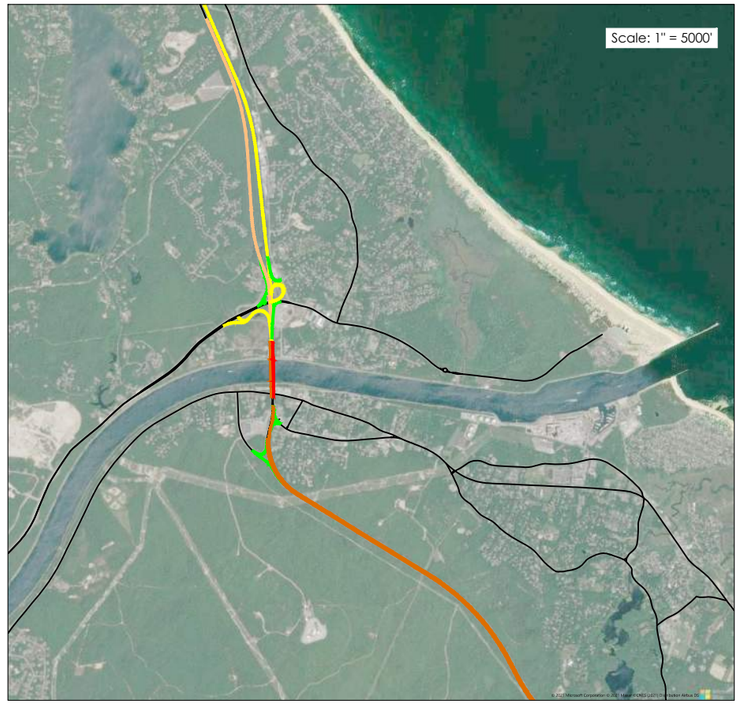
B□□r□□□Br□d□□□□□d□□ □□□□□ □r□Br□d□□□D□□□□□□□□ □□□□□□d□□□ □ □r□AM □□□□□□ □□r

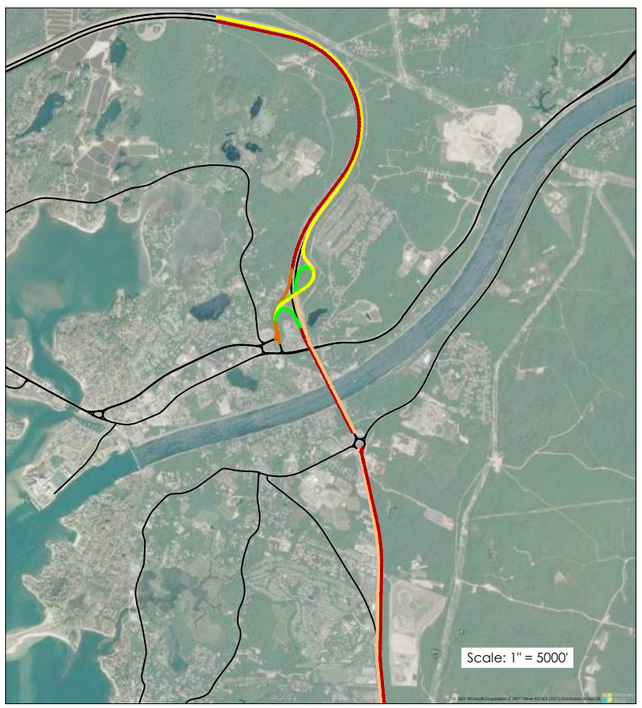
2019□□ □□□□□□□C□□d□□□□□

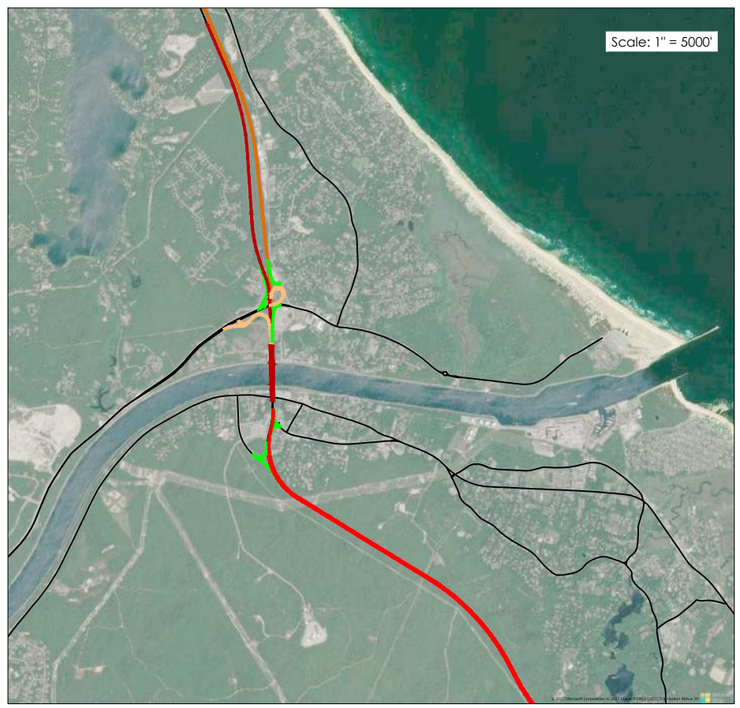
□□ □□□

1. □□□r□□□□r□□r□□r□□□□□□□□□□□□□□









FALL WEEK DAY □□.M. □PE AK □□ □UR

□UMM□R□WEEK DAY □□.M. □PE AK □□ □UR

N

NAD 83

LEGEN D

□□ □	D□□□□□□□(pc/mi/In □
A, B, C	□26 for□□r□□□ □□ □28 for M□r□□-D□□r□□
D	26 - 35 for□□r□□□ □□ 28 - 35 for M□r□□-D□□r□□
E	35-45
F	45-80
F	80-100
F	□100

NO □E □

1. Fi ures □r□ rep resentative of □□□ d□nsity □□□vehicl s pe r□□□□□□□□eac □ □□r□□□□r r□□d□ □□□□□□□ □□□d□□□□□d □□□□□□□B-6□□□d d□□□□□r□□r□□□□ □□eue □□□□□□□□d□r□□□pe riod s of t affic c □□□est on.
2. Queues d□r□□□pe □k hou rs □□ □□be sho rter□r□□ □□exten d□beyon d th□ segme □s □□□□□

Figure B-7

M□□□D□ □

C□□□C□d C□□□□r□□r□□ M□□□gement

B□r□□Br d□□□□d Sag □□ ore Br d□□□D ensity □ Fall an d□□□ □ □r□M
□□□□Hou r

2019 Ex st ng Con dition □

ORIGINAL SHEET - ARCH E

FALL S] AT PE AK UR

UMM RSAT PE AK UR

N

NAD 83

LEGEN D

	D
A, B, C	26 for r r 28 for M r -D r
D	26 35 for r r 28 35 for M r -D r
E	35-45
F	45-80
F	80-100
F	100

NO E

1. Fi ures r rep resentative of d nsity vehicl s pe r eac r r d B-6 d d r pe rio ds of t affic c est on.
2. Queues d r pe k hou rs be sho rter r exten d beyon d th segme s

Figure B-8

M D

C C d C r r M

B r r Br d d Sag ore Br d D ensity Fall an d r A Hou r

2019 Ex st ng Con dition

Attachment 3 – 2050 Design Year No Build Alternative Conditions

MassDOT

Cape Cod Program Management

2050 Fall PM
No Build Condition
2024-07-09

Figure C-1



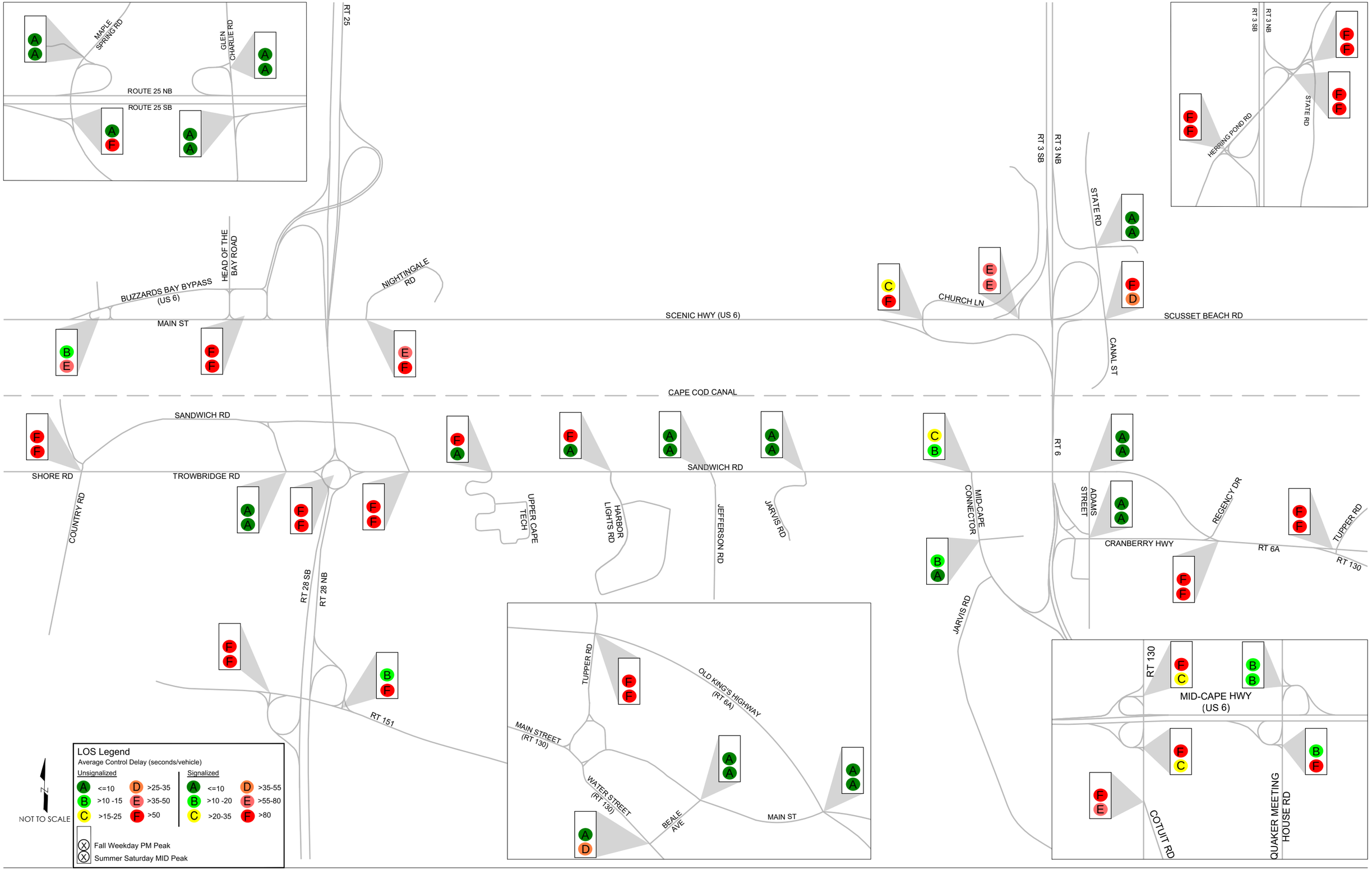
MassDOT

Cape Cod Program Management

2050 Fall PM
No Build Condition
2024-07-09

Figure C-2

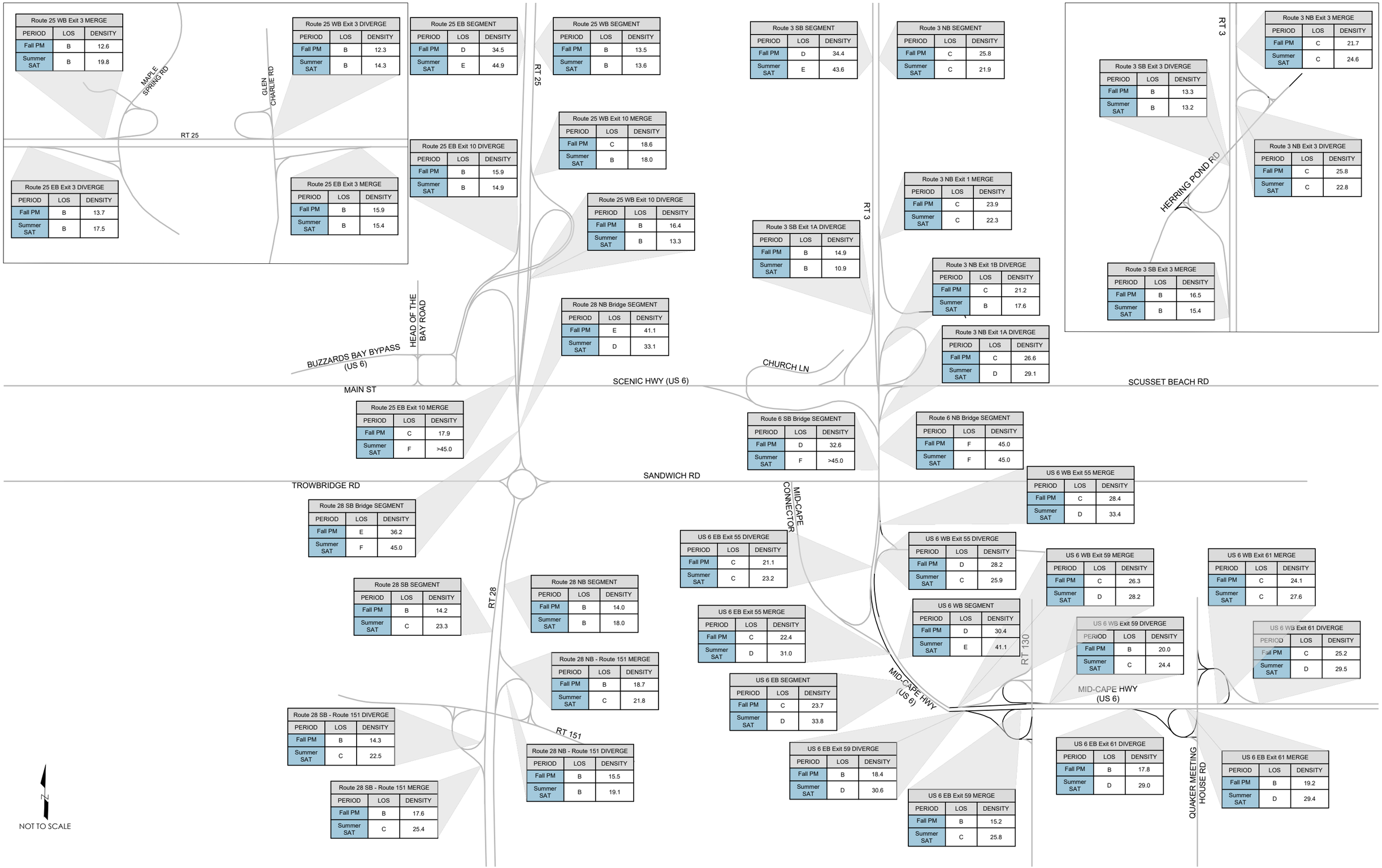




PRE-DECISIONAL & DELIBERATIVE

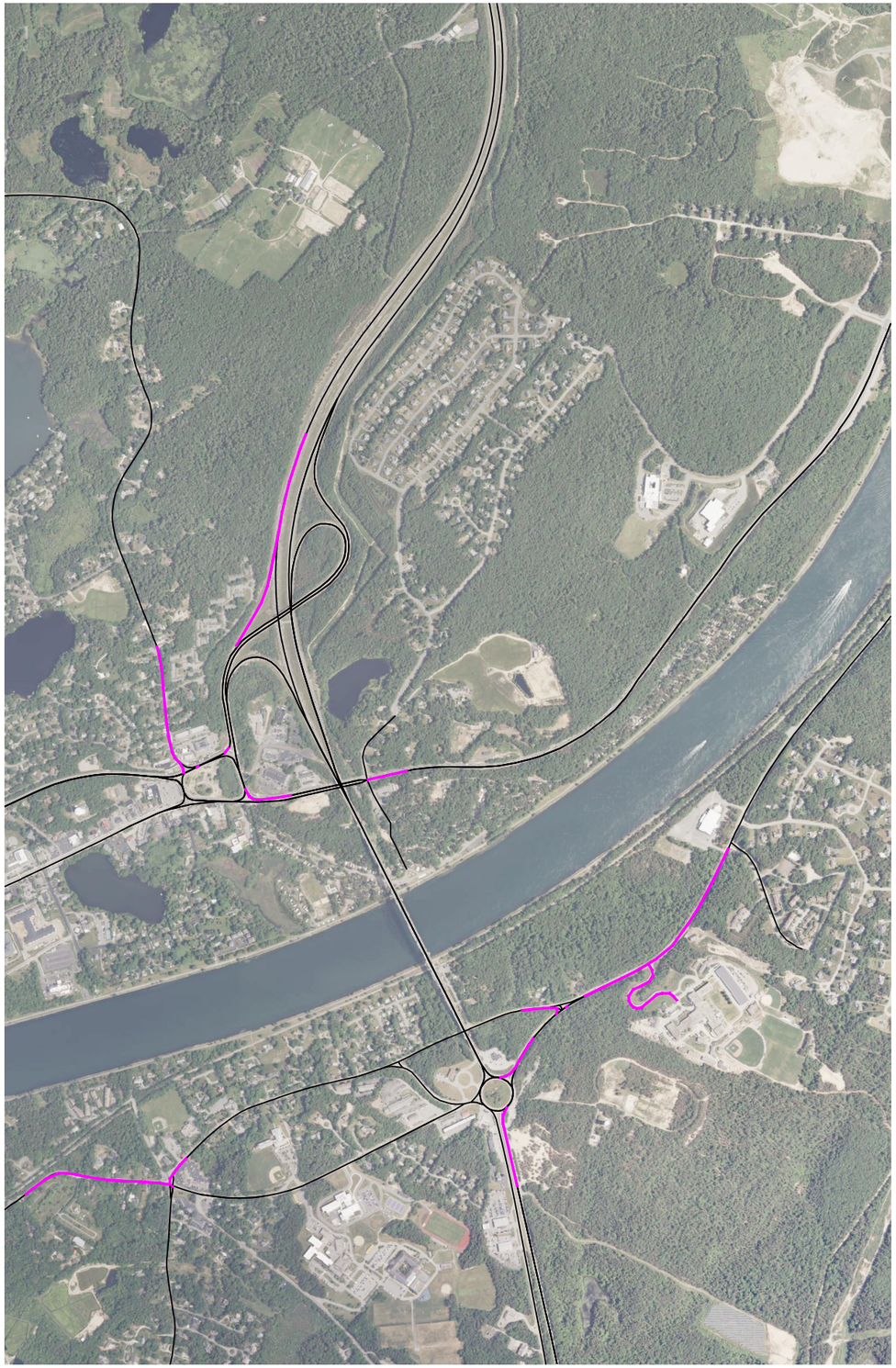
Figure C-3 : Intersection Level of Service Summary - No-Build Fall PM & Summer SAT (2050)

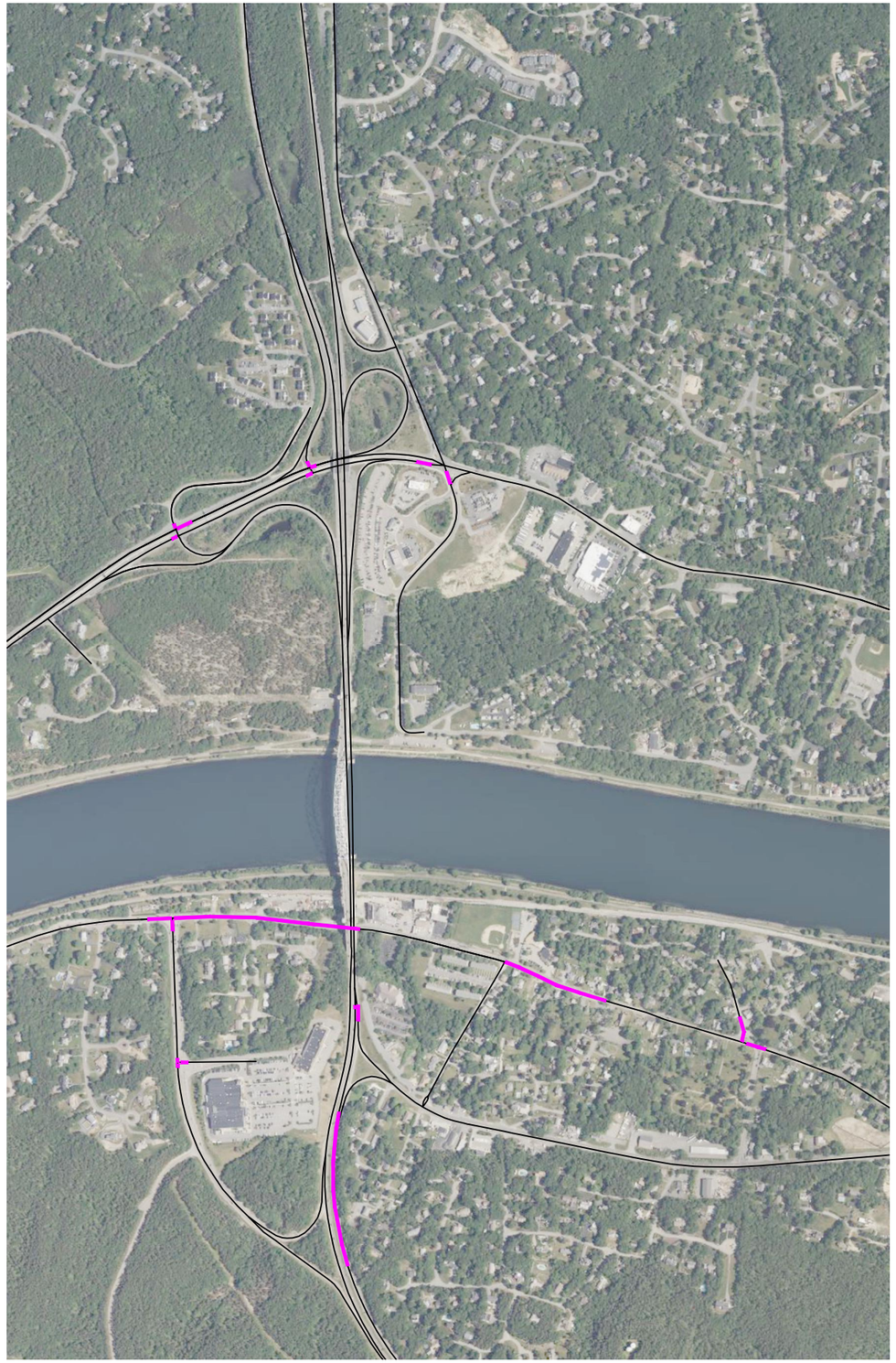
HNTB



PRE-DECISIONAL & DELIBERATIVE

Figure C-4 : Freeway Level of Service Summary - No-Build Fall PM & Summer SAT (2050)





N

NAD 83

NOT TO SCALE

2050 No Build Condition

Note:

1. Figure only shows queues that are greater than or equal to 20 ft

Color	Description
	Avg Q's Fall PM

Figure C-5 : Avg Queues in No-Build for Fall PM

HNTB

Table C-1 : Synchro and SIDRA Results Summary - 2050 No-Build

Intersection	2050 No-Build Weekday Fall PM					2050 No-Build Summer Saturday MID				
	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)
1:: Maple Springs Rd / Route 25 NB On-Ramp	A	0.5				A	0.3			
Maple Springs Rd NB (thru)	A	0.0	0.11	-	0	A	0.0	0.05	-	0
Maple Springs Rd NB (thru/right)	A	0.0	0.70	-	0	A	0.0	0.69	-	0
Maple Springs Rd SB (left/thru)	A	3.1	0.08	-	6	A	3.0	0.07	-	3
2:: Maple Springs Rd / Route 25 SB Off-Ramp	A	3.4				F	255.3			
Route 25 SB Off-Ramp EB (left)	C	21.2	0.32	-	55	B	14.9	0.057	-	3084
Route 25 SB Off-Ramp EB (right)	B	12.3	0.42	-	55	F	$440.4	1.943	-	3084
Maple Springs Rd NB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Maple Springs Rd NB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Maple Springs Rd SB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
3:: Glen Charlie Road / Route 25 NB Off-Ramp	A	5.3				A	2.3			
Route 25 NB Off-Ramp EB (left)	F	73.3	0.69	-	123	D	32.8	0.14	-	44
Route 25 NB Off-Ramp EB (right)	B	13.3	0.25	-	123	C	17.6	0.38	-	44
Glen Charlie Rd NB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Glen Charlie Rd SB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
4:: Glen Charlie Road / Route 25 SB On-Ramp	A	0.8				A	0.8			
Glen Charlie Rd NB (thru)	A	0.0	0.57	-	0	A	0.0	0.44	-	0
Glen Charlie Rd NB (right)	A	0.0	0.02	-	0	A	0.0	0.04	-	0
Glen Charlie Rd SB (left/thru)	A	2.0	0.08	-	6	A	1.5	0.06	-	4
5:: Buzzards Bay Rotary	B	11.2				E	40.1			
Main Street (Route 6) EB (left)	A	8.1	0.45	-	51	E	37.2	0.95	-	1068
Main Street (Route 6) EB (left/thru)	A	8.2	0.45	-	51	E	37.4	0.95	-	1068
Main Street WB (thru/right)	B	11.2	0.57	-	97	F	75.1	1.06	-	796
Lincoln Avenue SB (left/thru/right)	A	10.0	0.13	-	9	B	10.4	0.25	-	18
Buzzards Bay Bypass (Route 6) SWB (left)	B	14.6	0.58	-	95	B	10.9	0.39	-	38
Buzzards Bay Bypass (Route 6) SWB (left/right)	B	13.9	0.58	-	15'	B	10.6	0.39	-	37
6:: Scenic Highway (Route 6) / Main Street (Route 6) / Nightingale Road / Andy Olivia Drive	D	53.9				F	101.2			
Main Street (Route 6) EB (left/thru)	A	9.4	0.81	135'	#180'	F	101.9	1.18	~563	#900
Main Street (Route 6) EB (thru/right)	A	9.4	0.81	135'	#180'	F	101.9	1.18	~563	#900
Scenic Hwy (Route 6) WB (left/thru)	F	82.6	1.12	~791'	#932'	F	107.0	1.17	~821	#975
Scenic Hwy (Route 6) WB (thru/right)	F	82.6	1.12	~791'	#932'	F	107.0	1.17	~821	#975
Andy Olivia Dr NB (left/thru/right)	D	40.4	0.22	15'	43'	D	48.4	0.7	77	#151
Nightingale Pond Rd SB (left/thru)	D	40.2	0.17	11	34	D	35.9	0.06	66	22
Nightingale Pond Rd SB (right)	D	39.5	0.03	0	0	D	35.9	0.05	0	23
7:: Sandwich Road / Trowbridge Road / County Road / Shore Road	A	1.5				F	81.2			
Shore Rd EB (left/thru/right)	A	9.6	0.19	-	18	A	8.4	0.14	-	12
Trowbridge Rd WB (left/thru/right)	A	8.6	0.15	-	13	A	8.0	0.06	-	5
County Rd NB (left/thru/right)	F	Err	Err	-	Err	F	141.4	1.12	-	283
Sandwich Rd SB (left/thru/right)	F	Err	Err	-	Err	F	$305.8	1.50	-	398
8:: Trowbridge Rd./Veterans Way	A	0.9				A	0.7			
Trowbridge Rd EB (left/thru/right)	A	8.1	0.01	-	0	A	8.0	0.01	-	0
Trowbridge Rd WB (left/thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Driveway NB (left/thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Veterans Way SB (left/thru/right)	C	17.3	0.13	-	10	B	14.7	0.08	-	7
9:: Bourne Rotary	F	496.5				F	829.6			
General MacArthur Boulevard NB (left/thru)	F	621.1	2.33	-	7033	F	627.4	2.35	-	8327
General MacArthur Boulevard NB (right)	A	9.9	0.30	-	28	C	20.3	0.72	-	214
Sandwich Road WB (left/thru)	C	20.9	0.62	-	104	F	200.0	1.35	-	1584
Sandwich Road WB (right)	F	442.9	1.93	-	4166	F	265.6	1.52	-	2229
Route 28 (Bourne Bridge) SB (left/thru)	F	671.5	2.45	-	10114	F	1466.3	4.22	-	18408
Route 28 (Bourne Bridge) SB (right)	A	6.9	0.23	-	22	A	6.0	0.06	-	5
Trowbridge Road EB (left/thru/right)	F	283.1	1.55	-	2064	F	81.1	1.00	-	454
10:: Sandwich Road / Bourne Rotary Connector	F	784.4				F	264.4			
Sandwich Rd SB (left/right)	F	$4536.7	10.77	-	1790	F	$2518.5	6.227	-	Err
Bourne Rotary Connector EB (left/thru)	B	14.8	0.02	-	0	B	12.1	0.031	-	2
Sandwich Rd WB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
11:: Sandwich Road / Upper Cape Cod Technical School Driveway	F	282.7				A	1.1			
Cape Cod Technical School Driveway NB (left/right)	F	$5262	11.59	-	568	F	185.0	0.48	-	41
Sandwich Rd EB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Sandwich Rd WB (left)	B	13.5	0.11	-	10	B	12.1	0.01	-	1
Sandwich Rd WB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
12:: Sandwich Road / Harbor Lights Road	A	26.1				A	1.1			
Harbor Lights Rd NB (left/right)	F	$1452	3.20	-	Err	F	185	0.48	-	40
Sandwich Rd EB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Sandwich Rd WB (left/thru)	B	12.3	0.01	-	1	A	0.0	0.00	-	0
13:: Sandwich Road / Jefferson Road (Tech Drive)	A	0.7				A	5.6			
Jefferson Rd (Tech Dr) NB (left/right)	F	199.4	0.39	-	30	F	187.7	0.99	-	133
Sandwich Rd EB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Sandwich Rd WB (left/thru)	B	12.2	0.01	-	1	B	12.1	0.01	-	1
14:: Sandwich Road / Jarvis Road	A	0.7				A	0.4			
Jarvis Rd NB (left/right)	F	199.4	0.39	-	30	F	194.4	0.23	-	15
Sandwich Rd EB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Sandwich Rd WB (left/thru)	B	12.2	0.01	-	0	B	12.1	0.01	-	1

Table C-1 : Synchro and SIDRA Results Summary - 2050 No-Build

Intersection	2050 No-Build Weekday Fall PM					2050 No-Build Summer Saturday MID				
	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)
15:: Sandwich Road (Route 6 Bypass) / Mid-Cape Connector	C	32.9				B	12.7			
Sandwich Rd EB (thru)	B	17.2	0.62	204	326	B	14.7	0.58	135	255
Sandwich Rd EB (right)	A	1.4	0.55	0	0	A	1.5	0.58	0	0
Sandwich Rd WB (left)	A	8.5	0.32	28	51	A	5.8	0.01	1	5
Sandwich Rd WB (thru)	E	64.9	1.08	~766	#1010	B	16.6	0.86	290	#695
Mid-Cape Connector NB (left)	D	40.0	0.81	157	#274	C	24.8	0.57	85	159
Mid-Cape Connector NB (right)	C	21.0	0.43	52	115	B	19.3	0.54	58	149
16:: Mid-Cape Connector / Factory Outlet Way	B	14.1				A	8.0			
Factory Outlet Way (Market Basket Driveway) WB (left)	C	29.8	0.20	23	44	C	34.9	0.23	15	34
Factory Outlet Way (Market Basket Driveway) WB (left)	C	29.8	0.20	23	44	C	34.9	0.23	15	34
Factory Outlet Way (Market Basket Driveway) WB (right)	B	17.2	0.35	73	110	C	24.2	0.17	24	54
Mid-Cape Connector NB (thru)	B	19.4	0.58	178	313	B	11.0	0.53	175	274
Mid-Cape Connector NB (right)	A	6.7	0.07	0	17	A	4.2	0.04	0	8
Mid-Cape Connector SB (left)	C	34.4	0.60	82	134	C	34.1	0.04	2	13
Mid-Cape Connector SB (thru)	A	5.2	0.34	76	106	A	3.2	0.34	64	90
Mid-Cape Connector SB (thru)	A	5.2	0.34	76	106	A	3.2	0.34	64	90
17:: Herring Pond Road / State Road	F	828.7				F	878.5			
Herring Pond Rd EB (left/right)	F	$1390.6	4.01	-	Err	F	$1725.3	4.75	-	Err
State Rd NB (left/thru)	A	8.0	0.13	-	11	A	9.2	0.21	-	20
State Rd SB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
18:: Herring Pond Road / Route 3 NB Ramps	F	223.0				F	235.0			
Route 3 NB Ramps EB (left/right)	F	$825.8	2.73	-	1270	F	$2906.5	6.88	-	Err
Herring Pond Rd NB (left/thru)	A	8.8	0.01	-	0	B	10.5	0.28	-	28
Herring Pond Rd SB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Herring Pond Rd SB (right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
19:: Herring Pond Road / Route 3 SB Ramps	F	291.3				F	1065.3			
Route 3 SB Ramps WB (left/right)	F	$1016.9	3.15	-	1378	F	$2437.7	6.30	-	Err
Herring Pond Rd NB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Herring Pond Rd SB (left/thru)	A	8.8	0.16	-	15	A	10.0	0.29	-	31
20:: Scenic Highway (Route 6) / Church Lane / Route 6 SB On-Ramp	D	46.7				F	131.9			
Scenic Hwy (Route 6) EB (left)	D	45.8	0.49	33'	93'	E	62.3	0.45	32	71
Scenic Hwy (Route 6) EB (thru)	F	82.7	1.11	233'	415'	F	253.0	2.11dr	~995	#1203
Scenic Hwy (Route 6) EB (thru/right)	F	82.7	1.11	233'	415'	F	253.0	2.11dr	~995	#1203
Scenic Hwy (Route 6) WB (left)	D	43.8	0.68	105'	226'	F	172.7	1.27	~898	#1219
Scenic Hwy (Route 6) WB (thru)	B	13.0	0.68	300'	456'	B	10.5	0.55	286	403
Scenic Hwy (Route 6) WB (thru)	B	13.0	0.68	300'	456'	B	10.5	0.55	286	403
Scenic Hwy (Route 6) WB (thru/right)	B	13.0	0.68	300'	456'	B	10.5	0.55	286	403
Church Lane SB (left/thru/right)	D	44.0	0.53	51	131	E	65.8	0.70	113	184
21:: Scenic Highway (Route 6) & Route 3 SB Off-Ramp	E	59.2				E	69.9			
Scenic Hwy (Route 6) EB (thru)	B	12.7	0.56	252'	347'	A	8.9	0.27	101	147
Scenic Hwy (Route 6) WB (thru)	C	20.0	0.85	523	632	C	33.1	0.97	832	#1093
Scenic Hwy (Route 6) WB (thru)	C	20.0	0.85	523	632	C	33.1	0.97	832	#1093
Route 3 Off-Ramp SB (left/right)	F	227.1	1.38	~640'	#883'	F	249.1	1.42	~616	#842
22:: Meetinghouse Lane / State Road / Canal Street	D	45.4				D	47.7			
Meetinghouse Ln EB (left)	E	75.4	1.07	366'	#1074'	D	53.7	0.82	118	#203
Meetinghouse Ln EB (thru)	B	19.7	0.47	112'	#449'	E	62.7	0.82	232	#375
Meetinghouse Ln EB (right)	B	15.9	0.19	0'	68'	D	39.8	0.15	0	66
Meetinghouse Ln WB (left)	D	37.5	0.07	3'	17'	D	42.2	0.26	20	46
Meetinghouse Ln WB (thru/right)	D	51.8	0.57	65'	131'	F	122.0	1.05	199	#346
Canal St NB (left)	C	28.8	0.53	81'	126'	C	26.5	0.74	96	230
Canal St NB (thru/right)	D	36.2	0.54	123'	188'	B	19.5	0.35	134	298
State Rd SB (left)	D	35.3	0.15	16'	36'	B	18.3	0.14	24	70
State Rd SB (thru/right)	D	39.4	0.24	20'	80'	C	34.8	0.76	311	#832
23:: State Road / Route 3 NB On-Ramp	B	10.3				A	3.3			
State Rd NB (left)	C	18.7	0.83	-	266	B	11.0	0.36	-	42
State Rd NB (thru)	A	0.0	0.42	-	0	A	0.0	0.08	-	0
State Rd SB (thru)	A	0.0	0.12	-	0	A	0.0	0.38	-	0
State Rd SB (right)	A	0.0	0.01	-	0	A	0.0	0.01	-	0
24:: Cranberry Highway / Adams Street	A	4.8				A	3.0			
Cranberry Highway EB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Cranberry Highway EB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Cranberry Highway WB (left/thru)	A	8.0	0.01	-	1	A	8.0	0.01	-	1
Cranberry Highway WB (thru)	A	0.0	0.00	-	1	A	0.1	0.00	-	0
Adams Street NB [left/thru/right]	B	13.7	0.04	-	3	B	14.2	0.05	-	5
Adams Street SB [left/thru/right]	B	14.9	0.50	-	70	B	14.0	0.38	-	44
25:: Sandwich Road / Adams Street	A	1.5				A	0.5			
Sandwich Rd EB (thru/right)	A	0.0	0.50	-	0	A	0.0	0.49	-	0
Sandwich Rd WB (left/thru)	A	2.3	0.03	-	2	A	0.9	0.02	-	2
26:: Cranberry Highway / Sandwich Road / Regency Drive	F	2311.5				A	5.7			
Sandwich Rd EB (left/thru/right)	A	0.0	0.00	-	0	A	9.2	0.01	-	0
Sandwich Rd WB (left/thru/right)	B	10.5	0.40	-	49	C	19.4	0.76	-	186
Cranberry Highway NB (left/thru)	F	$15195.6	33.15	-	1,078	A	0.0	0.00	-	Err
Cranberry Highway NB (right)	B	11.6	0.07	-	5	B	13.6	0.13	-	11
Regency Dr SB (left/thru/right)	F	$1338.3	1.09	-	38	A	0.0	0.00	-	Err

Table C-1 : Synchro and SIDRA Results Summary - 2050 No-Build

Intersection	2050 No-Build Weekday Fall PM					2050 No-Build Summer Saturday MID				
	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)
27:: Old King's Highway (Route 6A) / Main Street (Route 130) / Tupper Road	F	361.7				F	4359.8			
Old King's Hwy (Route 6A) EB (left/thru/right)	A	9.6	0.06	-	5	B	10.7	0.13	-	11
Old King's Hwy (Route 6A) WB (left/thru/right)	A	0.0	0.00	-	0	A	8.1	0.01	-	0
Main St (Route 130) NB (left/thru/right)	F	$1724.6	4.61	-	Err	F	$27653.9	59.78	-	Err
Tupper Rd SB (left/thru/right)	C	16.8	0.21	-	20	F	107.3	1.05	-	281
28:: Old King's Highway (Route 6A) / Tupper Road	F	234.8				F	302.4			
Old King's Hwy (Route 6A) EB (left)	B	19.9	0.07	6	25	C	24.3	0.34	13	54
Old King's Hwy (Route 6A) EB (thru/right)	C	28.6	0.67	203	415	D	49.7	0.93	352	#750
Old King's Hwy (Route 6A) WB (left/thru)	D	38.3	0.82	230	#518	F	240.3	1.44	~516	#906
Old King's Hwy (Route 6A) WB (right)	C	22.1	0.30	49	144	D	43.6	0.89	265	#640
Tupper Rd NB (left/thru/right)	F	610.0	2.23	~487	#828	F	729.3	2.5	~700	#1112
Tupper Rd SB (left)	F	485.0	1.95	~366	#661	F	774.7	2.59	~389	#680
Tupper Rd SB (thru/right)	F	160.1	1.21	~297	#606	D	47.3	0.74	148	#327
29:: Water Street (Route 130) / Beale Avenue	A	1.5				D	33.6			
Beale Ave WB (left/right)	E	45.2	0.36	-	38	F	229.2	1.35	-	391
Water St (Route 130) NB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Water St (Route 130) SB (left/thru)	B	10.8	0.02	-	3	B	10.4	0.02	-	2
30:: Main Street / Beale Avenue	A	4.6				A	5.5			
Main St EB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Main St WB (left/thru)	A	7.4	0.03	-	3	A	7.9	0.17	-	15
Beale Ave NB (left/right)	A	9.1	0.08	-	8	B	12.3	0.18	-	16
31:: Old King's Highway (Route 6A) / Main Street / Old Main Street	A	1.9				A	1.6			
Main St EB (left)	D	31.4	0.04	-	3	F	1291.8	2.20	-	93
Main St EB (thru/right)	B	13.3	0.19	-	16	E	41.4	0.60	-	88
Old Main St WB (left/thru/right)	D	26.4	0.06	-	5	F	568.2	1.17	-	75
Old King's Hwy (Route 6A) NB (left/thru/right)	A	8.8	0.01	-	5	B	11.6	0.38	-	44
Old King's Hwy (Route 6A) SB (left/thru/right)	A	8.4	0.06	-	0	B	10.7	0.01	-	1
32:: Forestdale Road (Route 130) / Route 6 EB Ramps	F	123.6				C	21.0			
Route 6 EB Ramps EB (left)	C	22.9	0.11	11	33	C	25.3	0.38	21	52
Route 6 EB Ramps EB (right)	F	327.6	1.63	~252	#448	D	42.6	0.75	21	#188
Forestdale Rd (Route 130) NB (left)	B	11.1	0.53	19	44	A	3.8	0.16	7	15
Forestdale Rd (Route 130) NB (thru)	F	84.2	1.14	~640	#868	B	16.3	0.9	253	#598
Forestdale Rd (Route 130) SB (thru/right)	C	22.1	0.89	116	m#428	A	8.6	0.49	97	170
33:: Water Street (Route 130) / Route 6 WB Ramps	F	115.4				C	23.2			
Route 6 WB Ramps EB (left)	F	317.1	1.62	~338	#510	D	53.7	0.93	112	#269
Route 6 WB Ramps EB (right)	A	0.2	0.13	0	0	A	0.0	0.02	0	0
Forestdale Rd (Route 130) NB (left)	F	130.5	1.24	~230	m#188	C	22.6	0.63	75	115
Forestdale Rd (Route 130) NB (left)	F	130.5	1.24	~230	m#188	C	22.6	0.63	75	115
Forestdale Rd (Route 130) NB (thru)	B	10.9	0.45	150'	m134'	A	9.3	0.69	156	257
Forestdale Rd (Route 130) SB (thru)	D	36.3	0.88	192	#351	C	29.2	0.84	150	#318
Forestdale Rd (Route 130) SB (right)	A	0.0	0.00	0	0	A	0.0	0.02	0	0
34:: Quaker Meeting House Road / Route 6 EB Ramps	A	5.6				F	60.5			
Route 6 EB Ramps EB (left/right)	D	25.9	0.55	-	80	F	$339.7	1.59	-	452
Quaker Meetinghouse Rd NB (left/thru)	A	9.4	0.23	-	23	B	10.1	0.26	-	26
Quaker Meetinghouse Rd SB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
35:: Quaker Meeting House Road / Route 6 WB Ramps	A	7.9				A	9.5			
Route 6 WB Ramps WB (left/right)	C	23.5	0.66	-	123	E	45.0	0.78	-	194
Quaker Meetinghouse Rd NB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Quaker Meetinghouse Rd SB (left/thru)	A	8.0	0.03	-	2.5	A	8.4	0.01	-	1
36:: Route 130 / Cotuit Rd	B	13.9				E	47.0			
Cotuit Rd WB (left)	A	0.0	0.00	-	0	F	181.9	0.36	-	29
Cotuid Rd WB (right)	F	192.6	1.34	-	663	F	155.1	1.25	-	606
Route 130 NB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Route 130 SB (left)	E	44.3	0.97	-	405	B	13.0	0.53	-	79
Route 130 SB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
37:: Nathan Ellis Highway (Route 151) / Route 28 NB Ramps	A	9.2				F	334.0			
Nathan Ellis Hwy (Route 151) EB (left/thru)	A	8.8	0.12	-	10	B	11.2	0.24	-	23
Nathan Ellis Hwy (Route 151) WB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Nathan Ellis Hwy (Route 151) WB (right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Route 28 NB Ramps SB (left/right)	F	91.9	0.97	-	228	F	$3637.4	8.51	-	Err
38:: Nathan Ellis Highway (Route 151) / Route 28 SB Ramps	F	111.8				F	550.5			
Nathan Ellis Hwy (Route 151) EB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Nathan Ellis Hwy (Route 151) EB (right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Nathan Ellis Hwy (Route 151) WB (left/thru)	A	8.9	0.12	-	10	B	10.4	0.28	-	28
Route 28 SB Ramps NB (left/right)	F	286.5	1.57	-	1060	F	$2066.2	5.44	-	Err
39:: Belmont Circle	F	525.0				F	473.0			
Buzzards Bay Bypass (Route 6) EB (left/thru/right)	C	17.1	0.62	-	93	F	345.3	1.69	-	2518
Main Street (Route 6) WB (left/thru)	D	34.7	0.88	-	296	E	42.4	0.94	-	549
Main Street (Route 6) WB (right)	F	576.3	2.24	-	7001	F	481.0	2.03	-	6822
Old Bridge Road NB (left/thru/right)	A	9.5	0.01	-	0	A	9.1	0.01	-	1
Route 28/25 Ramps SB (left/thru/right)	F	921.0	3.01	-	10367	F	714.4	2.55	-	8548
Main Street NEB (left/thru/right)	F	348.3	1.73	-	3873	F	568.6	2.22	-	6532
Head of the Bay Road SEB (left/thru/right)	C	19.2	0.59	-	66	E	47.3	0.87	-	175

Attachment 4 – 2050 Design Year Build Alternative Conditions

MassDOT

Cape Cod Program Management

2050 Fall PM
Pairing 1 Build Condition
2024-01-05

Figure D-1

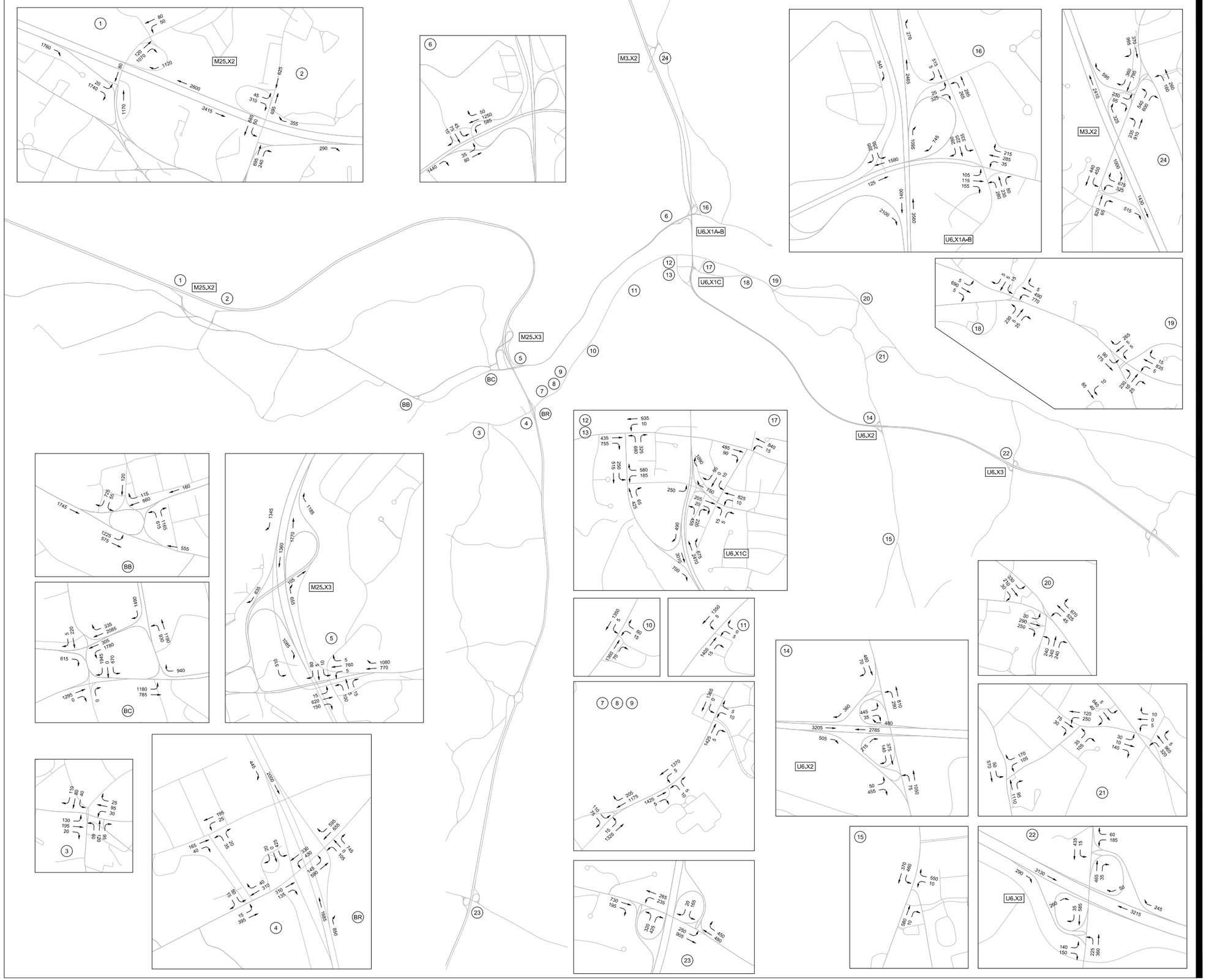
PRE-DECISIONAL &
DELIBERATIVE

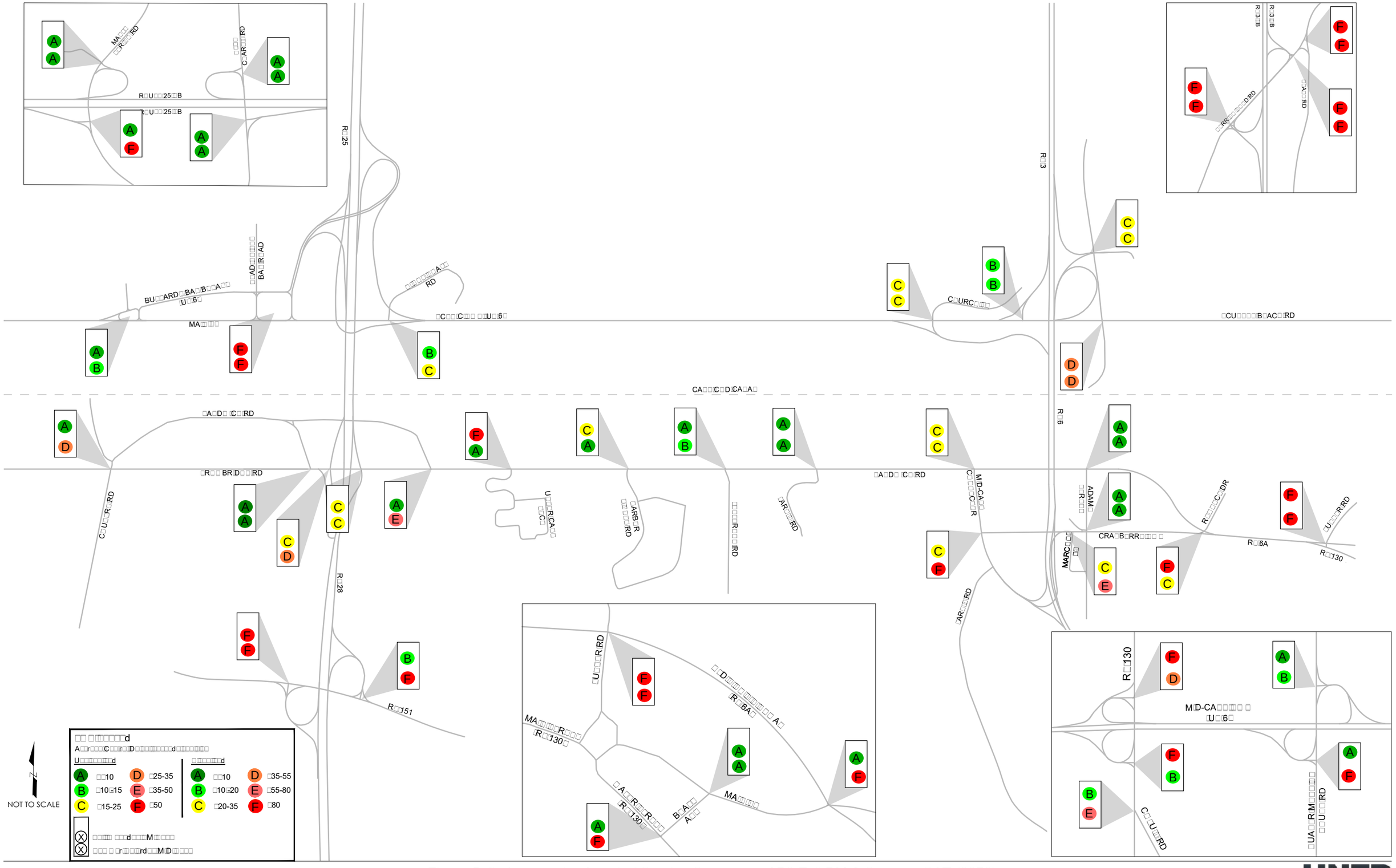
MassDOT

Cape Cod Program Management

2050 Summer SAT
Pairing 1 Build Condition
2023-08-31

Figure D-2





PRE-DECISIONAL & DELIBERATIVE

Figure D-3 : Intersection Level of Service Summary - AP9 Fall PM & Summer SAT (2050)

HNTB

Route 25 WB Exit 3 MERGE		
PERIOD	LOS	DENSITY
Fall PM	C	24.1
Summer SAT	C	24.4

Route 25 WB Exit 3 DIVERGE		
PERIOD	LOS	DENSITY
Fall PM	B	19.3
Summer SAT	B	19.7

Route 25 EB SEGMENT		
PERIOD	LOS	DENSITY
Fall PM	F	45.0
Summer SAT	F	45.0

Route 25 WB SEGMENT		
PERIOD	LOS	DENSITY
Fall PM	B	17.5
Summer SAT	B	17.8

Route 3 SB SEGMENT		
PERIOD	LOS	DENSITY
Fall PM	E	38.2
Summer SAT	F	45.0

Route 3 NB SEGMENT		
PERIOD	LOS	DENSITY
Fall PM	C	24.2
Summer SAT	D	28.5

Route 3 NB Exit 3 MERGE		
PERIOD	LOS	DENSITY
Fall PM	C	20.1
Summer SAT	D	28.9

Route 3 SB Exit 3 DIVERGE		
PERIOD	LOS	DENSITY
Fall PM	B	17.0
Summer SAT	C	24.5

Route 3 NB Exit 3 DIVERGE		
PERIOD	LOS	DENSITY
Fall PM	C	26.3
Summer SAT	D	29.7

Route 25 EB Exit 3 DIVERGE		
PERIOD	LOS	DENSITY
Fall PM	B	16.8
Summer SAT	F	29.5

Route 25 EB Exit 10 DIVERGE		
PERIOD	LOS	DENSITY
Fall PM	C	23.3
Summer SAT	C	25.3

Route 25 WB Exit 10 MERGE		
PERIOD	LOS	DENSITY
Fall PM	D	28.6
Summer SAT	C	22.6

Route 25 EB Exit 3 MERGE		
PERIOD	LOS	DENSITY
Fall PM	B	15.1
Summer SAT	B	18.1

Route 3 NB Exit 1 MERGE		
PERIOD	LOS	DENSITY
Fall PM	C	24.2
Summer SAT	C	27.4

Route 3 SB Exit 1A DIVERGE		
PERIOD	LOS	DENSITY
Fall PM	B	14.7
Summer SAT	B	18.1

Route 3 SB Exit 3 MERGE		
PERIOD	LOS	DENSITY
Fall PM	B	17.1
Summer SAT	C	20.1

Route 28 NB Bridge WEAVE		
PERIOD	LOS	DENSITY
Fall PM	B	19.2
Summer SAT	B	16.0

Route 6 SB Bridge WEAVE		
PERIOD	LOS	DENSITY
Fall PM	B	17.2
Summer SAT	C	27.3

Route 6 NB Bridge WEAVE		
PERIOD	LOS	DENSITY
Fall PM	D	30.4
Summer SAT	D	31.5

Route 28 SB Bridge WEAVE		
PERIOD	LOS	DENSITY
Fall PM	A	8.3
Summer SAT	B	17.2

Route 28 NB EXIT X DIVERGE		
PERIOD	LOS	DENSITY
Fall PM	B	17.8
Summer SAT	C	26.9

Route 28 SB EXIT X MERGE		
PERIOD	LOS	DENSITY
Fall PM	B	16.1
Summer SAT	F	>45

Route 28 SB SEGMENT		
PERIOD	LOS	DENSITY
Fall PM	B	14.6
Summer SAT	D	27.3

Route 28 NB SEGMENT		
PERIOD	LOS	DENSITY
Fall PM	B	17.1
Summer SAT	D	27.2

Route 28 NB - Route 151 MERGE		
PERIOD	LOS	DENSITY
Fall PM	B	16.7
Summer SAT	C	24.8

Route 28 SB - Route 151 DIVERGE		
PERIOD	LOS	DENSITY
Fall PM	B	14.8
Summer SAT	C	26.2

Route 28 NB - Route 151 DIVERGE		
PERIOD	LOS	DENSITY
Fall PM	B	13.4
Summer SAT	C	22.3

Route 28 SB - Route 151 MERGE		
PERIOD	LOS	DENSITY
Fall PM	B	10.8
Summer SAT	C	24.0

US 6 EB Exit 55 MERGE		
PERIOD	LOS	DENSITY
Fall PM	B	13.4
Summer SAT	D	28.2

US 6 WB Exit 55 DIVERGE		
PERIOD	LOS	DENSITY
Fall PM	D	33.7
Summer SAT	D	30.0

US 6 WB Exit 59 MERGE		
PERIOD	LOS	DENSITY
Fall PM	F	>45
Summer SAT	D	30.6

US 6 WB Exit 61 MERGE		
PERIOD	LOS	DENSITY
Fall PM	F	>45
Summer SAT	D	31.8

US 6 WB SEGMENT		
PERIOD	LOS	DENSITY
Fall PM	F	45.0
Summer SAT	E	38.4

US 6 WB Exit 59 DIVERGE		
PERIOD	LOS	DENSITY
Fall PM	F	>45
Summer SAT	D	31.6

US 6 WB Exit 61 DIVERGE		
PERIOD	LOS	DENSITY
Fall PM	F	>45
Summer SAT	F	>45

US 6 EB SEGMENT		
PERIOD	LOS	DENSITY
Fall PM	C	21.4
Summer SAT	F	45.0

US 6 EB Exit 59 DIVERGE		
PERIOD	LOS	DENSITY
Fall PM	C	22.7
Summer SAT	F	>45

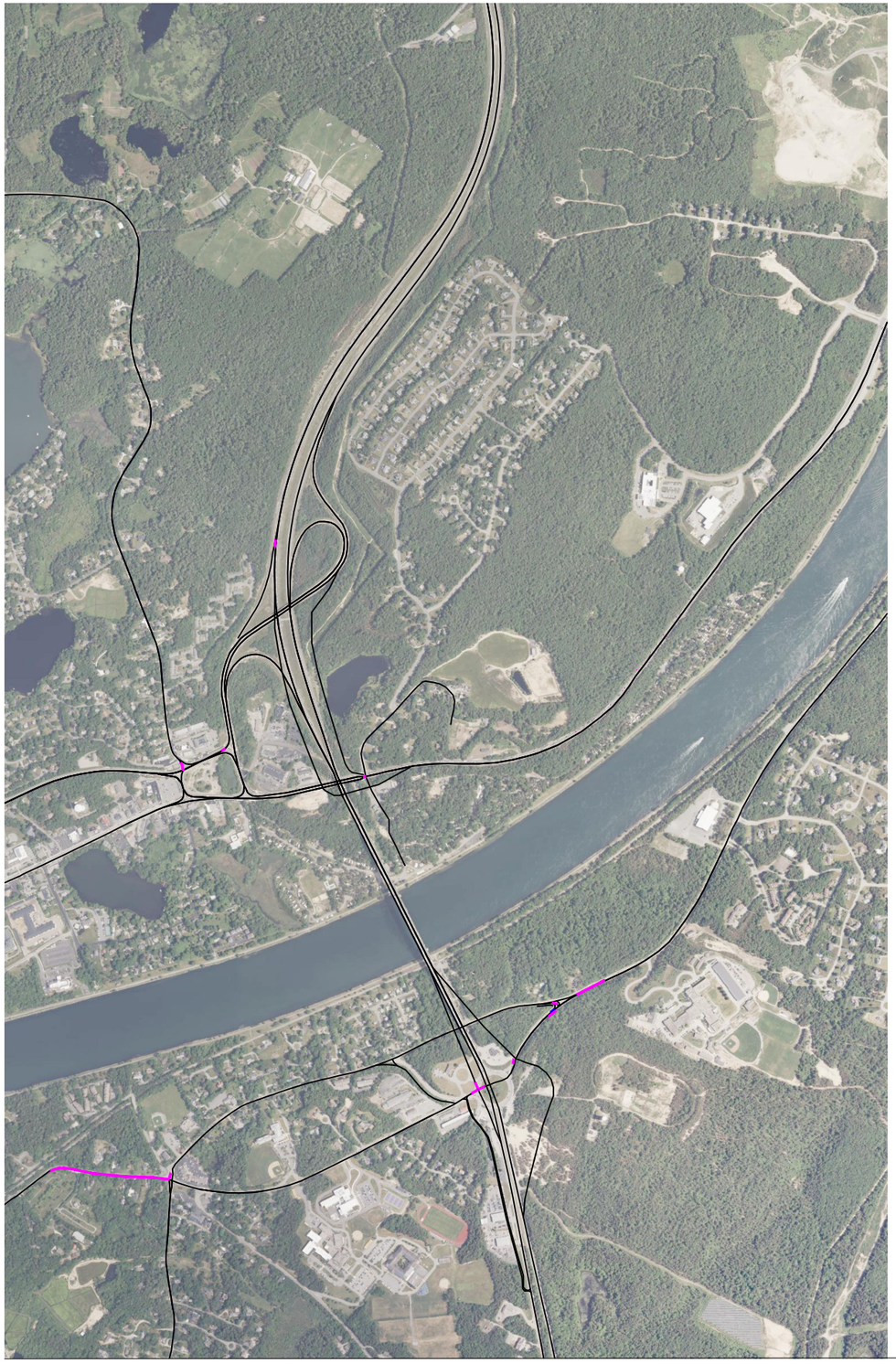
US 6 EB Exit 59 MERGE		
PERIOD	LOS	DENSITY
Fall PM	B	13.9
Summer SAT	D	29.7

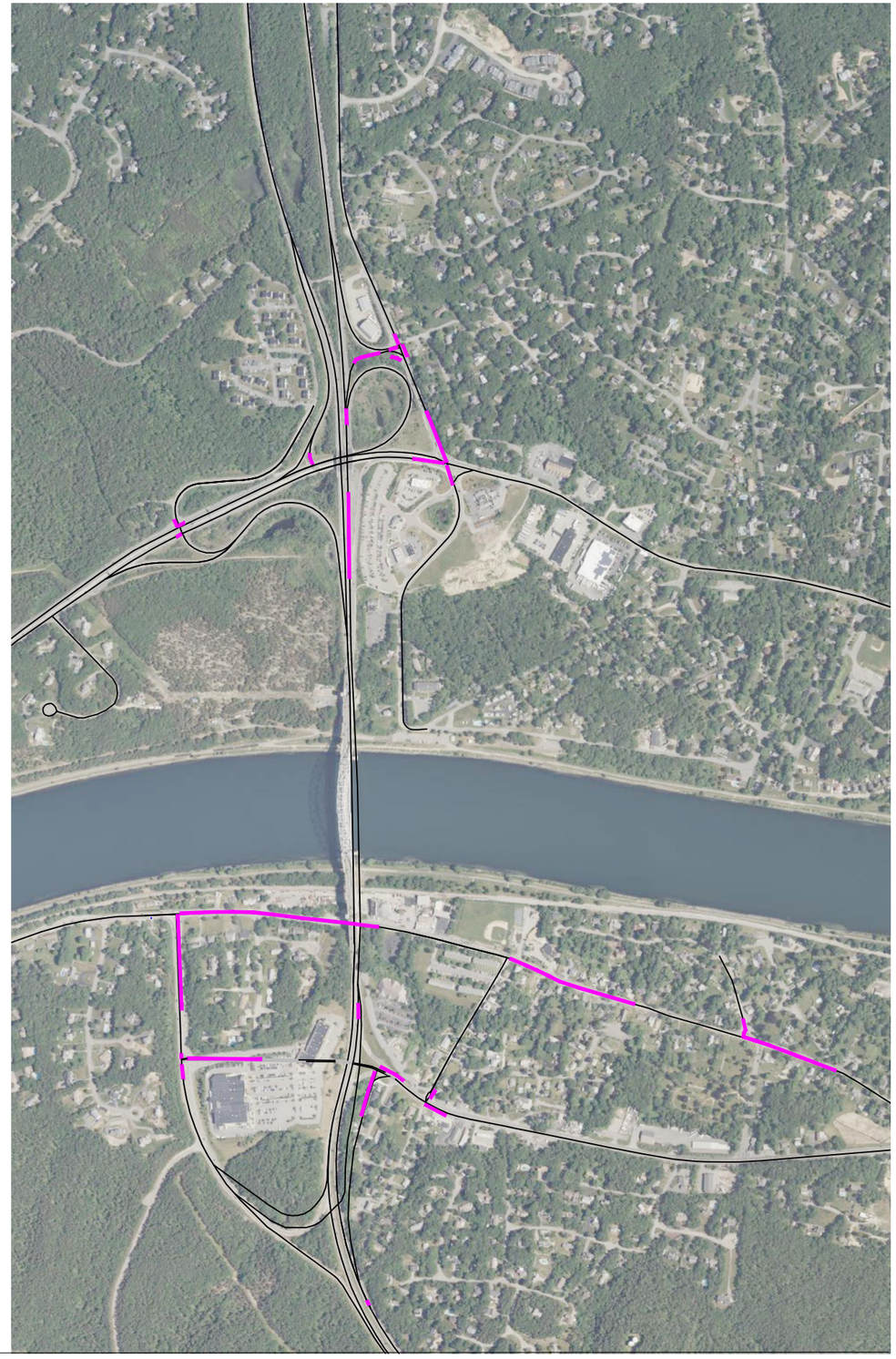
US 6 EB Exit 61 DIVERGE		
PERIOD	LOS	DENSITY
Fall PM	B	18.0
Summer SAT	E	35.4

US 6 EB Exit 61 MERGE		
PERIOD	LOS	DENSITY
Fall PM	B	17.2
Summer SAT	D	32.6

RT 25
MARLE SPRING RD
GLEN CHARLIE RD
HEAD OF THE BAY ROAD
BUZZARDS BAY BYPASS (US 6)
MAIN ST
SCENIC HWY (US 6)
CHURCH LN
SCUSSET BEACH RD
RT 3
HERRING POND RD
TROWBRIDGE RD
SANDWICH RD
RT 28
RT 151
MID-CAPE CONNECTOR
RT 130
MID-CAPE HWY (US 6)
QUAKER MEETING HOUSE RD

NOT TO SCALE





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NAD 83

NOT TO SCALE

2050 Build Condition

Note:

1. Figure only shows queues that are greater than or equal to 20 ft

Color	Description
	Avg Q's Fall PM

Figure D-5 : Avg Queues in AP 9 for Fall PM

HNTB

Table D-1 : Synchro and SIDRA Results Summary - 2050 AP9

Intersection	2050 AP9 Weekday Fall PM					2050 AP9 Summer Saturday MID				
	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)
6:: Scenic Highway (Route 6) / Main Street (Route 6) / Nightingale Road / Andy Olivia Drive	**B**	**12.4**				**C**	**22.5**			
Main Street (Route 6) EB (left)	A	6.4	0.18	10	65	B	12.9	0.08	2	17
Main Street (Route 6) EB (thru/right)	B	10.3	0.48	57	#432	B	19.9	0.79	200	#934
Scenic Hwy (Route 6) WB (left)	A	9.2	0.01	1	9	B	12.8	0.03	1	8
Scenic Hwy (Route 6) WB (thru/right)	B	12.2	0.45	76	#324	B	20.0	0.80	202	#933
Andy Olivia Dr NB (left/thru/right)	C	27.9	0.27	6	39	D	46.4	0.67	49	#218
Nightingale Pond Rd SB (left/thru)	C	27.6	0.23	5	48	D	35.1	0.13	6	65
8:: Trowbridge Road / Veterans Way	**A**	**0.6**				**A**	**1.3**			
Trowbridge Rd EB (left/thru)	A	8.6	0.01	-	0	A	8.2	0.01	-	0
Trowbridge Rd EB (thru)	A	0.1	0.00	-	0	A	0.1	0.00	-	0
Trowbridge Rd WB (thru)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Trowbridge Rd WB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Veterans Way SB (left/thru/right)	C	17.6	0.13	-	13	B	13.9	0.15	-	13
9:: Trowbridge Road / Route 25 SB Off-Ramp	**C**	**31.5**				**D**	**44.3**			
Trowbridge Rd EB (thru)	C	30.9	0.79	272	#553	D	44.8	0.59	144	#308
Trowbridge Rd EB (thru/right)	C	30.9	0.79	272	#553	D	44.8	0.59	144	#308
Trowbridge Rd WB (left)	E	58.9	0.63	124	#263	E	58.5	0.74	388	#675
Trowbridge Rd WB (thru)	B	14.4	0.18	26	163	B	14.0	0.16	38	172
Trowbridge Rd WB (thru)	B	14.4	0.18	26	163	B	14.0	0.16	38	172
Route 25 SB Off-Ramp (left)	D	43.1	0.6	97	#251	E	60.1	0.8	189	281
Route 25 SB Off-Ramp (thru/right)	D	36.3	0.11	2	64	D	44.9	0.47	87	172
9:: Sandwich Road / Trowbridge Road / Route 28 NB Off-Ramp	**C**	**25.8**				**C**	**34.8**			
Trowbridge Rd EB (left)	D	52.0	0.71	160	#267	E	58.7	0.56	66	m#108
Trowbridge Rd EB (left)	D	52.0	0.71	160	#267	E	58.7	0.56	66	m#108
Trowbridge Rd EB (thru)	A	3.4	0.25	31	88	B	18.6	0.34	148	203
Trowbridge Rd EB (thru)	A	3.4	0.25	31	88	B	18.6	0.34	148	203
Sandwich Road WB (thru)	B	19.6	0.36	98	#265	C	28.7	0.51	206	#414
Sandwich Road WB (thru)	B	19.6	0.36	98	#265	C	28.7	0.51	206	#414
Sandwich Road WB (right)	C	26.6	0.64	21	#332	C	29.3	0.47	27	197
Route 28 NB Off-Ramp (left/thru)	D	42.9	0.11	10	31	C	34.0	0.23	62	128
Route 28 NB Off-Ramp (right)	D	43.2	0.15	0	#79	D	53.0	0.83	145	#473
10:: Sandwich Road / Bourne Rotary Connector	**A**	**0.3**				**E**	**43.8**			
Sandwich Road EB (left/right)	F	114.9	0.14	-	13	F	$1109.4	2.99	-	333
Sandwich Road (Bourne Rotary Connector) NB (left/thru)	C	21.0	0.02	-	3	B	13.2	0.04	-	3
Sandwich Road (Bourne Rotary Connector) NB (thru)	A	0.4	0.00	-	0	A	1.1	0.00	-	0
Sandwich Rd WB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
15:: Sandwich Road (Route 6 Bypass) / Mid-Cape Connector	**C**	**25.4**				**C**	**28.9**			
Sandwich Rd EB (thru)	C	24.3	0.27	90	178	D	45.3	0.75	283	#499
Sandwich Rd EB (right)	B	10.3	0.64	159	600	A	9.3	0.70	188	#895
Sandwich Rd WB (left)	B	15.4	0.26	53	121	C	27.6	0.20	18	46
Sandwich Rd WB (thru)	C	24.8	0.79	403	#721	D	36.6	0.78	353	474
Sandwich Rd WB (thru)	C	24.8	0.79	403	#721	D	36.6	0.78	353	474
Mid-Cape Connector NB (left)	D	41.0	0.81	280	#447	C	31.9	0.69	370	m#558
Mid-Cape Connector NB (right)	D	41.0	0.81	280	#447	C	31.9	0.69	370	m#558
16:: Mid-Cape Connector / Cranberry Highway Extension	**C**	**20.4**				**F**	**103.5**			
Cranberry Highway Extension WB (left)	D	44.9	0.81	213	m311	F	246	1.47	~1084	m#1073
Cranberry Highway Extension WB (right)	B	16.9	0.55	155	m260	B	17.4	0.45	154	m173
Cranberry Highway Extension WB (right)	B	16.9	0.55	155	m260	B	17.4	0.45	154	m173
Mid-Cape Connector NB (thru)	C	25.4	0.34	112	#270	E	69.4	0.93	290	#776
Mid-Cape Connector NB (right)	B	11.5	0.40	80	162	A	7.4	0.07	8	32
Mid-Cape Connector SB (left)	D	45.6	0.51	99	m#183	D	52	0.04	4	m5
Mid-Cape Connector SB (thru)	B	11.1	0.37	166	305	C	30.6	0.68	217	#556
Mid-Cape Connector SB (thru)	B	11.1	0.37	166	305	C	30.6	0.68	217	#556
16:: Cranberry Highway / Route 6 E NB Off-Ramp	**C**	**32.0**				**E**	**71.2**			
Cranberry Highway EB (left)	C	0.0	0.00	0	0	B	0.0	0.00	0	0
Cranberry Highway EB (thru)	C	29.6	0.72	276	#619	B	14.3	0.01	2	10
Cranberry Highway WB (thru/right)	C	24.9	0.29	99	198	E	76.5	1.06	745	#1240
Route 6 E NB Off-Ramp (left/thru)	D	41.1	0.90	354	#559	F	80.5	1.00	~384	#611
Route 6 E NB Off-Ramp (right)	B	17.6	0.26	76	118	C	30.4	0.43	141	217
20:: Scenic Highway (Route 6) / Church Lane / Route 6 SB On-Ramp	**C**	**21.5**				**C**	**29.4**			
Scenic Hwy (Route 6) EB (left)	E	57.5	0.55	46	89	E	63.1	0.57	29	66
Scenic Hwy (Route 6) EB (thru)	C	21.1	0.59	198	#562	C	24.4	0.07	16	61
Scenic Hwy (Route 6) EB (thru/right)	C	21.1	0.59	198	#562	C	24.4	0.07	16	61
Scenic Hwy (Route 6) WB (left)	D	47.8	0.36	47	64	D	44.8	0.76	256	186
Scenic Hwy (Route 6) WB (left)	D	47.8	0.36	47	64	D	44.8	0.76	256	186
Scenic Hwy (Route 6) WB (thru)	B	16.4	0.61	106	#615	B	18.4	0.48	102	271
Scenic Hwy (Route 6) WB (thru)	B	16.4	0.61	106	#615	B	18.4	0.48	102	271
Scenic Hwy (Route 6) WB (thru/right)	B	16.4	0.61	106	#615	B	18.4	0.48	102	271
Church Lane SB (left/thru/right)	E	57.0	0.63	82	137	E	63.4	0.73	107	176
21:: Scenic Highway (Route 6) & Route 3 SB Off-Ramp	**B**	**10.7**				**B**	**19.9**			
Scenic Hwy (Route 6) EB (thru)	A	2.7	0.52	14	21	A	9.7	0.07	40	34
Scenic Hwy (Route 6) EB (thru)	A	2.7	0.52	14	21	A	9.7	0.07	40	34
Scenic Hwy (Route 6) WB (thru)	B	13.8	0.43	116	m353	B	17.7	0.58	265	521
Scenic Hwy (Route 6) WB (thru)	B	13.8	0.43	116	m353	B	17.7	0.58	265	521
Scenic Hwy (Route 6) WB (thru)	B	13.8	0.43	116	m353	B	17.7	0.58	265	521
Route 3 Off-Ramp SB (left)	E	56.3	0.74	166	236	E	62.2	0.82	202	295
Route 3 Off-Ramp SB (right)	A	0.5	0.32	0	0	A	0.3	0.20	0	0

Table D-1 : Synchro and SIDRA Results Summary - 2050 AP9

Intersection	2050 AP9 Weekday Fall PM					2050 AP9 Summer Saturday MID				
	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)	LOS	Delay (sec)	v/c Ratio	50% Queue (feet)	95% Queue (feet)
22:: Meetinghouse Lane / State Road / Canal Street	**D**	**50.2**				**D**	**53.0**			
Meetinghouse Ln EB (left)	D	41.0	0.88	~382	#500	E	67.0	0.64	48	m#84
Meetinghouse Ln EB (left)	D	41.0	0.88	~382	#500	E	67.0	0.64	48	m#84
Meetinghouse Ln EB (thru/right)	B	15.9	0.51	80	#322	D	43.9	0.59	232	#458
Meetinghouse Ln WB (left)	F	183.2	0.79	8	29	E	63.1	0.57	29	#78
Meetinghouse Ln WB (thru)	D	43.9	0.22	39	103	D	42.8	0.6	176	#455
Meetinghouse Ln WB (right)	D	37.0	0.03	3	14	C	21.9	0.33	59	174
Canal St NB (left)	F	154	1.12	~120	#239	D	36.0	0.71	161	237
Canal St NB (thru/right)	D	47.5	0.59	133	211	E	77.5	0.93	257	#428
State Rd SB (left)	D	49.7	0.67	95	#163	F	89.4	1.03	~250	#444
State Rd SB (thru)	F	86.0	0.94	222	#390	D	43.4	0.60	173	263
State Rd SB (right)	B	18.7	0.21	54	88	D	43.9	0.72	146	#288
23:: State Road / Route 3 NB Ramps	**C**	**24.4**				**C**	**25.2**			
Route 3 NB Off-Ramp (left)	C	28	0.73	116	#372	C	28.3	0.15	10	41
Route 3 NB Off-Ramp (right)	B	12.5	0.44	52	123	D	44.5	0.88	107	#320
State Rd NB (left)	C	27.8	0.67	79	#200	C	28.6	0.57	53	#140
State Rd NB (left)	C	27.8	0.67	79	#200	C	28.6	0.57	53	#140
State Rd NB (thru)	B	17.8	0.73	163	#565	A	5.5	0.26	34	162
State Rd SB (thru/right)	D	43.0	0.83	104	#345	C	22.0	0.76	163	#528
24:: Cranberry Highway / Adams Street	**A**	**1.6**				**A**	**2.1**			
Cranberry Highway EB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Cranberry Highway WB (left)	A	8.6	0.01	-	0	A	7.7	0.01	-	0
Cranberry Highway WB (thru/right)	A	0.0	0.00	-	0	A	0.0	0.00	-	0
Adams Street NB (left/thru/right)	C	16.8	0.13	-	10	D	31	0.14	-	13
Adams Street SB (left/thru/right)	B	12.3	0.07	-	5	C	21.7	0.29	-	30