



# REIMAGINING BRIDGE STREET

## UEP FIELD PROJECTS 2022

CHRISTENSEN, COLLINS, FEDERICO, TOMASOA, TROLLINGER  
REPORT COMPILED FOR THE TOWN OF WEYMOUTH, MA



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# ACKNOWLEDGMENTS

## **Indigenous Land Acknowledgment**

This Field Project team would like to acknowledge that Tufts University is built on the ancestral lands of the Wôpanâak, Massachusetts, and Nipmuc people, as well as a former slaveholding plantation –Ten Hills Plantation. Weymouth is located on the former lands of the Wampanoag, Massachusett, and Pokanoket tribes. Both native and enslaved persons lived and worked on the land now known as Massachusetts. As we recognize this history, we must also acknowledge that this paper is a product of an enduring settler-colonial legacy.

This report was prepared for the Town of Weymouth's Department of Community Development and Planning by a Tufts Field Project Team in the Department of Urban and Environmental Policy and Planning at Tufts University.

We would like to acknowledge and thank the following people for their contributions to our work:

**Christine Cousineau, Lucy Perkins, and the entire Field Project teaching team.**

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GRADUATE SCHOOL  
OF ARTS AND SCIENCES

Urban and Environmental  
Policy and Planning



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# EXECUTIVE SUMMARY

In the spring of 2022, the Department of Planning and Community Development of the Town of Weymouth, Massachusetts, approached a Field Projects team at Tufts University's Department of Urban and Environmental Policy and Planning with the aim of soliciting recommendations for an economic and physical revitalization of Bridge Street.

Bridge Street is a stretch of Massachusetts Route 3A, a state highway that runs through North Weymouth. It is characterized by low density development, auto-centric commercial uses, poor walkability, and a lack of lively retail. Furthermore, Bridge Street is ill-equipped to deal with the impacts of climate change which include urban heat island effects, sea level rise, and stormwater flooding.

The Field Project Team approached our task with three overarching goals:

- 1. Building identity, vision, and strengthening the sense of place for Weymouth.**
- 2. Focusing on using multimodal transportation along the corridor.**
- 3. Centering climate adaptation and resilience.**

Through secondary research, site visits, and interviews, we found that Bridge Street needs to address traffic congestion, roadway safety, a lack of multimodal infrastructure, land use inconsistencies, stormwater flooding, and extreme heat concerns.

Based on these findings, the Town's Department of Planning and Community Development should consider implementing recommendations along the

entirety of Bridge Street as well as specific changes and enhancements for two focus sites: Bicknell Square and the Neck/Green Street intersection (Veterans Memorial Circle). Our recommendations can be categorized into three main categories:

## **Land Use**

To encourage the development and density required for the desired economic growth, Weymouth should consider implementing a 40R Overlay District and enforcing new design guidelines for the new 40R Overlay District, the existing B-2 Business District, and the Neighborhood Center District (NCD) areas. The Town should reduce the amount of space used for parking lots by encouraging shared parking where possible.

## **Multimodal Transportation**

To better control and calm traffic along the corridor, thereby making a safer environment for all roadway users, the town should consider a Road Diet as well as the construction of a roundabout at Veterans Memorial Circle. The Town should also aim to prioritize non-motorized forms of transportation along Bridge Street through sidewalk and bike lane enhancements in accordance with its existing Complete Streets Policy.

## **Climate Resilience**

To mitigate the climate driven threats of extreme heat, stormwater flooding, and sea level, the Town should incorporate climate adaptation techniques through the use of green infrastructure technologies. New design guidelines should reflect this by encouraging the planting of street trees, construction of bioswales, the expansion and connectivity of green spaces, and the use of permeable pavement for sidewalks along Bridge Street.

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# CHAPTER 1 INTRODUCTION

# USING THIS GUIDE

It is the Field Project Team's aim that this report be a tool in envisioning a new future for Bridge Street. This document is meant to demonstrate what the corridor could look like, and strategies for how to get there. Bridge Street is poised to be a central hub in Weymouth full of opportunities, inviting retail spaces, and people. Through providing strategic planning recommendations, this report aims to provide the first building blocks in transforming Bridge Street into a destination people want to go to, not simply a corridor to travel through.

The report is set out into several chapters. In each chapter, information is split between three topic areas: Land Use, Multimodal Transportation, and Climate Resilience. Chapter One starts with an introduction to our project by outlining who we are as well as our project goals. Next, we detail how we conducted our research in our methodology in Chapter Two. The findings from our research are presented in Chapter Three, which serves as the rationale for our recommendations on what planning strategies could be most beneficial and impactful along Bridge Street. Next, in Chapter Four we present our recommendations, split between general corridor recommendations and focus site recommendations for our two focus sites: Bicknell Square and Veterans Memorial Circle. Finally, we conclude this report by laying out several next steps that the Town of Weymouth can take to move forward in implementing changes along Bridge Street. Our literature review, which provides further information on the science, rationale, and theory behind our recommendations, can be found in the Appendix.

Sincerely,  
The Tufts Field Project Team  
Alison Christensen, Brenna Trollinger, Madison Collins,  
Michael Tomaso, and Peter Federico



FIGURE 2: SITES FROM NORTH WEYMOUTH. TOP LEFT: VIETNAM MEMORIAL PARK SIGN TOP RIGHT: ABIGAIL ADAMS STATE PARK SIGN, MIDDLE: INTERSECTION OF NECK, GREEN AND BRIDGE STREETS, BOTTOM: SHOPS IN BICKNELL SQUARE. PHOTOS BY BRENNA TROLLINGER

# PROJECT INFORMATION

## OUR TEAM

As part of their course requirements, first-year MA and MS Tufts UEP students conduct research and analysis for partners on planning and policy issues. The members of the 2022 Reimagining Bridge Street Team are: Alison Christensen,

Brenna Trollinger, Madison Collins, Peter Federico, and Michael Tomaso. The Field Project Team is pictured below in the above order from left to right.



FIGURE 3: THE 2022 REIMAGINING BRIDGE STREET FIELD PROJECT TEAM.

## PROJECT BACKGROUND

Our Field Project partner is the Town of Weymouth's Department of Community Development and Planning. This department is responsible for the coordination of all planning and development activities of the town.

The Town of Weymouth is located 16 miles southeast of Boston in Norfolk County, covers an area of 21.57 square miles including water, and is connected to Boston via the MBTA bus system, commuter rail, and the state highway network. The city is divided into four districts: North Weymouth, South Weymouth, East Weymouth, and Weymouth Landing. Our project site is Bridge Street, a portion of Massachusetts state highway 3A located in North Weymouth between the Fore River and Weir River. Bridge Street passes through Bicknell Square, the village center of North Weymouth. Situated along the South Shore of the Boston harbor, Bridge Street is east of Quincy and west of Hingham.



FIGURE 4: NORTH WEYMOUTH BANNER. PHOTO BY BRENNA TROLLINGER

# PROJECT GOALS

The primary objective of our field project is to encourage sustainable economic growth and development along Bridge Street. Our objective will be realized through recommendations to support three main goals:

## 1. BUILD IDENTITY, VISION, AND A SENSE OF PLACE FOR WEYMOUTH.

It is important to create a sense of place for the Bridge Street Corridor to bring in visitors, economic activity, and create a diverse and welcoming community. To that extent, our plan provides recommendations on how the Bridge Street Corridor can cultivate a convivial atmosphere that will be conducive to commercial and communal activities through the use of design guidelines and zoning recommendations.



IDENTITY AND SENSE OF PLACE

## 2. CENTER ADAPTATION AND RESILIENCE TO CLIMATE CHANGE.

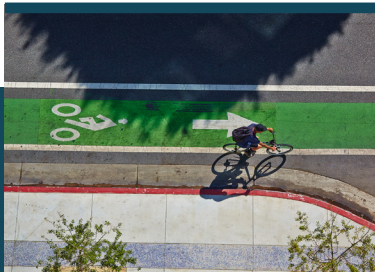
Building on the recommendations described in Weymouth’s 2018 Municipal Vulnerability Preparedness Program Report, this goal focuses on site-design standards to mitigate the impacts of sea-level rise, flooding, and increased extreme heat temperatures. Through assessing planning decisions on their adaptability to climate impacts, we can propose ways in which Weymouth, its built environment, and its community will develop and grow sustainably.



CLIMATE RESILIENCE

## 3. FOCUS ON MULTIMODAL TRANSPORTATION ALONG THE CORRIDOR.

The sidewalk along Bridge Street is presently extremely inhospitable to pedestrians, which limits foot traffic and thus opportunities for business and growth along North Weymouth’s main artery. Our recommendations will use multimodal design to enhance walkability while maintaining optimal traffic flow to ensure that both motorists and non-motorists are able to benefit from an enhanced Bridge Street



MULTIMODAL TRANSPORTATION

PROJECT SITES

Our project site is the Bridge Street Neck, Green and Bridge streets. The focus sites Corridor in North Weymouth. Along the are denoted from left to right, respectively, in the corridor, we have also chosen two focus figure to the right. sites: Bicknell Square and the intersection of

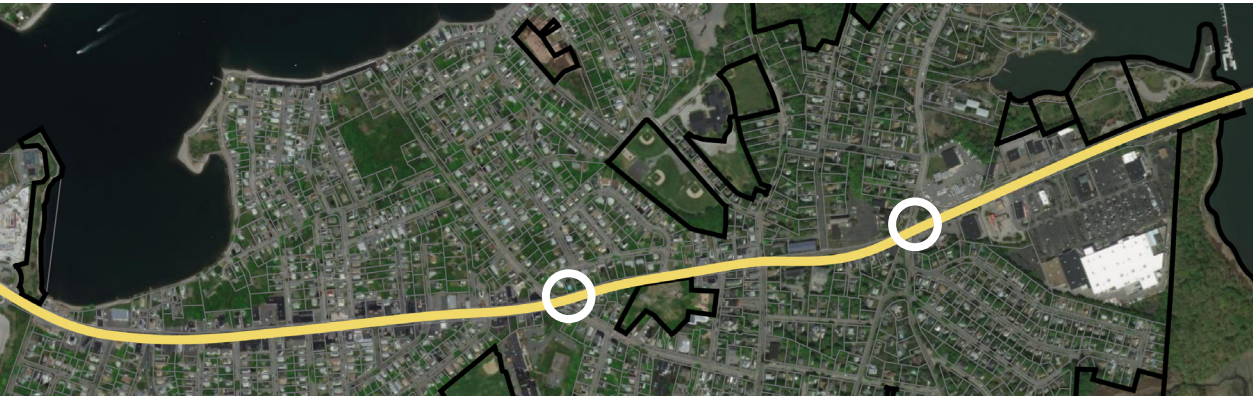


FIGURE 5: BRIDGE STREET CORRIDOR, WITH BICKNELL SQUARE CIRCLED TO THE LEFT, AND THE INTERSECTION OF NECK AND GREEN STREET TO THE RIGHT. GRAPHIC BY PETER FEDERICO.

WEYMOUTH DEMOGRAPHICS

In 2020, Weymouth had a population of 57,437 and a population density of 3,421 persons per square mile.<sup>1</sup> The population is 82% white, 6.2% Asian, 5.6% African-American, and 4.1 % Hispanic or Latino. Between 2016-2020, Weymouth had a median household income (in 2020 dollars) of \$85,536 and a median home value of \$384,700, with 6.3% of its residents living below the poverty line.

TABLE 1: RACE DEMOGRAPHICS IN WEYMOUTH AND MASSACHUSETTS.

Race	Town of Weymouth	Massachusetts
White alone, Not Hispanic or Latino	82%	71%
Asian	6%	7%
Black or African American	6%	7%
Hispanic or Latino	4%	12%
Two or More Races	2%	3%

Weymouth is less diverse than the state average. Compared with neighboring communities, Weymouth is demographically closest to Quincy, having similar median incomes and poverty rates<sup>2</sup>. Other neighboring South Shore towns like Hingham and Cohasset have almost double the median household income of Weymouth and Quincy. A visual representation of the median household incomes and poverty rates is shown in Table 2.

TABLE 2: MEDIAN INCOME AND POVERTY RATE OF WEYMOUTH AND SELECTED SOUTH SHORE CITIES.

Location	Median Income	Poverty Rate
Massachusetts	\$84,385	9.40%
Quincy	\$80,462	9.80%
WEYMOUTH	\$85,536	6.30%
Cohasset	\$141,036	6.50%
Hingham	\$147,520	3.60%

## HISTORY OF WEYMOUTH

Weymouth was first settled by English colonizers in 1622 on indigenous Wampanoag, Massachusetts, and Pokanoket territory<sup>3</sup>. As the town began to expand in the 17th century, it built upon and further developed the Native American trails that had been used for centuries prior to colonization. The trails formed the backbone of Weymouth's road network, and would become Bridge Street hundreds of years later.

This road network was transformed in the late 19th to early 20th centuries to include streetcars. Workers would walk or take the streetcar from home to work, and Weymouth was a hub of business activity. The streetcar system remained in place until the 1930s when the outsourcing of industry and widespread adoption of the automobile led to its decline<sup>4</sup>. The closure of Weymouth's streetcar network coincided with widespread economic decline. This resulted in the closure of many storefronts in the 1940s, 50s, and 60s<sup>5</sup>.

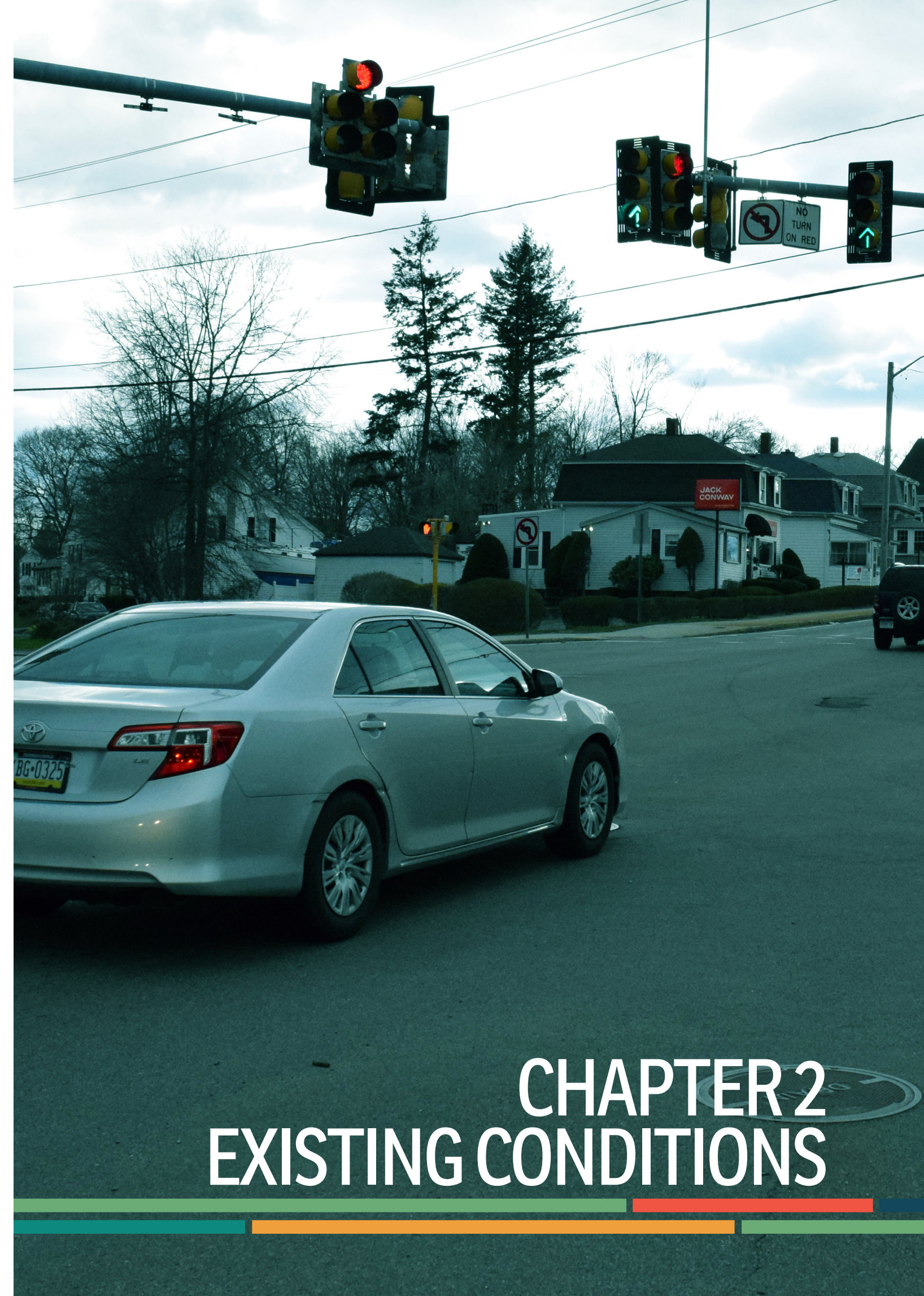
Unlike other New England towns, Weymouth emerged from the aggregation of four small village centers that were once clusters of housing and local businesses located at important crossroads along the Native American trails. These four mixed-use village centers still exist today and are: Bicknell Square in North Weymouth; Columbian Square in South Weymouth; Lower Jackson Square in East Weymouth; and Weymouth Landing.

The commercial importance of Weymouth's four village centers has waned since the 1970s due to the emergence of large shopping and entertainment complexes in neighboring towns such as the Hingham Shipyard and South Shore Plaza in Braintree. Nonetheless, each of the village centers retains its own characteristics of historic buildings, unique small businesses, and green open spaces. The history of Weymouth has led to the current conditions along Bridge Street.



FIGURE 6: OLD COLONY STREET RAILWAY THROUGH WEYMOUTH. SOURCE: WIKIMEDIA COMMONS

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# CHAPTER 2

## EXISTING CONDITIONS

# CONDITIONS ALONG BRIDGE STREET

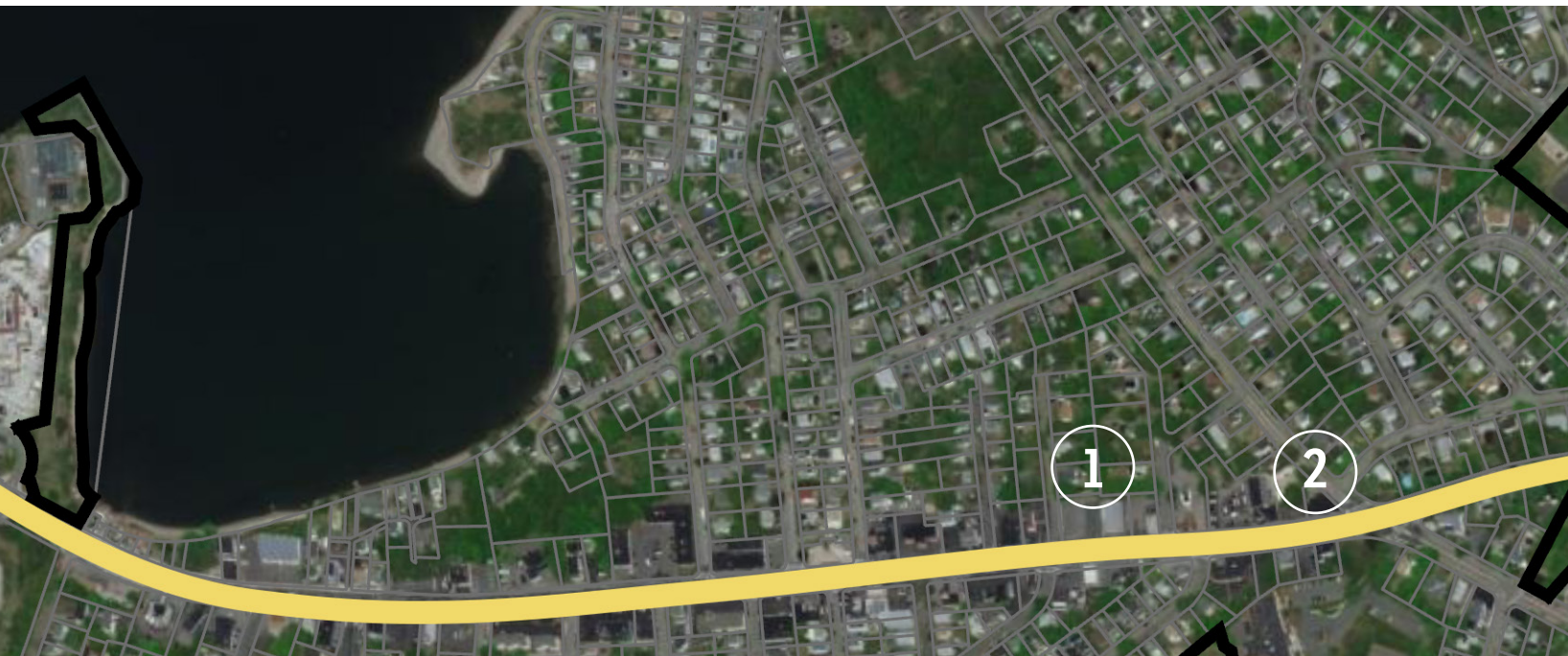


FIGURE 7: (ABOVE) AERIAL MAP OF BRIDGE STREET CORRIDOR IN NORTH WEYMOUTH. THE NUMBERS CORRESPOND TO THE VIEWS IN FIGURE 8. GRAPHIC BY PETER FEDERICO AND BRENNIA TROLLINGER.



## LAND USE AND ZONING

Bridge Street features a plethora of gas stations, auto body shops, and drive-thrus. Underused parcels and industrial complexes also take away from the economic and placemaking viability of this area, and are visually unappealing. The vacant lots along the corridor add to our observable perception that there is a lack of destinations along Bridge Street. Although there are few enticing higher-end businesses along the corridor, such as the True North Restaurant and Bar, for the most part, Bridge Street lacks a robust network of retail. The absence of cohesion among land uses and building types along Bridge Street creates a confusing network of businesses, residences and industrial activities alongside one another.

## MULTIMODAL TRANSPORTATION

Bridge Street is a four-lane undivided state highway with inconsistent shoulders and sidewalks, none of which run along the entire corridor length. The sidewalks that do exist create a piecemeal network of narrow and uneven walkways. Frequent curb cuts and unpainted crosswalks makes crossing dangerous. Currently, the street has minimal bicycle, pedestrian and MBTA bus infrastructure, creating a congested and dangerous roadway for all who use Route 3A.

Current conditions along the corridor serve the needs of driving at the expense of other modes of transportation. The street is not well-scaled for pedestrians, as signs are large and above pedestrian eye height. Parcels are

Bridge Street is characterized by several clusters of commercial development including chain restaurants, gas stations, convenience stores, and retail stores, several of which are empty or underused. As a state highway and commuter corridor, Bridge Street is heavily traveled. Speeding traffic in the area makes Bridge Street potentially hazardous to pedestrians, cyclists, and other non-motorists. Further, the corridor does not have consistent bike or pedestrian infrastructure. Besides auto-oriented businesses with wide curb cuts, land use zones along Bridge Street also include single family residences and retail businesses.



FIGURE 8: (BELOW) BRIDGE STREET SITE VIEWS. PHOTOS BY BRENNA TROLLINGER AND PETER FEDERICO



not well-connected, meaning that patrons must drive between businesses rather than being able to walk and visit multiple businesses. Many businesses are also located in the center of their parcel, with large setbacks in the front and sides of the lots. Some also have drive-thrus like Dunkin Donuts and Everyday Café, leading to a “drive-in, drive-out” effect along the corridor.

The disconnect between parcels creates an “island” effect. For instance, Bicknell Square is located in close proximity to Beals Park, but there is not a clear connection between the two and they feel isolated from each other.

Because Bridge Street is a state highway, cars drive fast. This makes the roadway unsafe for pedestrians and bicyclists, especially in places where there are no

shoulders, bike lanes, or sidewalks. The driving speeds along the street further deter pedestrians and cyclists from using the corridor.

**CLIMATE RESILIENCE**

The surface area of Bridge Street consists largely of asphalt, concrete, and other paved surfaces. The high percentage of land that is impervious along the corridor is of particular environmental concern as it retains heat in the summer and does not allow for the proper drainage of precipitation. Furthermore, the impervious surfaces increase the risk of stormwater runoff creating pollution concerns in nearby waterways.venvironmentally detrimental.

# FOCUS SITE CONDITIONS

## BICKNELL SQUARE

Bicknell Square is one of four village centers in WOne of Weymouth's four village centers, Bicknell Square is located at the intersection of Bridge Street and Sea Street. The Square has a small strip of retail businesses including a jeweler, a pet grooming business, and an antique shop, as well as auto shops, and a few restaurants. Beyond commercial uses, the Square has residential developments like the

Bicknell Condominiums, and single-family housing developments. There is also the nearby Unitarian Universalist church of Weymouth, the South Shore Bank and the Bridge Street Foodmart. Bicknell Square is also adjacent to greenspaces such as Beals Park and a privately owned park in front of the Bicknell Condominiums.



## VETERANS MEMORIAL CIRCLE

The intersection of Bridge Street, Neck Street and Green Street is a busy crossroad located in the eastern portion of Bridge Street. This site is proximate to several businesses including a drive-through Dunkin Donuts, the U-Haul Storage and Truck Rental, and Castle Self Storage. These businesses are non-conforming with the current zoning in the area. It is also adjacent to St. Jerome's Church as well as the Jack Conway real estate

office. The intersection is flanked by residential areas and is often congested due to a disorganized and confusing traffic pattern. The intersection has sidewalks and crosswalks, but they are not consistently paved or visible, making the roadway difficult to navigate. Furthermore, there are several MBTA bus stops near the intersection, but no dedicated bus lane and inconsistency of bus stop signage and infrastructure.



FIGURE 10. CONDITIONS AT VETERANS MEMORIAL CIRCLE. TOP LEFT: DUNKIN DONUTS SIGN, TOP RIGHT: VIETNAMMEMORIAL PARK SIGN, MIDDLE: STREET SIGN AT NECK AND BRIDGE STREETS, BOTTOM: NECK, GREEN AND BRIDGE STREETS INTERSECTION. PHOTOS BY BRENNIA TROLLINGER

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A photograph of a busy intersection. In the foreground, a dark-colored sedan is blurred, indicating motion. To the left, a white van is also visible. In the background, there are traffic lights, bare trees, and a cloudy sky. The overall scene is a typical urban intersection.

# CHAPTER 3 METHODOLOGY

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# RESEARCH TEAMS

In order to conduct a multipronged and coordinated approach to our research, analysis, and recommendations, we divided our Field Project team into sub-teams of focus areas. All members of the Field Project team were part of the focus teams, in various roles of lead and support.



## URBAN DESIGN TEAM

The Urban Design Team produced design recommendations that aim to enhance Bridge Street, in accordance with our project goals outlined in Chapter One. This includes, but is not limited to, investigating the potential of creating and improving upon multimodal transportation infrastructure as well as visual enhancements for the corridor.



## COMMUNITY ENGAGEMENT TEAM

The Community Engagement Team took the lead on community interviews. This team is well-versed in IRB protocols and the required interview methods. It collated and coded the interviews for our analysis.



## ZONING AND LAND USE TEAM

The Zoning and Land Use Team familiarized themselves with Weymouth's zoning bylaws to identify areas in which current zoning and land use patterns along Bridge Street may be incongruous with the Field Project's goals of placemaking, encouraging business development, and centering climate resilience. This team was responsible for proposing changes to the zoning bylaws that will encourage the mixed-use development necessary to achieve our stated goals.



## CLIMATE RESILIENCE TEAM

The Climate Resiliency Team worked towards centering climate change adaptation strategies and initiatives to protect natural resources and sites within our study area. To assess environmental protection, this team used GIS, surveys, interviews, and land use zoning research. Further, the climate team read and synthesized existing climate plans and policies in Weymouth as well as other similar communities.



## GRAPHIC DESIGN AND EDITING TEAM

The Graphic Design and Editing Team worked to ensure that deliverables are clear, accurate, concise, and visually understandable throughout the project. This team was responsible for the overall look and visuals of the report, as well as its written content by ensuring that all parts of the project maintain cohesion and a consistent tone, and that all literature is properly cited.

# RESEARCH METHODS

To meet our project goals, we used five research methods: site visits, interviews, co-benefit analysis, GIS mapping, and a literature review. Each of these research methods informed our findings, and ultimately, our final recommendations for Bridge Street and our two focus sites.

## **SITE VISITS**

Our team conducted several site visits to assess existing conditions along the corridor and points of interest. We took pictures of Bridge Street, Bicknell Square, Veterans Memorial Circle, current greenspaces, current traffic along the corridor, signage, businesses, shared parking, underused lots, potential instances for improving connectivity, and instances of local character. These visits helped us to experience, visualize, and document the major issues the corridor is facing—especially from the perspective of pedestrians, cyclists, and non-automotive users.

## **INTERVIEWS**

Stakeholder interviews aided us in engaging with the residents of Weymouth so that we were better equipped to understand the community perspectives on our project site. These insights helped to shape our recommendations for building a sense of place along Bridge Street. We conducted interviews with residents and city officials to better understand current conditions along the corridor and in North Weymouth, and what changes stakeholders might want. All interviews were conducted in accordance with IRB protocols.

## **CO-BENEFIT ANALYSIS**

The Co-benefit analysis in this report is a method used to sort and prioritize land use, transportation, and climate resilience recommendations based upon best practices in each area. Co-benefits are added benefits, for land use, transportation, or climate resilience when policies or changes are enacted to regulate these areas. Utilizing co-benefits in an analysis can help to persuade the general public of the desirability of any given recommendation as it is an added benefit.

Our teams created four specific co-benefits tables to highlight our overarching goals and create a visual representation of the benefits of each recommendation. The four co-benefits tables are: Co-Benefits of Land use Planning, placemaking, Multimodal Transportation, and Climate Resilience. These tables are tools that our teams used to visualize how our recommendations aligned with best-practices and our project goals (see Chapter one for our project goals).

## **GIS MAPPING**

Our team used GIS mapping and spatial analysis to assess the built environment along Bridge Street including zoning maps, areas at risk for flooding and extreme heat, automobile crash data, and areas of environmental concern. This was done to analyze zoning districts along the corridor, the amount of impervious surface, vegetative cover, air temperature, pollution emissions, and vehicular collision information. These maps helped to guide our recommendations for land use changes, climate adaptation and resilience measures, and multimodal transportation changes that are needed along the corridor.

## **LITERATURE REVIEW**

To gain a deeper theoretical understanding of the opportunities and challenges of our project site, we conducted a literature review of peer-reviewed articles, policy documents, archival materials, and other relevant materials. Our literature review formed the basis of our research, guided our design recommendations, and can be found in our Appendix.

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A photograph of a road scene. In the foreground on the right, a white road sign with a black border reads 'NORTH' in a small box above a larger box containing '3A'. The sign is mounted on a metal pole. To the left of the sign, a dark-colored SUV is driving away from the camera on a two-lane road. Further ahead, another car is visible. The background features a bright blue sky with large, white, fluffy clouds. Power lines are visible across the sky. The bottom of the image has a decorative horizontal bar with segments of teal, orange, and red.

# CHAPTER 4 FINDINGS AND ANALYSIS

# STAKEHOLDER INTERVIEWS

## INTERVIEW GOALS

We conducted interviews to gain insight into how Weymouth town officials and community representatives perceived the current and ideal conditions for Bridge Street. Through these interviews we were able to understand and identify our stakeholders' current opinions, their preferred vision, and challenges and opportunities for improving community character, zoning and land use, transportation, and climate. Specifically, we conducted interviews with members of the North Weymouth Civic Association, a district councilor, a transportation practice leader from Kimley-Horton & Associates Inc., the Conservation Commission, and the Department of Planning & Community Development. These individuals were selected for their extensive knowledge about Bridge Street and because the information they provided best represented the town's goals and priorities.


Our questions can be divided into four categories: placemaking, zoning, transportation, and climate. First, placemaking questions investigated our stakeholders' attitudes and impressions towards the current and desired vision for Bridge Street. These questions also helped us explore stakeholder priorities, economic and business challenges and opportunities, and community participation in planning. Second, zoning questions examined

our stakeholders' perceptions towards land use and design along Bridge Street. This line of inquiry illustrated issues related to development, strategies to improve land use, and our specific focus sites. Third, we asked questions regarding traffic, perceptions towards bicycle accessibility and pedestrian safety along Bridge Street. Fourth, and finally, our climate questions asked our stakeholders about known vulnerabilities along Bridge Street, and their receptiveness towards climate change policies. These questions gave us valuable local insight into Weymouth's climate vulnerable areas, mitigation strategies, and current community efforts to build climate resilience in Weymouth.

## COMMUNITY AND SENSE OF PLACE

Placemaking is the process by which sites are transformed into safe, connected, comfortable, visually attractive areas that promote and facilitate civic engagement. Our interviews were essential in capturing and documenting our stakeholders current perception of Bridge Street's sense of place, and their preferred sense of place.

Based on our interviews we found stakeholder's current attitudes and desired vision of Bridge Street Corridor often involved addressing economic challenges and fostering business opportunities. While stakeholders currently have a negative perception of Bridge



Street describing it as “ugly” or “degraded,” they also remark on positive features such as “hardworking” and “potential” that may advance revitalization opportunities. The negative perceptions were connected to the current physical attributes, while positive perceptions were connected to the people and communities residing near the area. Accompanying these perspectives, stakeholders recognized their strong sense of community, how it is an asset to community improvement, and how it is essential that the community be involved in decision making.

*“I believe that [Bridge Street] holds our neighborhood back from growing into the great place that it is, and should be even more so.... We're very close to Boston, we have great commuting options, we're right on the bus line, commuter rail, close access to the Quincy train station, the commuter boats in Hingham... beautiful park views of Boston....This is a really beautiful neighborhood., [but] the 3A condition has really held us back.”*

*-Pascale Burga, District 1 Councilor*

We found that stakeholders held negative perceptions toward the current state of Bridge Street. Their opinions are often connected to how land is currently being used along Bridge Street, the caliber and repetition of certain

types of businesses, and the perceived high volumes and speeds of traffic. The community perceived that underutilized properties and certain businesses, including nail salons, gas stations, and auto repair shops, contributed to an uninviting atmosphere around Bridge Street; and that Bridge Street is a place to get through, not a destination to go to.

To improve community character stakeholders professed they would prefer more professional or upscale businesses and restaurants to improve and enliven the neighborhood. They often brought up the Republic's Collection bath and kitchen showroom, and the True North restaurant as examples of preferable businesses. These businesses receive relatively high and steady amounts of business, and are new or were newly renovated within the past 5 years. These businesses may be desirable because they have a strong reputation for providing quality goods and services, and have an appealing exterior appearance.

*“Everybody's vision of Bridge Street is nails, bars, auto repair places . . . yeah if we could kind of clean that image up, make it more respectable.”*

*-Geoff Potter, President of the North Weymouth Civic Association.*

Furthermore, there seems to be a mismatch between the character of Bridge Street and the surrounding area. Stakeholders have a negative perception of Bridge Street, but describe the residential sections as “neighborly” and “friendly”. This may be because the properties along Bridge Street are primarily commercial uses, while the surrounding neighborhood contains single-family homes, and waterfront parks and property. The stakeholders seem to want to protect and amplify the character of the surrounding area- this may include the ocean and colonial style homes.

*“Bridge Street is not representative of our neighborhood... if you had an opportunity to turn down any of the side streets or go by the ocean... you would see that [Bridge Street] is not representative of our neighborhood”*

*–Pascale Burga, District 1 Councilor*

Connecting to their strong sense of community, stakeholders were adamant in ensuring strong community involvement for future development and planning. This group is also concerned about change. They therefore would need a high level of community involvement to support new development, and would not be receptive to a development review committee.

*“People in our town are especially very reluctant to change...we want our neighborhood, we want to retain our neighbors.”*

*–Pascale Burga, District 1 Councilor*

## ZONING AND LAND USE

Changes in zoning and land use are productive tools to revitalize Bridge Street toward our stakeholders' ideal vision. Their comments on zoning and land use often reflected that stakeholders would like to attract business. They would often identify specific zoning and land use characteristics of Bridge Street they attributed to issues regarding business development. Further, interviewees commented on our proposals to improve zoning and land use.

Interviewees often noted that current zoning is a major challenge to inviting the types of businesses that the community would prefer. Particularly, the short and shallow blocks along Bridge Street are a development challenge, as well as conflicting types of businesses. When inquiring on openness to mixed use overlay zoning with accompanying design guidelines, there were mixed responses.

The Department of Planning and Community Development expressed the potential of mixed-used development and increased density to generate economic growth along Bridge Street. They referenced Weymouth Landing, an area within the town with a successful mixed-use overlay to demonstrate the potential for mixed-use zoning to generate positive economic growth. As both town residents and officials have been pleased with the outcomes of this development, it is possible that mixed-use zoning along Bridge Street could create similar successful economic and community building outcomes.

*"You have to break it up into sections. So that... you could very easily accommodate... uses you wouldn't necessarily want or have in your little square or downtown area."*

*—Bill Scully, transportation practice leader from Kimley-Horton & Associates Inc.*

*"[Weymouth Landing has created] some additional tax revenue base for the town . . . new restaurants are opening up because of the density of the concentration of populations within these squares now . . . we're very happy with the results of what's happened so far."*

*—Robert Luongo, Director of Planning and Community Development.*

When considering a mixed-use district, representatives from the North Weymouth Civic Association, and the Department of Planning and Community Development were concerned about building height and the occupying businesses. Stakeholders are receptive to mixed use but they want to ensure that new businesses would enhance the corridor.

*"... height is a major concern. I think what we're finding out is the neighborhood is willing to live with three stories, but I'm not sure if they would be willing to live with four stories... I think there's a tolerance for three stories, but I don't know if there would be a tolerance for anything more than that."*

*—Robert Luongo, Director of Planning and Community Development*

Furthermore, sufficient parking for

businesses was also a significant challenge. When we asked about receptiveness to shared parking, we received mixed responses. For instance, one interviewee responded that there are no opportunities for shared parking on Bridge Street. Meanwhile, another interviewee remarked that shared parking would be productive if the businesses had opposite operation hours. Additionally, further concerns about coordination, legality, and permanence of shared space were also raised. These concerns and varying responses indicate a lack of understanding about shared parking.

*"The only way I could see it working is if they were truly opposite hour businesses. So if a fully daytime business would probably be agreeable to allowing a mostly night time restaurant to share parking. But in terms of competing hours, I think it would be tough to establish"*

*—Eric Schneider, Principal Planner of Planning and Community Development*

Stakeholders view zoning and land use policies as effective strategies to address their multifaceted concerns and preferences. However, their responses to these strategies were often mixed, and therefore it is important that the community continues to be engaged in zoning and land use redevelopment efforts to ensure that development reflects their preferred sense of place and identity.

## TRANSPORTATION

Traffic and transportation infrastructure were also key components in stakeholder's current and preferred picture of Bridge Street

walkability and connectivity. Interviewees gave insight into how they felt about safety and traffic calming measures.

*"People are flying through, passing on the right, running the lights like crazy."*

*–Geoff Potter, President of the North Weymouth Civic Association.*

Stakeholders shared that for both walking and driving they did not feel safe along Bridge Street. From a pedestrian perspective they felt unsafe and often attributed this to the high speeds of the car traffic. As a solution they identified that crosswalks and more pedestrian infrastructure, including lighting and landscaping, would improve walkability. From a driver perspective, stakeholders also expressed they feel unsafe, especially when turning in and out of businesses because of the dangers cutting in front of high volumes and high speeds of traffic.

Further, the four lane highway limits the potential to implement traffic calming and multimodal transportation infrastructure. Since this area is a state managed road under MassDOT, it appears that transportation planners are working under the assumption that they must maintain four lanes, and therefore believe it is difficult to implement multi-modal transportation infrastructure because town land would need to be used.

*"I think the designers that are working with the state tend to basically go 'well no, you can't do the roundabout there because you're going to need a two lane roundabout', [this] becomes very wide and then you need to start taking property".*

*–Bill Scully, transportation practice leader from Kimley-Horton & Associates Inc.*

*"We try to keep our neighborhood with a neighborly type of feel. Unfortunately we have 3A that divides us so North Weymouth is on both sides of that road. And if you put a rotary in it, [it] solidifies the idea [this area] is a cut through."*

*–Pascale Burga, District 1 Councilor*

## CLIMATE RESILIENCE

Stakeholders expressed concern that as a coastal town, Weymouth would be severely impacted by climate change in the long term. Interviewees identified their receptiveness to climate resilience measures, areas of concern along Bridge Street, and plausible mitigation strategies.

*"Being the coastal part of the town, climate change is certainly going to have a major effect on us... more awareness... throughout the whole town is going to be better."*

*–Geoff Potter, President of the North Weymouth Civic Association.*

Stakeholders were open to a climate mitigation plan and perceived that it would help increase awareness about climate change and its impact on the town. They also informed us that coastal erosion and heat island effect were prevalent issues; and that increasing green space and green infrastructure would help mitigate both issues.

*"Increased green space and recreational opportunities for residents, I think it'd be a big [goal]... there's not a lot of trees along the road,*



FIGURE 11: KING'S COVE PARK. PHOTO BY PETER FEDERICO

*"I BELIEVE THAT [BRIDGE STREET] HOLDS OUR NEIGHBORHOOD BACK FROM GROWING INTO THE GREAT PLACE THAT IT COULD BE..."*  
**—PASCALE BURGA,  
 DISTRICT 1 COUNCILOR**

*and there's a lot of pavement. So shade trees, reducing that heat island effect, I think is a goal."*

*—Andrew Hultin, Weymouth Conservation Commission.*

## MAJOR CONCLUSIONS

- Currently the community has predominantly negative experiences and perceptions of Bridge Street's sense of place, however they also believe that the area's strengths, including the community, have potential to catalyze improvements.
- Avenues to improve sense of place, zoning and land use, transportation and climate resilience were often related, and strategies
- for improvement often have co-benefits across revitalization goals.
- Interviews revealed mixed community perceptions of 40R zoning and roundabouts, however these did not always align with existing empirical knowledge on the topic. Moving forward it is essential that the community remains closely engaged throughout the development process to ensure community cooperation and trust.

# LAND USE AND ZONING

## DESIGN GUIDELINES ALONG BRIDGE STREET

The land uses along Bridge Street, with the exception of the areas within the 2018 Commercial Corridor Overlay District, presently lack design guidelines. The lack of consistent design guidelines can be seen in areas zoned as General Business (B-2) and Neighborhood Center District (NCD) around Bicknell Square. As a result, Bridge Street's streetscape is incoherent and inconsistent. One might find a lot with a deep front setback used as a parking lot at one location, and then a bank with the minimum building setback and parking in the rear at another site. The two images below demonstrate the inconsistent lot setbacks along Bridge Street.



FIGURE 12. 383 BRIDGE STREET, GOOGLE MAPS



FIGURE 13. 233 BRIDGE STREET, GOOGLE MAPS

Furthermore, the lack of design guidelines has led to several blank and uninviting facades. The figures below show two examples of businesses along Bridge Street that are not engaging or attractive from a pedestrian perspective.



FIGURE 14. 322 BRIDGE STREET, GOOGLE MAPS



FIGURE 15. 250 BRIDGE STREET, GOOGLE MAPS

The lack of visual cohesion along Bridge Street, as shown through these site views supports the need for updated zoning districts with new design guidelines. Large parking lots, wide curb cuts, missing sidewalks, blank walls, a lack of landscaping and pedestrian protection negatively influence the extent to which the built environment of Bridge Street can support pedestrian activity<sup>6</sup>.

For these reasons, new design guidelines are needed to improve block-level design quality, encourage contiguous shopfronts, provide for shade trees and street furniture. Improving street connectivity, and encouraging density and mixed-uses will attract pedestrian activity and help support a better retail mix.

As previously mentioned, Bridge Street has design guidelines for new development under the Commercial Corridor Overlay

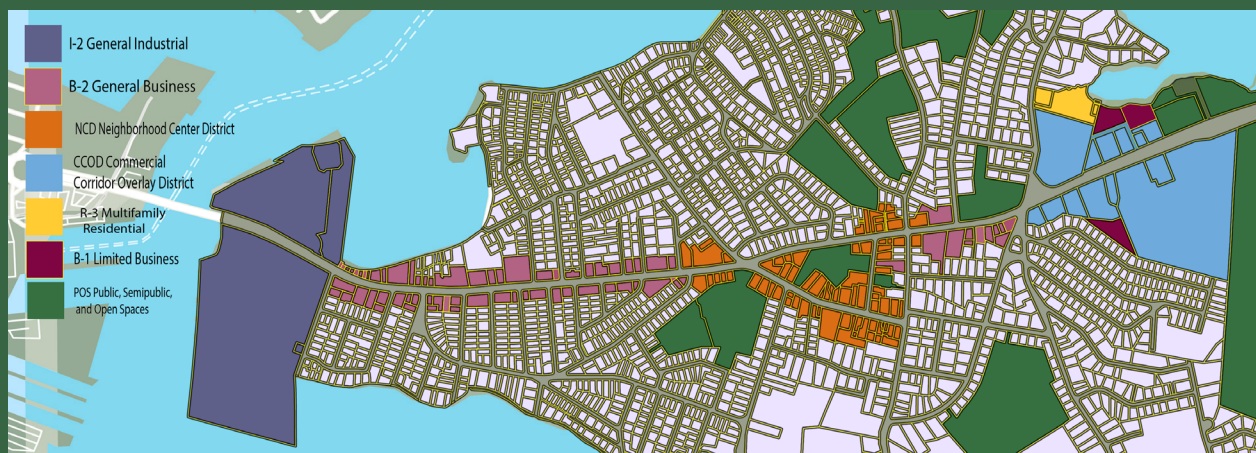


FIGURE 16. BRIDGE STREET ZONING MAP, ADAPTED FROM WEYMOUTH ZONING MAP, 2017.

(CCOD). This is the blue area in the zoning map above. These guidelines are meant to encourage density by requiring that proposals be a minimum of three stories and 45 feet, and a maximum of five stories and 70 feet, with a maximum floor area ratio (FAR) of 1.00.

Furthermore, mixed-use developments are expressly encouraged in the CCOD. However, in reviewing the requirements laid out in this section of Weymouth's zoning code, we note that the overlay district is tailored to the needs of automobile users rather than for enhancing pedestrian experience and encouraging mixed use development.

While the zoning code stipulates that the CCOD intends to "promote the economic development, general welfare and safety of the community through the use of basic urban design standards in special development areas," the urban design standards are problematic.<sup>7</sup> Front parking for businesses is allowed. While the general minimum front yard setback is 25 feet, if the front setback will be used for parking, the minimum setback is 70 feet, "to allow for a minimum of five-foot landscape area along the frontage, a row of parking, and a travel aisle." In most design guidelines for commercial corridors, front parking for commercial uses is prohibited.

As part of the parking requirements of the CCOD overlay, Weymouth "encourages the use of shared parking arrangements."<sup>8</sup> We have found that some businesses have adopted shared parking through private agreements

along Bridge Street. Through municipal encouragement, its use could become more widespread along the corridor.



FIGURE 17. A SIGN AT THE SUNNYSIDE CAFÉ, 374 BRIDGE STREET, ADVERTISING SHARED PARKING AT MAISON'S AUTO BODY, 398 BRIDGE STREET. PHOTO BY BRENNA TROLLINGER.

## FINDINGS

### PLACEMAKING

Currently there are some ornamental features along Bridge Street that are inspired by the ocean. This includes a small decorative boat on the traffic island in Bicknell Square and some North Weymouth banners with sailboats on them in this same area. Bicknell Square

seems to capture the area's coastal and ocean features through repeated imagery of the boats and coordinating the boat and banners with a similar blue color scheme.



FIGURE 18: CHUBBY II, BICKNELL SQUARE. PHOTO BY BRENNA TROLLINGER

*"[BRIDGE STREET] DOESN'T REALLY HAVE MUCH OF AN IDENTITY, AND I THINK PEOPLE TRY TO PASS BY AS QUICKLY AS POSSIBLE TO KIND OF GET THROUGH IT..."*  
- PASCALE BURGA, DISTRICT 1 COUNCILOR

# MULTIMODAL TRANSPORTATION

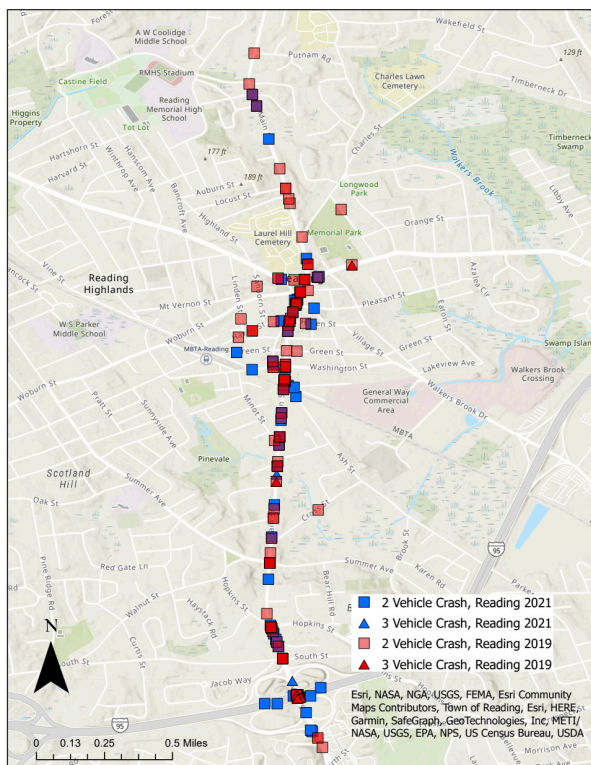
## LANE REDUCTIONS THROUGH ROAD DIETS

The team conducted site visits to assess the current state of MA Route 3A and the viability of creating a safer thruway for all modes of transport. After driving, walking, and biking along the corridor, we found that Bridge Street is dangerous with all transportation methods. The four-lane undivided route has multiple intersections and left-hand turns that contribute to the unsafe conditions of Bridge Street. After conducting spatial analysis through GIS, our team has found that implementing a road diet, similar to that of Main Street in Reading, MA would be a viable option for Bridge Street. The road diet in Reading resulted in the removal of one lane from two segments of the

state road Route 128 to convert the roadway from a four-lane roadway to a three-lane street with shoulders as well as a center-running left-turn lane.

The road diet in Reading, MA is a leading example of an effective and successful road diet program. In 2019, before the road diet was implemented, there were a total of 234 crashes along main street. After three years of implementation, there was a 20% decrease in the number of crashes. This can be seen in the figures 19 and 20 below. The reduction from four to three lanes and the inclusion of a center turn lane reduced traffic pile ups and multiple vehicle crashes, creating a safer thruway for all roadway users.

Multiple Vehicle Crashes Reading, MA



Single-Vehicle Crashes Reading, MA

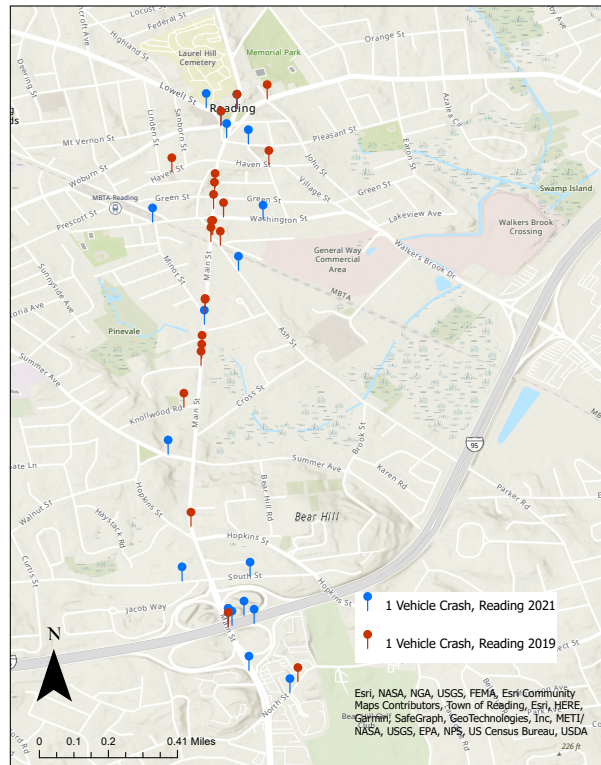


FIGURE 19. MULTIPLE VEHICLE CRASHES READING, MA. MAP BY ALLIE CHRISTENSEN, DATA FROM MASSDOT.

FIGURE 20. SINGLE VEHICLE CRASHES READING, MA. MAP BY ALLIE CHRISTENSEN, DATA FROM MASSDOT.

## FINDINGS

### VEHICLE CRASH HOTSPOTS

The figure below shows that vehicle crashes are prevalent along Bridge Street, and that there are several “crash hot spots.” The figure below underlines the need for safety improvements along the corridor and the need for focusing safety strategies at these “car crash hotspots” including the Intersection of Bridge and North streets which has the highest number of reported crashes from 2018 to 2022.

During an interview with Bill Scully, we

learned that the high crash number at this intersection can be explained by a high traffic volume and congestion along both roadways. Because Road Diets are also known decongestion strategies (Streetsblog Mass), implementing a road diet to calm traffic and reduce the number of vehicle crashes at Bridge and North Street is well supported by empirical data, interviews and our spatial analysis.

## Bridge Street, Weymouth Crashes

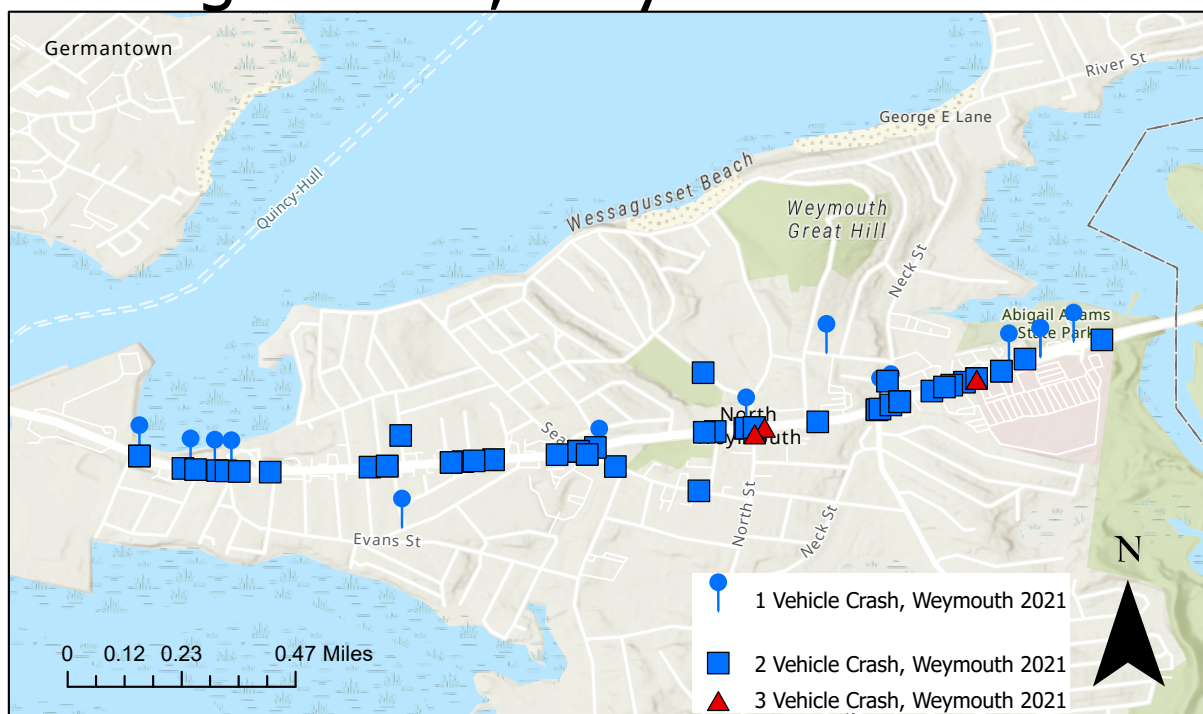


FIGURE 21. BRIDGE STREET, WEYMOUTH CRASHES. MAP BY ALLIE CHRISTENSEN, DATA FROM MASSDOT.

### ROUNDBABOUTS REDUCE INTERSECTION CRASHES

The Federal Highway Administration Safety Guidelines state that full stop intersections create a safety hazard for all roadway users and concludes that yielded roadways, like roundabouts, are a safer alternative<sup>9</sup>. As mentioned above, Bridge Street has several full stop intersections that are “car crash hotspots.” As mentioned in the Introduction, we renamed the intersection

of Neck, Green and Bridge streets Veterans Memorial Circle. In Figure 21, we can see that Veterans Memorial Circle is one such “hotspot” as there were 32 reported vehicle crashes between 2018 and 2021.

We conducted further statistical and spatial analysis using GIS which supported the use of a roundabout as a traffic calming safety measure. Along Route 3A in Quincy, we found that the introduction of a roundabout in 2018 was successful in reducing the number of multiple vehicle crashes and did not increase the number of single vehicle crashes.

Using data from 2017, prior to the construction of the roundabout in Quincy, and current 2021 crash data, we saw a severe reduction in the number of multiple vehicle crashes approaching the roundabout, as seen

in Figure 20. Introducing a roundabout on Bridge Street is well supported by our research and would calm traffic, reduce crashes, and increase safety along Bridge Street.

## Multiple Vehicle Crashes

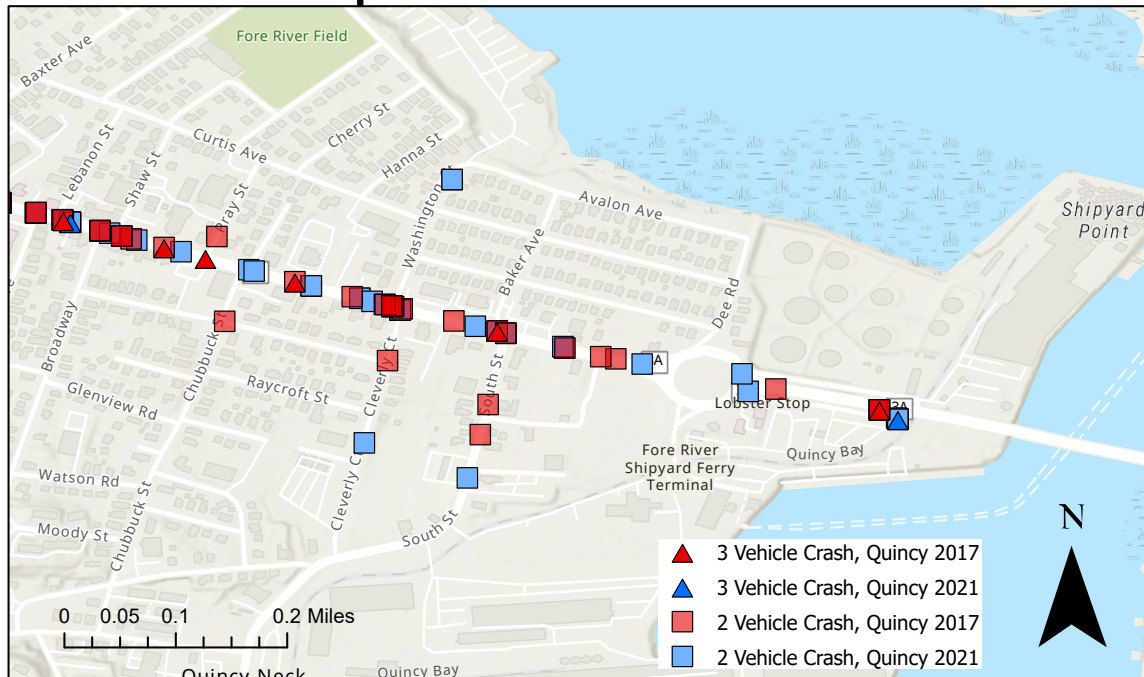


FIGURE 22: MULTIPLE VEHICLE CRASHES IN QUINCY, MA. MAP BY ALLIE CHRISTENSEN, DATA FROM MASSDOT.

## Single-Vehicle Crashes

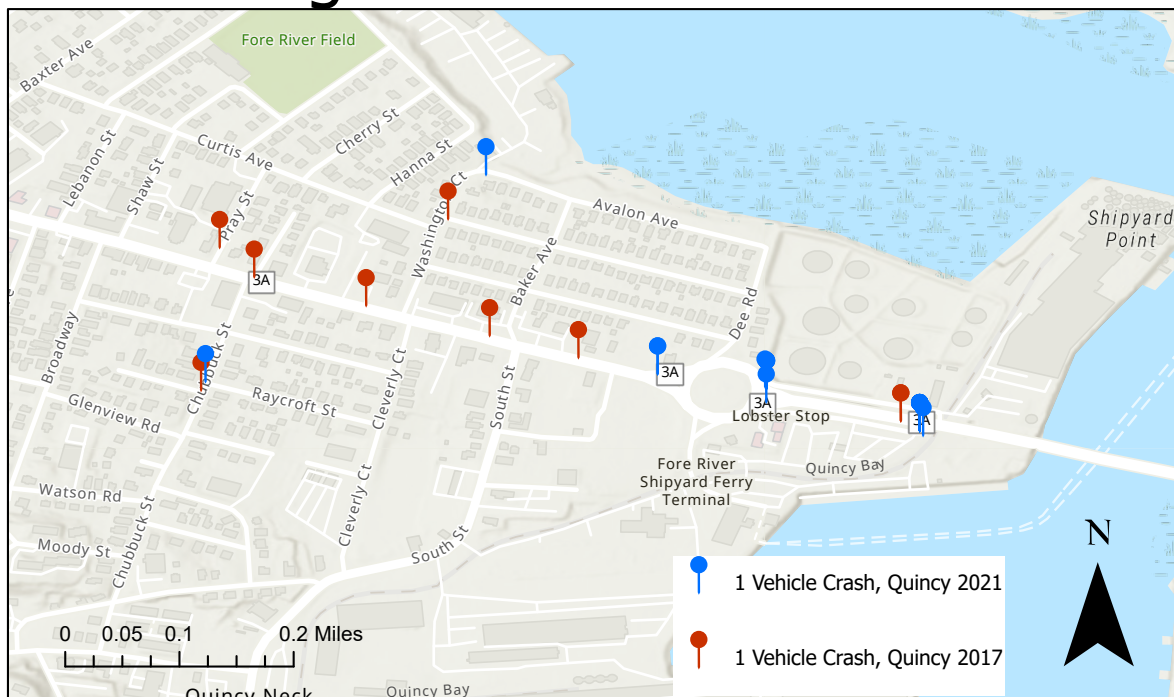


FIGURE 23: SINGLE VEHICLE CRASHES IN QUINCY, MA. MAP BY ALLIE CHRISTENSEN, DATA FROM MASSDOT.

# CLIMATE RESILIENCE

## IMPERVIOUS SURFACES

Within a 30-meter (98 feet) buffer of Bridge Street, there are 140,287 square meters (1,510,000 square feet or 35 acres) of impervious surface (Figure 17). This amount of impervious surface represents 76% of the total area within a 30-meter buffer of Bridge Street. In comparison, 26% of the land area consists of impervious surfaces. As shown in Table 4, Bridge Street has a much higher percentage of impervious surface than Weymouth as a whole.

Further, a visual analysis as shown in Figure 17 indicates that the impervious surface is highly concentrated at Bicknell Square and Veterans Memorial Circle. A high percentage of impervious surface can lead to flooding, increased runoff, pollution and the Urban

Heat Island (UHI) effect. It must be noted that these data were obtained in 2005, which is likely an underestimate of the current impervious conditions along the corridor due to development patterns over the last 17 years. The high percentage of impervious surface along Bridge Street represents a key environmental concern. Further analysis shows how impervious surfaces are related to flooding and UHI risks in the area.

TABLE 3: COMPARISON OF THE PERCENTAGE OF IMPERVIOUS SURFACES IN THE TOWN OF WEYMOUTH AND BRIDGE STREET WITHIN A 30 METER BUFFER.

Value	Town-wide m <sup>2</sup>	Bridge Street Corridor m <sup>2</sup>
0	32084911	43959
1	11397982	140287
Total area	43482893	184246
Percentage of Impervious Surface	26.2125659	76.14113739

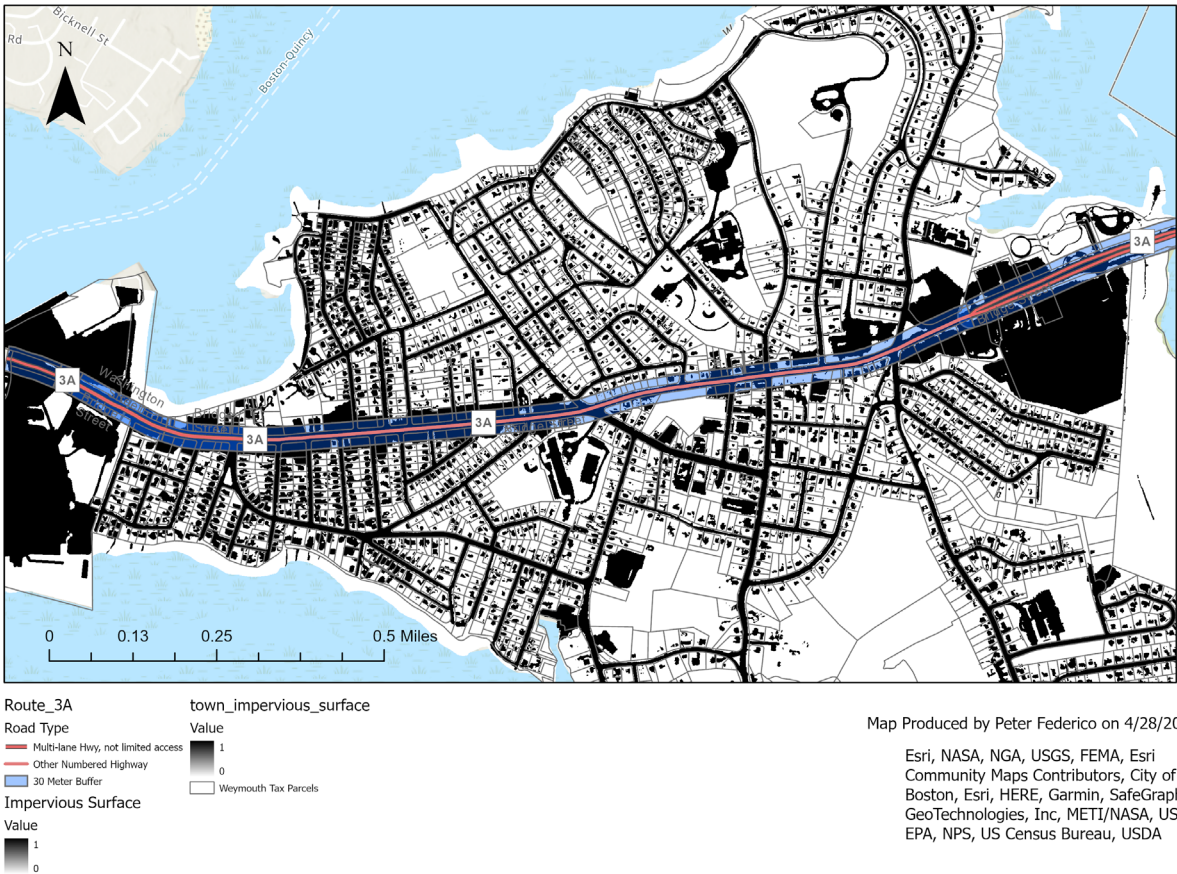


FIGURE 24: IMPERVIOUS SURFACES IN NORTH WEYMOUTH. DATA WAS OBTAINED IN 2005. IMPERVIOUS SURFACES (VALUE 1) IS CONCENTRATED ALONG THE ROUTE 3A CORRIDOR. MAP BY PETER FEDERICO.

## FLOODING

Using GIS, we found that Bridge Street faces flood hazards from the north and the south both from climate-driven sea level rise and storm surges. A spatial analysis of flooding risks along Bridge Street reveals that the corridor is

sheltered from most major flooding risks due to its elevation, which is higher than other portions of North Weymouth. However, some parcels abutting Veteran's Memorial Circle have a 1% annual chance of flooding, with base flood elevation<sup>10</sup>. While these are called "100 year floods," climate projections indicate that

### *FEMA Flood Hazard along the Bridge Street Corridor*



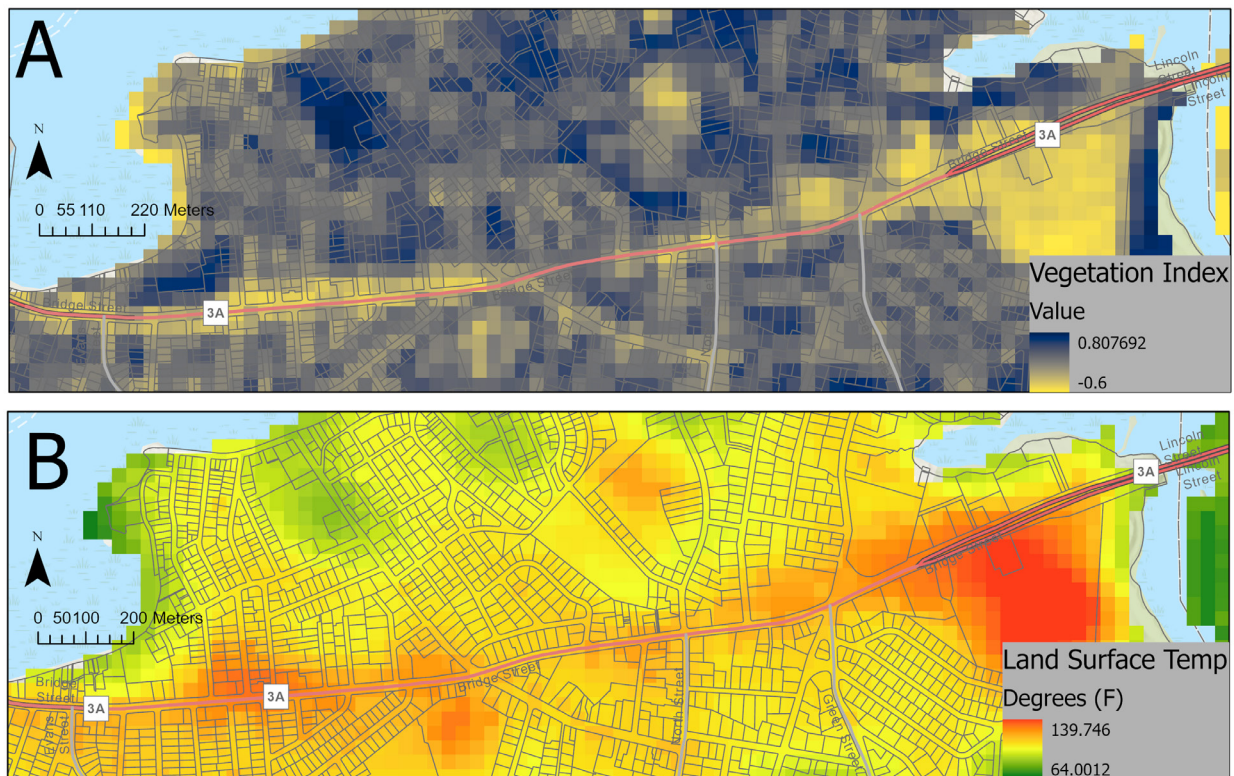
FIGURE 25. (ABOVE) FEMA FLOOD HAZARDS ALONG BRIDGE STREET. MAP BY PETER FEDERICO. FIGURE 26. (BELOW) FEMA FLOOD HAZARD NEAR THE BRIDGE STREET AND NECK STREET INTERSECTION. MAP BY PETER FEDERICO.

the probability of these extreme floods will increase.<sup>11</sup>

Figure 22 below shows a closer look at the flooding risk along Bridge Street. From the map, it is clear that a majority of 750 Bridge Street, where U-Haul is located, is within the 1% chance floodplain. This means that during a 100-year storm, which is currently occurring every 60 years and projected to occur every 10-20 years by 2050, Veterans Memorial Circle is at risk of severe flooding.<sup>12</sup> This means that the parcel is also at risk of suffering from increased runoff of pollutants



## Visualizing Urban Heat Island along the Bridge Street Corridor



Map Produced by Peter Federico on 4/28/2022

A: Esri, NASA, NGA, USGS, FEMA, Esri Community Maps Contributors, City of Boston, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

B: Esri, NASA, NGA, USGS, FEMA, Esri Community Maps Contributors, City of Boston, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

FIGURE 27. VISUALIZING THE URBAN HEAT ISLAND EFFECT ALONG BRIDGE STREET, WEYMOUTH, MA. MAP BY PETER FEDERICO.

during such floods. The threat of pollution runoff is further exacerbated by a high ratio of impervious to non-impervious surfaces since impervious surfaces collect pollutants and do not absorb water.

### URBAN HEAT ISLAND

The vegetation index is a remote sensing tool that “provides a relative measure, ranging from -1 to 1, of vegetation density and health.”<sup>13</sup> The vegetation index is low or negative (yellow) in Veterans Memorial Circle, and at and west of Bicknell square. This suggests that there is little to no vegetation in those areas, or that the health of existing vegetation is low. This map shows that low or negative vegetation areas coincide with Bridge Street, and other paved areas such as the Riverway Plaza. Impervious surfaces are both a cause and exacerbating factor of high land surface temperatures.

The Land Surface Temperature Map shows areas with the hottest surface temperature in red and orange. Green indicates lower temperatures and yellow represents middle value temperatures. The land surface temperatures are highest at the Riverway Plaza, Veterans Memorial Circle, and at and west of Bicknell Square. These areas are denoted with reds and oranges on the map.

A comparison between the surface temperature and vegetation index maps helps to explain where Urban Heat Island is most intense in North Weymouth. Areas that have high surface temperatures also have low or negative vegetation index values. This data explicitly shows the link between low vegetation cover, high amounts of impervious surfaces and Urban Heat Island. This relationship underlines the need for green infrastructure practices to be implemented in areas which exhibit both high surface temperatures and low/negative

vegetation index values.

### PRIORITIZING RESILIENCE

There are several parcels near the Neck and Green Street intersection that need protection based on environmental quality concerns. According to the Mapping and Prioritizing Parcels for Resilience (MAPPR) tool, created by Mass Audubon, the parcel currently occupied by the U-Haul near Veterans Memorial Circle (3, on the map below) is of high priority for resilience prioritization. It has been assigned this priority because the parcel is within an area of environmental interest and in very close proximity to existing protected parcels of equal or higher concern. Parcels with a darker color and higher number are of higher priority for resilience environmental planning

measures (i.e. Great Hill Park).<sup>14</sup>

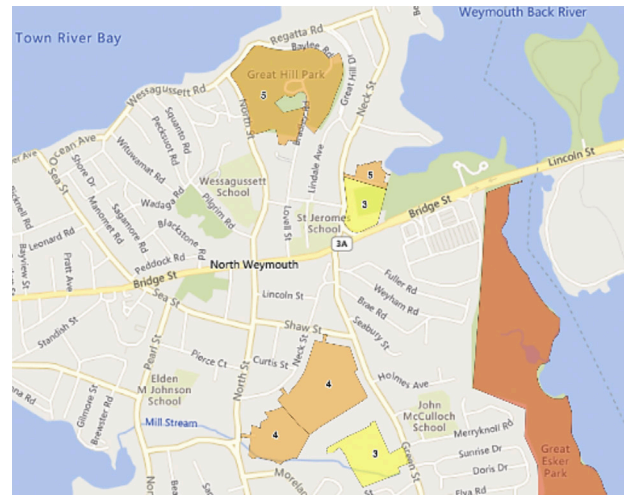


FIGURE 28. MAPPING AND PRIORITIZING PARCELS FOR RESILIENCE (MAPPR) PARCELS IN NORTH WEYMOUTH, USING THE "BALANCED" MODEL APPROACH (MAPPR TOOL 2.0).



*"... COASTAL RESILIENCY IS A HUGE GOAL FOR THE AREA... [AS WELL AS] REDUCING [URBAN] HEAT ISLAND EFFECT"*  
- ANDREW HULTIN, WEYMOUTH CONSERVATION COMMISSION

FIGURE 29. CONTAMINATED SHELLFISH AREA SIGN AT KINGS COVE. PHOTO BY PETER FEDERICO.

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# CHAPTER 5 RECOMMENDATIONS

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# CORRIDOR WIDE RECOMMENDATIONS

## LAND USE

### 40R OVERLAY DISTRICT

#### The Town should consider creating a 40R Overlay District.

**Intent:** A 40R overlay district could be applied to specific parcels along Bridge Street to provide an opportunity for residential development and to encourage mixed-use development, thereby creating a unique and inviting environment that supports the economic revitalization of Bridge Street. It would also provide a larger base for existing and future commercial uses and better meet the mixed-use aims of the Commercial Corridor Overlay District, remove conflicting uses and work towards meeting state affordable housing requirements. Furthermore, a successful development on a 40R overlay district could serve as a showcase to attract developers in the future and help Weymouth fulfill its requirements for affordable housing.

1. The Town should identify parcels along Bridge Street that fulfill the requirements for a 40R overlay district. It is this Field Project team's opinion that a 40R Overlay District would be better suited for attracting mixed-use development than the existing Commercial Corridor Overlay District at the east end of Bridge Street.

2. The Town should start by zoning some of these parcels for a 40R overlay district in accordance with Chapter 40R and the design requirements laid out in the rest of our recommendations.
3. The Town should issue a Request for Proposals to developers for the areas zoned with a 40R overlay district.

**Intent:** To create connectivity from Abigail Adams State Park to a potential 40R Overlay District at the U-Haul site and to create space for recreation for a 40R Overlay District,

- The Town should use 0 Bridge Street, 279 Bridge Street, 0-off Neck St, and 0 Neck Street for a green space and pedestrian walkways.

**Intent:** In order to qualify for the benefits of 40R and meet its requirements,

1. The Town should work towards certifying the infrastructure—water, sewage, transportation—of Bridge Street to be adequate in meeting projected demand within five years.
2. The Town should allow housing to be built as-of-right at densities of at least 8 to 20 units per acre within the 40R overlay.
3. The overlay should require that at least 20% of the units developed within it and per project be affordable at 80% of area

These recommendations are not meant to be all-encompassing. Rather, they are foundations that the Town can build upon as they review their policies and options in the future.

median income or less for at least a 30-year period.

4. The total area covered by the overlays must not exceed 25% of the Town's area, and no one district may exceed 15% of the Town's area. The area we propose for one 40R District roughly covers 10 acres.

*in a 40R overlay meets the climate resiliency goals set out in our report,*

1. The Town should consider using the 40R payments to provide density bonuses for Low Impact Development (LID) features.
2. Design standards within the 40R overlay should minimize and in some instances eliminate front setbacks.

**Intent:** *To ensure that future development*

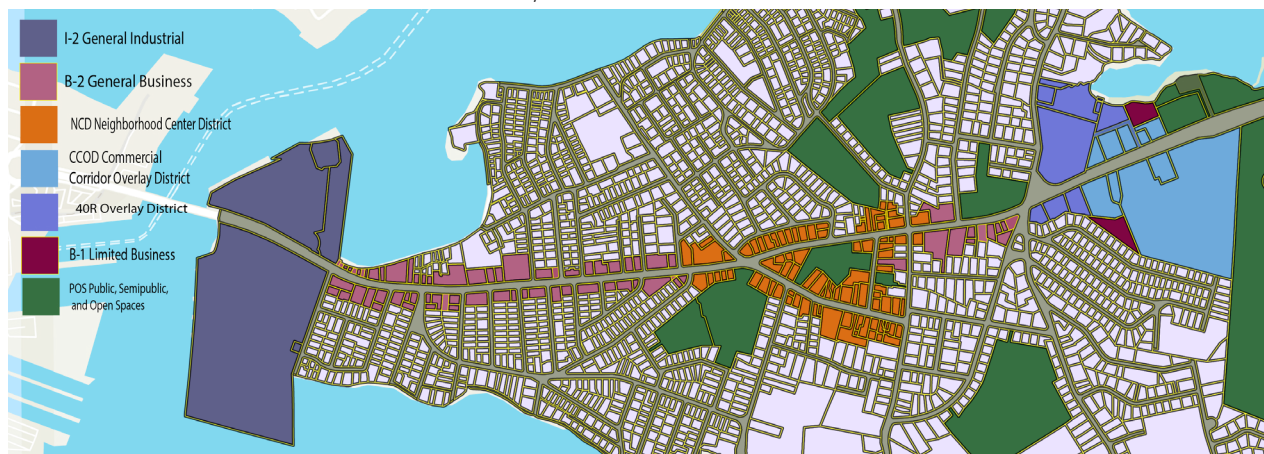


FIGURE 30. A POSSIBLE 40R ZONING DISTRICT SHOWN IN DARK BLUE. GRAPHIC BY BRENNA TROLLINGER.

## DESIGN GUIDELINES

**Intent:** *To regulate development and produce an environment conducive towards our stated goals within the Business District B-2,*

1. The Town should consider and build upon the following design guidelines, especially for areas zoned as B-2.
2. The Town should conduct a review of existing design guidelines, especially around the Commercial Corridor Overlay District area along Bridge Street.

## STREETWALL

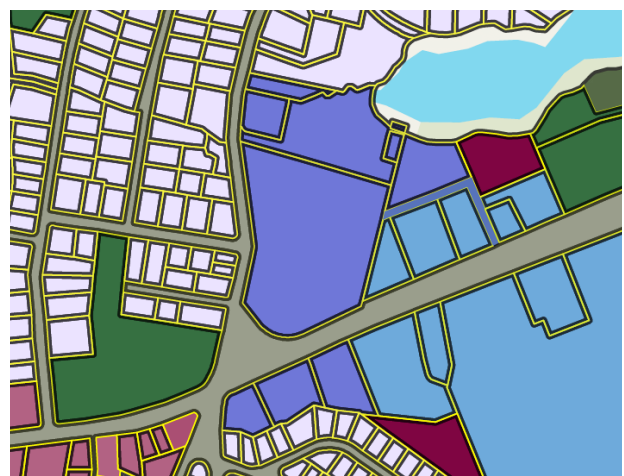


FIGURE 31. CLOSE UP OF FIGURE 30. GRAPHIC BY BRENNA TROLLINGER.

## RECOMMENDATIONS

The siting of buildings plays a critical role in establishing the character and sense of place of a commercial corridor. Siting buildings at the street's edge gives spatial definition to the public realm that is key to supporting pedestrian activity.

**Intent:** To maintain an unbroken and active pedestrian streetwall,

1. In new developments, parking lots should be located behind buildings, rather than at the front.
2. The Town should formalize allowing shared parking along Bridge Street by including it in the zoning bylaws for Neighborhood Center Districts, General Business B-2, the Commercial Corridor Overlay District, and a potential 40R Overlay District.

## BUILDING FORM

**Intent:** To ensure that buildings frame and define the street while reducing the apparent bulk and density of buildings,

1. Buildings should have a distinct "base" at the ground level, using articulation and high-quality materials.
2. The "top" of the building should be treated with a distinct outline that adds variation through varying heights, steps, or depths.
3. New structures should incorporate vertical and horizontal variety to develop an interesting and pleasing architecture that breaks up monotony while taking into account the surrounding neighborhood's own architectural features.

**Intent:** To ensure that buildings do not display blank and unappealing walls facing the street, buildings should have a number of the following design elements. We recommend incorporating at least three. (adapted from design guidelines in Spokane, WA)

1. Masonry (but not flat concrete block)
2. Concrete or masonry plinth at the base of the wall
3. Belt courses of a different texture and color
4. Outward projecting cornice

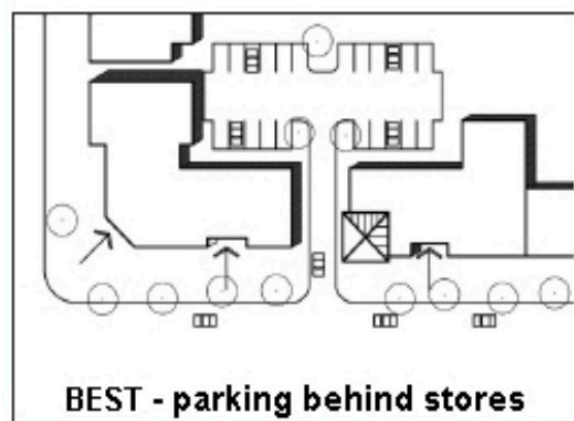
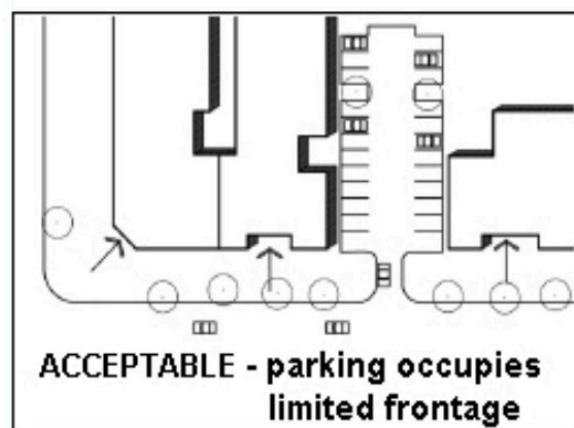


FIGURE 32. WHAT A PARKING LOT BEHIND A BUILDING COULD LOOK LIKE (SOURCE: ILLUSTRATIVE GUIDE TO REDEVELOPMENT, STAMFORD, CT).



FIGURE 33. AN EXAMPLE OF A REAR PARKING SIGN ALONG BRIDGE STREET. PHOTO BY PETER FEDERICO.

5. Projecting metal canopy
6. Decorative tilework
7. Opaque or translucent glass
8. Artwork
9. Vertical articulation
10. Lighting fixtures
11. Vertical landscape wall or "green wall"
12. Front facing display windows
13. Pedestrian scaled signage
14. An architectural element not listed above, as approved, that meets the intent.<sup>15</sup>

## SIGNAGE

The Town should ensure that signage is pedestrian-scaled and cohesive along Bridge Street.

**Intent:** To maintain a sense of place along the corridor,

1. Weymouth should continue to place its "Welcome to North Weymouth" banners, but at regular intervals along the length of Bridge Street, and at heights optimized for pedestrians.

**Intent:** To ensure that signs are interactive for pedestrians,

1. Signs should be oriented to pedestrians, rather than people in vehicles. This could be in the form of sandwich board signs, window signs.
2. Pole signs should not be permitted.
3. Ground signs should take the place of pole signs.

**Intent:** To ensure that signage is a part of the overall design of a project and not look like an afterthought,

1. The design of buildings and sites shall identify locations and sizes for future signs. Installed signs shall conform with an overall sign program that allows for advertising within the building's architecture, proportions, and details of the development.
2. Signs shall not project above a building's

roof or parapet.

**Intent:** To encourage interesting, creative, unique, and playful approaches to the design of signs,

1. Signs should be expressive and individualized.
2. Signs should convey the product or service offered by the business in a bold, graphic form.
3. Enhancements in the form of ornamental brackets oriented towards pedestrians are strongly encouraged.

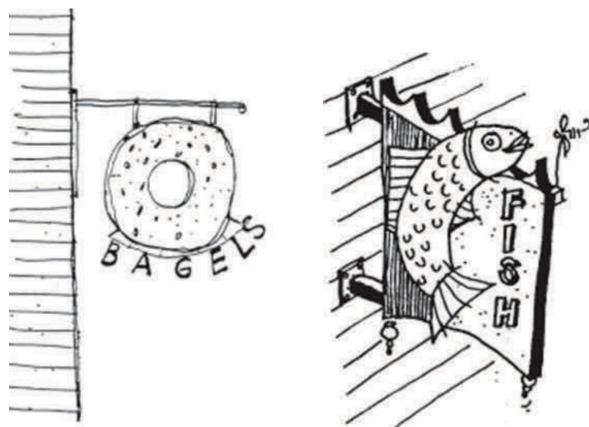


FIGURE 34. AN EXAMPLE OF POSSIBLE SIGNAGE THAT WOULD ENHANCE BRIDGE STREET'S IDENTITY. (SOURCE CITY OF SPOKANE).

## LIGHTING

**Intent:** In order to reduce light pollution and save energy while keeping streets well-lit for pedestrians

- The Town should consider installing pedestrian-scale street lights with LED bulbs and full cut-off light fixtures.

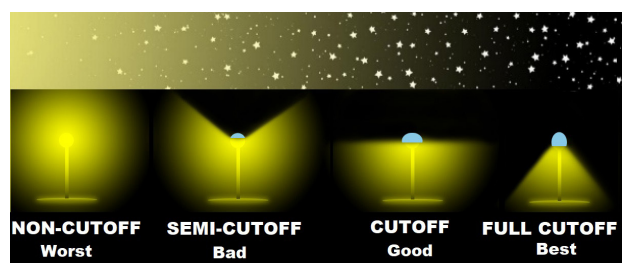


FIGURE 35. A COMPARISON OF CUTOFF LIGHT FIXTURES. (SOURCE BLANCO COUNTY FRIENDS OF THE NIGHT SKY).

# MULTIMODAL TRANSPORTATION

## ROAD DIET

**Intent:** To provide traffic calming measures, prevent dangerous car crashes, prevent unprotected left-hand turns, reduce road width, and create a safer environment for cyclists and pedestrians,

1. The Town should consider converting Bridge Street from a four-lane to a three-lane road with a middle left-hand turn lane.
2. Introduce a Road Diet, in cooperation with Massachusetts Department of Transportation, in compliance with the existing Complete Streets policy.

## BICYCLE LANES

**The Town should consider the implementation of bicycle infrastructure along Bridge Street.**

**Intent:** To enhance multi-modal transportation along the corridor and improve the cycling experience along Bridge Street,

1. The Town should add a cycle track or buffered bicycle lane along Bridge Street, separated from car traffic.
2. The Town should enforce the design guidelines requiring bicycle racks in the Commercial Corridor Overlay District along Bridge Street in accordance with the Town's existing Complete Streets policy.
3. The Town should update design guidelines for the Neighborhood Center District and General Business B-2 to require bicycle racks at businesses along Bridge Street

in accordance with the Town's existing Complete Streets policy.

## SIDEWALKS

**The Town should implement continuous, well-designed sidewalks along the entire length of Bridge Street.**

**Intent:** To ensure that sidewalks along Bridge Street are optimized for pedestrian traffic by creating adequate walking space and landscaping through the use of a Road Diet,

- The Town should divide the sidewalks along Bridge Street into three zones:

The Pedestrian Zone requires at least six feet of unobstructed sidewalk.

The Furniture Zone should be five to eight feet of width reserved for landscaping, benches, bike racks, space for sidewalk dining, and spaces with trees and rest areas for pedestrians.

The Frontage Zone is the area in front of businesses lining the sidewalk. This area should be three feet wide and can include book tables, clothing racks, and sidewalk dining space.

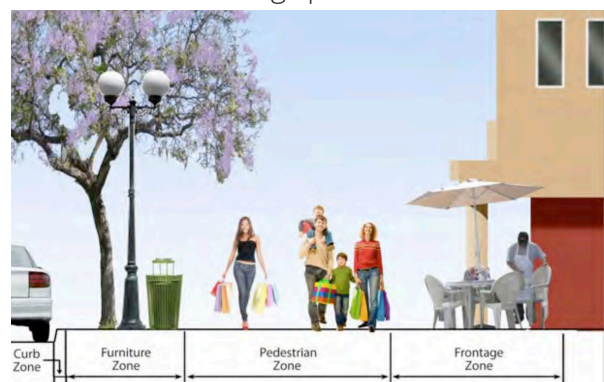


FIGURE 36. SIDEWALK ZONES. (SOURCE CALIFORNIA MODEL DESIGN MANUAL FOR LIVING STREETS AND MICHELE WEISHART).

## CROSSWALKS

**The Town should implement the following design guidelines along the entire corridor.**

***Intent:** To increase the visibility of crosswalks and thereby increase pedestrian safety when crossing Bridge Street,*

1. The Town should repaint crosswalks white with yellow or red highlights.
2. The Town should consider transforming crosswalks through the use of transportation art.

## PEDESTRIAN SCRAMBLE

*A pedestrian scramble is a safety measure used at intersections and utilizes an exclusive pedestrian crossing phase with no conflicting traffic. This allows pedestrians to cross in any direction and protects pedestrians from oncoming and turning traffic.*

***Intent:** To encourage walkability along Bicknell Square by making crossing Bridge Street easier and safer for pedestrians,*

- The Town should implement a pedestrian scramble at the intersection of Sea Street and Bridge Street.

## TRANSPORTATION ART

**The Town should incorporate functional, public, transportation art along Bridge Street.**

***Intent:** As part of an effort to create low-cost, quick-build interventions that reduce traffic speeds and increase connectivity between parcels while involving the creativity of the local community,*

- The Town should consider the creation of pavement murals, stencils, painted bump outs at intersections, increased signage, and flexposts along Bridge Street.

FIGURE 37. (TOP) A BEFORE AND AFTER MOCK-UP OF A PAINTED CROSSWALK AT THE INTERSECTION OF NECK AND GREEN STREET. FIGURE 38. (BOTTOM) BEFORE AND AFTER MOCK-UP OF BICKNELL SQUARE WITH A PEDESTRIAN SCRAMBLE AND REPAINTED CROSSWALKS. PHOTOS BY BRENNA TROLLINGER.



# CLIMATE RESILIENCE

## STREET TREES AND LANDSCAPING

**Intent:** To improve the health of the surrounding environment, including human physical and mental health; slow down traffic and improve safety for pedestrians and cyclists; and reduce the high temperatures associated with the urban heat island effect,

1. The Town should consider planting street trees along the corridor every 15 to 30 feet, depending on their canopy diameter.
2. The Town should prioritize landscaping that produces shade and is both drought tolerant and erosion-reducing.
3. The Town should consider trees that are salt and floodplain resistant such as swamp white oak or the hybrid American elm to safeguard against coastal inundation.

## BIOSWALES

A bioswale is a smaller version of a rain garden that is better suited to accommodate small spaces, like the area between a road and a sidewalk, traffic islands, or in parking lots due to their narrow design. They serve the same purpose as a rain garden by capturing, storing, and slowly releasing rainwater.<sup>16</sup>

**Intent:** To capture, store, and slowly release

stormwater and prevent flooding and pollutant runoff after heavy precipitation events,

1. The Town should install bioswales along the median at the eastern end of Bridge Street.
2. The Town should consider requiring bioswales in the five-foot landscape buffers between parking lots and Bridge Street.
3. Bioswales should be narrow in design to accommodate small spaces such as the edges of parking lots and strips between the road and sidewalk or parking lots.

## BIORETENTION AREAS

Bioretention areas slow the movement of stormwater during rain events by capturing water in geographically depressed areas while adding aesthetic value to a property. Native plants grown in a bioretention area mimic the natural ways in which water flows through land and is absorbed. They are more sizable than bioswales and are akin to large gardens, and are able to absorb more water than bioswales due to their size.

**Intent:** To ensure that large impervious surfaces contribute to the absorption of water runoffs,

- The Town should require Low-Impact Development (LID) bioretention areas within parking lots.



FIGURE 39: EXAMPLE OF A BIOSWALE. (SOURCE: PORTLAND, OR).

# FOCUS SITE RECOMMENDATIONS BICKNELL SQUARE

## ZONING

### EXTENSION OF NEIGHBORHOOD CENTER DISTRICT

**Intent:** To establish further connectivity along the corridor and to increase density around Bicknell Square,

- The Town should consider extending the Neighborhood Center District to incorporate the parcels to the south of Peddock Road.

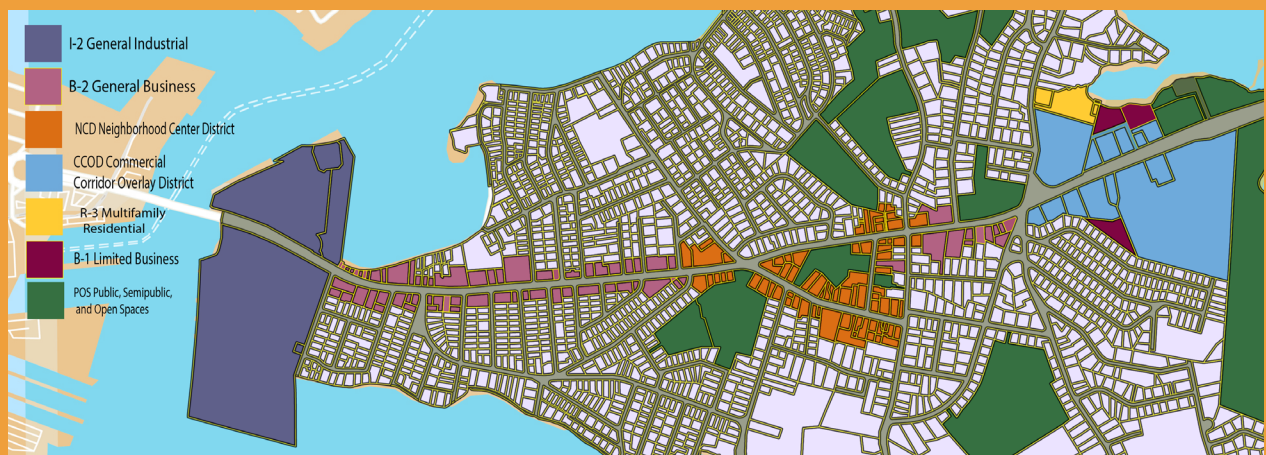
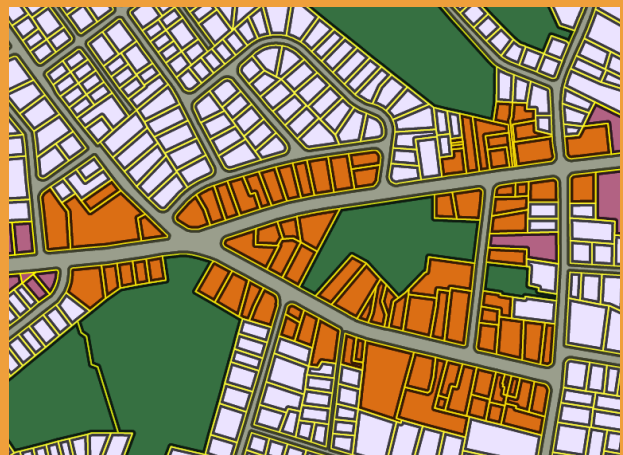


FIGURE 40. (BOTTOM) CURRENT ZONING ALONG BRIDGE STREET. ADAPTED FROM WEYMOUTH ZONING MAP, 2017.  
FIGURE 41. (TOP) A POSSIBLE EXTENSION OF THE NEIGHBORHOOD CENTER DISTRICT TO INCLUDE PARCELS SOUTH OF PEDDOCK ROAD. GRAPHIC BY BRENNIA TROLLINGER

## MIXED-USE DEVELOPMENT

**Intent:** To foster mixed-use development compatible with existing single-family houses,

1. Two-family dwellings and up to four-family dwellings should be added to the allowed uses within the Neighborhood Center District. These units can take the form of second floor apartments above first floor commercial buildings.

2. Commercial and retail developments should be allowed to be built to a maximum

of three stories with an additional fourth story allowed through special permit within Neighborhood Center Districts.

## ADDITIONAL HOUSING

**Intent:** To encourage increased density around Bicknell Square by allowing for structures such

## RECOMMENDATIONS

1. The Town should consider adding accessory dwelling units to the allowed uses of the Neighborhood Center
2. The Town should allow a second residential building on a lot in the Neighborhood Center District as long as the second building meets extant dimensional standards and fire separation requirements.

## PROHIBITED USES

**Intent:** To encourage multi-modal transportation along Bridge Street, create a more inviting environment for pedestrians, and increase connectivity between parcels,

- Drive-thru services should be removed from the list of specially permitted uses in the Neighborhood Center District.

**Intent:** To address environmental concerns by reducing the risk of chemical runoff and pollution within a residential area,



FIGURE 42. AN EXAMPLE OF EXISTING MULTI-FAMILY HOUSING 191 BRIDGE STREET. GOOGLE MAPS.

- The Town should omit laundry, dry-cleaning, and beauty shop retail services from the allowed uses in the Neighborhood Center District.<sup>17</sup>

## DESIGN GUIDELINES

**The Town should implement Design Guidelines within Bicknell Square which is home to the Sea Street Historic District.**

**Intent:** To ensure that new development adjacent or nearby to buildings with acknowledged historic architectural character

# BEFORE AND AFTER

(LEFT)  
FIGURE 45. CURRENT CONDITIONS  
ALONG BICKNELL SQUARE. PHOTO  
BY BRENNA TROLLINGER  
(RIGHT)  
FIGURE 46. MOCK UP OF BICKNELL  
SQUARE WITH MIXED-USE  
DEVELOPMENT. GRAPHIC BY  
BRENNA TROLLINGER



*is compatible with the neighborhood's historic context.*

- New development should incorporate historical architectural elements while still retaining elements of modern design. This could be reflected in roof lines, type of dormers, window proportions, materials, and paint colors.

## LOW IMPACT DEVELOPMENT

**Intent:** *To ensure that the Neighborhood Center District meets climate resilience goals,*

1. The Town should encourage Low Impact Development (LID) features near roadways and in parking islands at this site.
2. The Town should consider stricter impervious surface limits such that post-development infiltration should be equal or greater than pre-development levels. The above guidelines are similar to the environmental design guidelines for the U-Haul at 750 Bridge Street, explained in the next section.



FIGURE 43. CURRENT CONDITIONS ALONG BRIDGE STREET. PHOTO BY PETER FEDERICO



FIGURE 44. MOCK UP OF FIGURE 43 WITH THE ADDITION OF A BIOSWALE. GRAPHIC BY BRENNIA TROLLINGER.



# VETERANS MEMORIAL CIRCLE

## MULTIMODAL TRANSPORTATION

**The Town should implement a roundabout at Neck and Green streets to achieve the stated multimodal transportation goal.**

**Intent:** *To honor the area's connection to the Vietnam War Memorial,*

- The roundabout should be named the Veterans Memorial Circle.

**Intent:** *To calm traffic along the Bridge Street corridor, reduce the amount of car crashes at the intersection of Neck and Green Street, allow pedestrian access to the Vietnam War Memorial, provide landscaping and green infrastructure along the roadway, and prevent full stop intersections.*

1. The Town should consider a two-lane roundabout at the intersection of Neck, Green, and Bridge streets if Bridge Street remains a four-lane highway. This roundabout would consist of:
  - A central island, which is the raised area in the center of a roundabout around which traffic circulates. The island should not be walled-in to reduce single vehicle crash potential.
  - A splitter island, which is a raised or painted area on an approach used to separate entering and exiting traffic, deflect and slow entering traffic.
  - An apron, which is the traversable portion of the central island adjacent

to the circular roadway that may be needed to accommodate the wheel tracking of large vehicles.

- Landscape strips, which serve to separate road and pedestrian traffic to assist with guiding pedestrians to the designated crossing locations. The landscaping sections should not include trees to reduce crash potential.
  - Wider pedestrian crosswalks, which have to comply with ADA requirements.
  - Sparing signage that is only related to traffic directions. Additional signage including advertisements must be prohibited.
2. The roadway of the roundabout must be circular.
  3. Consider minimizing fixed-object items in the design i.e. signage, trees, walls, art, etc.
  4. The roundabout should be wide enough to allow emergency vehicles passage and meet fire safety requirements.

**Intent:** *To ensure that the roundabout meets climate resilience goals and mitigates the potential impacts of coastal inundation coming in from Neck Street,*

- The roundabout should incorporate LID and green infrastructure practices such as rain gardens, permeable pavement, and underground storage chambers for stormwater.

## CLIMATE RESILIENCE

**The Town should implement Green Infrastructure techniques to mitigate flooding impacts along Bridge Street.**

**Intent:** *To alleviate environmental and flood concerns along 750 Bridge Street, the site of U-Haul, by reducing the runoff of pollutants into Veterans Memorial Circle and to improve the ratio of impervious to non-impervious surfaces,*

1. The Town should require 50% of open space protection on this parcel and other parcels at risk of flooding.
2. The Town should encourage Low Impact Development (LID) features near roadways and in parking islands at this site.
3. The Town should consider stricter impervious surface limits such that post-development infiltration is equal or greater than pre-development levels.



FIGURE 47. AN EXAMPLE OF A PUBLIC PARCEL THAT USES RAIN GARDENS, PERMEABLE PAVEMENTS, AND UNDERGROUND STORAGE CHAMBERS FOR STORMWATER. A SIMILAR DESIGN COULD BE IMPLEMENTED IN THE CONSTRUCTION OF A ROUNDABOUT THAT CAN MITIGATE THE IMPACTS OF COASTAL INUNDATION COMING FROM NECK STREET. ESKIN ET AL.

## CLIMATE CALLOUT

The parcel at 750 Bridge Street, the U-Haul site, is a parcel of immediate environmental concern. At least half of the parcel is within the 1% floodplain: it will flood at least 3-5 feet during the 100-year storm, which is currently happening every 60 years and projected to occur every 10-20 years by 2050 (Ning et al., 2015). When the site floods more frequently and intensely due to climate change, this will cause severe runoff of pollutants of high environmental concern into Veterans Memorial Circle. The high ratio of impervious to non-impervious surface on the site increases its vulnerability to the aforementioned conditions.



FIGURE 48. CURRENT CONDITIONS AT NECK AND GREEN STREETS. PHOTO BY BRENNAL TROLLINGER.



FIGURE 49. A MOCK-UP OF A BIOSWALE AT NECK AND GREEN STREETS. GRAPHIC BY BRENNAL TROLLINGER.

# BEFORE AND AFTER



FIGURE 50. CURRENT CONDITIONS AT THE PROPOSED SITE OF VETERANS MEMORIAL CIRCLE. PHOTO BY BRENNA TROLLINGER



FIGURE 51. A MOCK-UP OF VETERANS MEMORIAL CIRCLE. NOTE HOW THE CIRCLE DOES NOT ENCROACH UPON THE VIETNAM MEMORIAL PARK, AND REUSES THE SAME CROSSWALKS, REPAINTED. GRAPHIC BY BRENNA TROLLINGER.

# CO-BENEFITS TABLES

## LAND USE PLANNING CO-BENEFITS TABLE

The Land Use Planning Co-benefits Table, below, outlines each of the land use and zoning change recommendations outlined in this report. Each recommendation and its non-exhaustive co-benefits is listed. This assessment finds that adding a 40R overlay district and design guidelines would provide Bridge Street and its community with the maximum number of co-benefits.

## PLACEMAKING

The Placemaking Co-benefits Table, below, outlines each of the placemaking recommendations outlined in this report. Each recommendation and its non-exhaustive co-benefits is listed. This assessment finds that hosting a community engagement envisioning process, implementing a 40R overlay district, and enforcing design guidelines for the corridor would provide Bridge Street and its community with the maximum number of co-benefits.

TABLE 4. PLACEMAKING CO-BENEFITS TABLE.

	Increase Tax Revenue	Aesthetic Consistency	Increase Business Activity	Diversity of Businesses	Pedestrian Scaling	Welcoming Spaces
Host a Community engagement envisioning process						
Conduct a Market study						
Encourage density through 40R						
Enforce cohesive Design guidelines for corridor, across zoning districts						
Create a review body or staff position to review and enforce design guidelines						
Restrict Billboards						
Improve signage and Continue Weymouth flags along the entire corridor						
Introduce functional art						
Improve lighting along the Corridor						

## RECOMMENDATIONS

TABLE 5. LAND USE PLANNING CO-BENEFITS TABLE.

	Increase Revenue	Tax	Aesthetic Consistency	Address Environmental Concerns	Pedestrian Scale	Increase Parcel Connectivity
40R Overlay						
Traditional Overlay						
Design Guidelines						

### MULTIMODAL TRANSPORTATION CO-BENEFITS

The Transportation Co-benefits Table, below, outlines each of the transportation improvement recommendations outlined in this report. Each recommendation and its non-exhaustive co-benefits is listed. This assessment finds that adding a cycle lane or buffered bike lane, increasing bicycle infrastructure (bike racks), and conducting a traffic study would provide Bridge Street and its community with the maximum number of co-benefits.

### CLIMATE RESILIENCE CO-BENEFITS

The Climate Resilience Co-benefits Table, below, outlines each of the Climate Resilience recommendations outlined in this report.<sup>18</sup> Each recommendation and its non-exhaustive co-benefits is listed. This assessment finds that adding street trees, implementing bioswales along the median, increasing community green spaces and conducting a hydrology study and flooding analysis would provide Bridge Street and its community with the maximum number of co-benefits.

TABLE 6. CO-BENEFITS OF CLIMATE RESILIENCE.

	Reduce Urban Heat Island Effect	Reduce Flooding	Improve Water Quality	Improve Air Quality	Improve Green Spaces	Reduce Energy Costs
Place street trees along corridor						
Implement bioswales along medians of the corridor						
Increase community and green spaces						
Consider permeable pavements						

TABLE 7: TRANSPORTATION RECOMMENDATIONS CO-BENEFITS TABLE.

	Reduce Auto Centricity	Calm Traffic	Increase Safety	Reduce Traffic Congestion	Improve Public Health	Reduce Emissions	Increase Parcel Connectivity
Conduct a transportation study							
Improve sidewalk design							
Repaint crosswalks: Consider painting red or yellow for greater visibility							
Consider using crosswalks as a space for public art							
Implement a Road Diet option 1: Reduce to one lane in each direction with a middle turn lane							
Implement a Road diet option 2: close one lane during non rush hours/weekends							
Add a cycle track or buffered bike lane along the corridor to separate traffic							
Bike racks and repair stations							

# CONCLUSIONS AND NEXT STEPS

It is the hope of this Field Project Team that the Town of Weymouth will implement some of the recommendations outlined above. While the recommendations have been structured as guidelines and implementable strategies, we also recognize the need for concrete next steps. Below are several of the next steps we believe the Town of Weymouth should take to be successful in implementing strategic planning interventions along Bridge Street and transforming the corridor into a vibrant space.

Should the Town choose to implement the above recommendations, the following next steps could be taken to ensure a successful implementation.

## 1. CONDUCT A MARKET STUDY

In order to assess the market potential for development along Bridge Street, the types of commercial and residential uses that could be supported, and the benefits that increased density would bring, the Town should conduct a market study along the Bridge Street Corridor

## 2. HOST A COMMUNITY ENGAGEMENT AND VISIONING PROCESS

To ensure that community members are fully involved in a vision for the future of Bridge Street, the Town should host a community engagement and visioning process. To aid in the process of assessing the community's reaction to proposed changes along Bridge Street and to help the Town decide which recommendations are best for Bridge Street, we have provided the Town with our Multiple-Criteria Analysis Table.

## 3. REVIEW ZONING AND DESIGN GUIDELINES

In addition to creating new design guidelines for General Business B-2 and the

Neighborhood Center District along Bicknell Square, the Town should consider conducting a review of its existing design guidelines for the Commercial Corridor Overlay. To avoid straining the resources and time of the Department of Planning and Community Development, the Town could extend its existing contracts with planning consultants or issue a new RFP to conduct a review of the zoning and Bridge Street corridor.

Alternatively, should the Town choose to keep design review in-house, the Town could consider either establishing a municipal Design Review Board or creating a staff position to cover the review and enforcement of design guidelines.

## 4. IMPROVE MULTI-MODAL TRANSPORTATION

The Town should conduct a traffic study along the length of Bridge Street to ascertain the possibility of a road diet and the addition of bicycle lanes.

To further assess the viability of our proposed roundabout, the traffic study should include the intersection of Bridge, Neck, and Green streets.

## 5. STRENGTHEN CLIMATE RESILIENCE

To better understand the impacts of climate change and increased flooding on Bridge Street, the Town should conduct a hydrology and stormwater flooding analysis for North Weymouth which should guide it in creating new design guidelines that will improve the area's climate resilience.

To ensure that future design guidelines meet climate resilience goals and address the urban heat island effect, it is imperative that green infrastructure be central to every project.

# MCA TABLE

Multiple-Criteria Analysis is a quantifiable decision-making process that aids in identifying the potential for important improvements. This participatory process can be visually represented by a Multiple-Criteria Analysis Table. We have created this table for municipal use to gauge the viability of recommendations

for Bridge Street, especially at Bicknell Square and the Neck/Green streets intersection. This table is meant to be used in focus groups with community stakeholders to further discuss possible changes to the corridor. For more information, see the appendix.

TABLE 8. MULTIPLE-CRITERIA DECISION ANALYSIS TABLE.

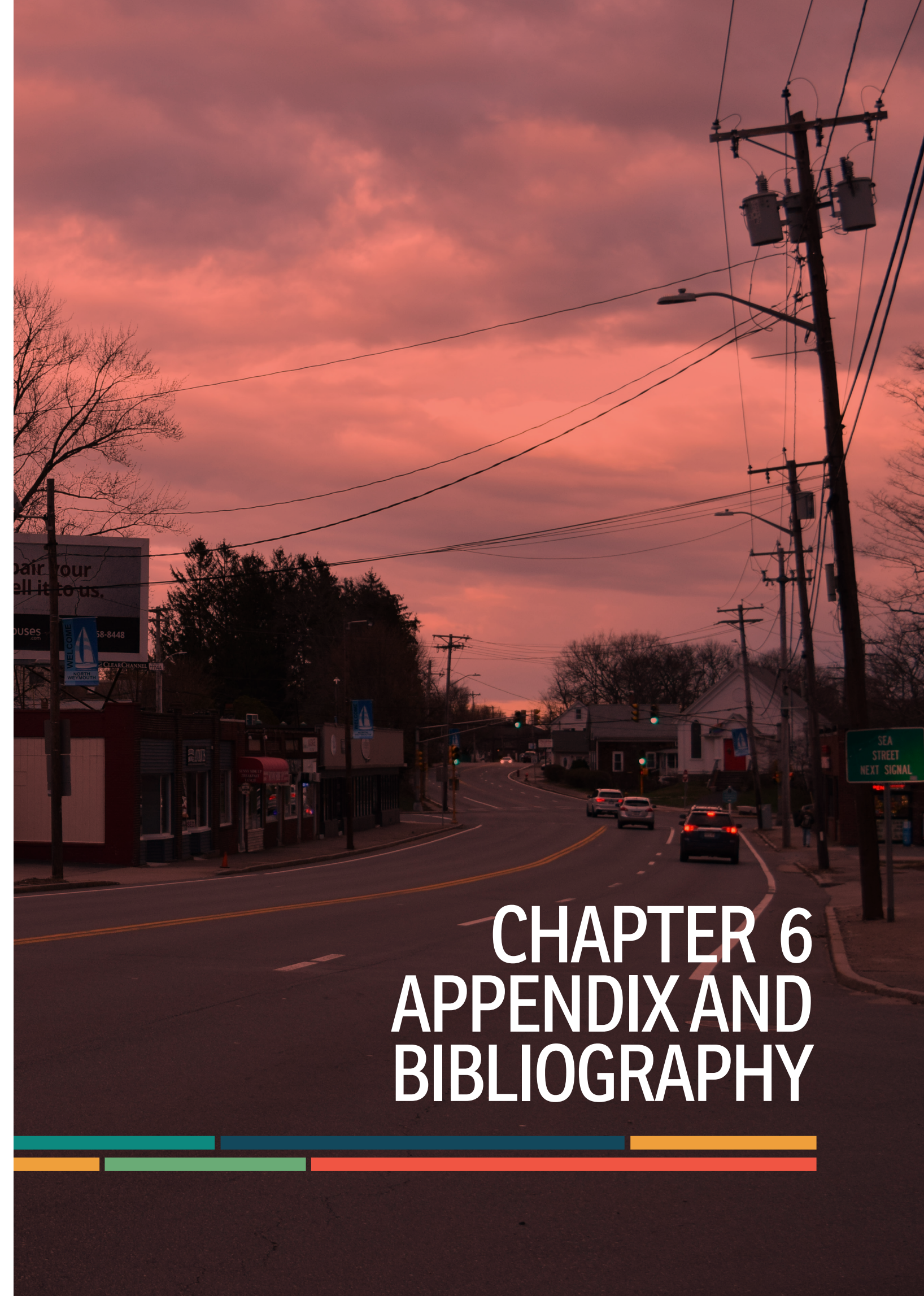
	CRITERIA	NO: 1	POSSIBLY NO: 2	NEUTRAL: 3	POSSIBLY YES: 4	YES: 5	
Feasibility							
	Increase tax revenue from development						
	Meets safety requirements						
	Meets Climate resilience standards						
	meets architectural and landscape design standards						
Acceptability							
	Meets local expectations of economic, health, social, cultural and recreational benefits						
	Access to necessary infrastructure						
Sustainability							
	Resilient to changes or disturbances						
	Improves the retail mix with new businesses						
	increases foot traffic for businesses along the corridor						
	Increases density along and adjoining the corridor						
							TOTALS
							FINAL TOTAL

*"I THINK PEOPLE ARE RECEPTIVE TO THE IDEA OF MIXED USE, AS LONG AS WE FIND A GOOD BUSINESS TO OCCUPY THE FIRST FLOOR WHERE IT'S GOING TO ATTRACT PEOPLE. "*  
*- PASCALE BURGA, DISTRICT 1 COUNCILOR*



FIGURE 52. VIEW OF BEALS PARK. PHOTO BY BRENNA TROLLINGER.

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# CHAPTER 6 APPENDIX AND BIBLIOGRAPHY

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# APPENDIX

TABLE 8. MULTIPLE-CRITERIA DECISION ANALYSIS TABLE.

	CRITERIA	NO: 1	POSSIBLY NO: 2	NEUTRAL: 3	POSSIBLY YES: 4	YES: 5	
Feasibility							
	Increase tax revenue from development						
	Meets safety requirements						
	Meets Climate resilience standards						
	meets architectural and landscape design standards						
Acceptability							
	Meets local expectations of economic, health, social, cultural and recreational benefits						
	Access to necessary infrastructure						
Sustainability							
	Resilient to changes or disturbances						
	Improves the retail mix with new businesses						
	increases foot traffic for businesses along the corridor						
	Increases density along and adjoining the corridor						
							TOTALS
							FINAL TOTAL

MCA TABLE

The MCA Table provided is meant as a participatory process tool to assess the viability of recommendations along Bridge Street. Within the table, each recommendation is assigned numerical values based on different criteria that are potential impact factors. The numerical values, which are on a scale of 1-5, with 1 being the lowest score and 5 being the highest, indicate the importance of each recommendation according to each criteria/ factor in response to the level of agreement to each criteria statement. The criteria were divided into three categories: Feasibility, Acceptability, and Sustainability.

We defined feasibility as the ability to convince the community and municipality to support a recommendation by gauging the following criteria: Increases tax revenue from development, Meets safety requirements, Meets Climate resilience standards, meeting architectural and landscape design standards.

We also defined the Acceptability category as the ability to gauge the likelihood of implementing the recommendations based on the level of approval (both municipal and residential approval) by gauging the following criteria: Meets local expectations of economic, health, social, cultural and recreational benefits, Access to necessary human infrastructure.

Finally, we defined the sustainability category as the assurance that the recommendation is taken seriously and will persist based on the following criteria: Resilient to changes or disturbances, Improve the retail mix with new businesses, increase foot traffic for businesses along the corridor, and Increases density along and adjoining the corridor.

The criteria explanation for the MCA table and descriptions are listed below:

- Increases tax revenue from development: this criteria aims to quantify the possible improvement of the economic status along



the corridor.

- **Meets safety requirements:** This criteria was chosen to ensure that local and state safety guidelines are being met.
- **Meets Climate resilience standards:** This criteria aims to support recommendations that promote climate resiliency as outlined in the Town of Weymouth's zoning codes and regulations
- **Meeting architectural and landscape design standards:** This criteria was chosen to ensure that placemaking is prioritized and follows design guidelines (listed in this report) as well as Weymouth's zoning codes and regulations.
- **Meets local expectations of economic, health, social, cultural and recreational benefits:** This criteria was chosen to maximize benefits from recommendations and is gauged by the local expectations as outlined in the Town of Weymouth's Master Plan
- **Access to necessary infrastructure:** This criteria was chosen because the proximity to necessary infrastructure, like public transport, grocery stores, community centers, etc. provides residents with adequate access to improved living conditions.
- **Resilient to changes or disturbances:** We chose this criteria because we want to promote development that is successful and lasting in North Weymouth so that placemaking and economic development are supported and promoted.
- **Improve the retail mix with new businesses:** We chose this criteria because we want to promote economic development along Bridge Street. Promoting a new mix of businesses with the already existing, successful businesses, draws new clientele and promotes placemaking and sense of community in North Weymouth.
- **increase foot traffic for businesses along the corridor:** We choose this criteria because we want to create a pedestrian-friendly environment that enhances the walker's experience while providing another clientele base for businesses along the corridor.
- **Increases density along and adjoining the corridor:** We chose this criteria because we want to promote dense development and increase the number of residents and non-single family housing units. Dense development allows economic centers to thrive and be supported by the surrounding neighborhood and aids in placemaking along Bridge Street.

# LITERATURE REVIEW

TABLE 9. 40R REQUIREMENTS AND BENEFITS.


Requirement	Incentives for Developers	Incentives for Municipality
Within 0.5 Miles of a transit station, near commercial centers, in areas with existing infrastructure or otherwise deemed highly suitable	Developments will be able to benefit from and market existing transportation and infrastructure links in attracting buyers.	Creating density around existing public transport networks will ensure that the added number of people will put less stress on existing road networks and will require less parking.
Infrastructure, defined as water, sewage, transportation, and so on, must be certified by local officials or improved upon to be adequate in meeting projected demand within five years.	Developers will not have to plan and build infrastructure from scratch, thereby saving development costs on their part.	A need to meet 40R requirements can push municipalities to improve infrastructure in areas they might not have had previously considered.
The overlay must allow housing to be built as-of-right at densities of at least 8 to 20 units per acre, depending on the type of housing. Land use, design, and density can be further regulated by creating sub-districts. Municipal plan approval authorities have a maximum of 120 days to review an application and can only deny them if they can prove that the applicant is non-compliant with the bylaw and design standards, or if their proposal will create an unmanageable adverse impact on the community.	As-of-right approvals: The shortening of the approval process to 120 days and limited grounds for denial create a pro-developer business environment, which is ideal for attracting investment.  Bond requirement for abutter appeals: Because plaintiffs will have to cover the costs of halting construction should they choose to challenge 40R decisions, developers will be able to reduce their own construction costs or negate potential challenges.	Municipalities receive a payment of \$3,000 per unit upon the issuance of building permits.  To alleviate concerns that increased density will lead to higher education costs, Chapter 40S allows the state to reimburse the municipality for any net new costs as a result of new residents in the 40R district minus property and excise tax revenues collected by the district. Furthermore, compliant municipalities receive higher state matching for new school buildings.
At least 20% of the units developed within the overlay and per project must be affordable at 80% of area median income or less for at least a 30 year period.	Lower affordability requirements: 40R requires only 20% of units to be affordable, rather than the 25% of 40B. As a result, developers can profit more under a 40R overlay.	Unless 10% of a town's housing is affordable, the town is susceptible to Chapter 40B development. Under 40B, developers are able to build more densely than municipal bylaws would normally allow should the amount of affordable units in a municipality be below the 10% threshold. Furthermore, the municipality would be unable to control the location of a 40B development. <sup>36</sup>
Municipalities can create more than one 40R district, provided that none exceeds 15% of its land area, and the total area of 40R overlays do not exceed 25% of its land area.		More favorable consideration from state agencies when a municipality applies for discretionary grants. State agencies taking the existence of 40R overlay districts into account include Environmental Affairs, Transportation, Housing, and Administration and Finance.  A one-time Zoning Incentive Payment (ZIP) of \$10,000 to \$600,000 for creating the overlay, depending on the net increase in as-of-right units. (CHAPA 6)

## 1. ZONING, LAND USE AND PLACEMAKING

The character of a community often refers to a location's identity and sense of place. "Community character" is defined by the human-made and natural features of an area, and includes, the site's visual landscape, the buildings and structures and their uses, the natural environment, activities, services, and local policies<sup>19</sup>. These elements combine to create the character or sense of place that defines an area<sup>20</sup>. Establishing a community character involves placemaking, which is the process of creating a quality place where people want to live, work, play and learn in.<sup>21</sup> These quality places are active and unique sites that are safe, connected, comfortable, able to promote and facilitate civic engagement, and are visually attractive.<sup>22</sup> Placemaking often

involves community engagement to capture stakeholder's social and cultural identities. Participants ineffective placemaking processes understand and use the community's local assets and potential as inspiration in designing quality public spaces.<sup>23</sup> It is possible to promote a positive "community character" along Bridge Street Corridor through placemaking that reflects North Weymouth.

It is essential that design and planning respond to character building and placemaking efforts, and therefore development should meet the objectives and standards of overlay provisions. Infrastructure should be appropriate to the site, and contribute to the preferred community character.<sup>24</sup> Establishing design review guidelines and a complementary regulatory body would ensure that development along Bride Street adheres and contributes to



placemaking. The Town of Plymouth's Historic District Commission Design Review Guidelines are a strong precedent of how local government is able to ensure consistency and predictability of development design for a commercial area.<sup>25</sup> In keeping with its colonial character, Plymouth integrated historic preservation with placemaking to create a successful downtown-harbor district.<sup>26</sup> The Bridge Street Corridor should create and adopt its own detailed design guidelines. While the character of this district is not colonial, nonetheless the design guidelines should be as detailed as Plymouth's, and remain consistent in order to create and maintain an appealing and vibrant mixed-use corridor.

Town branding that reflects North Weymouth's culture, landmarks, and heritage would improve town marketing, and make North Weymouth a destination. The Town of Scituate's Economic Development Commission worked with a consultant, Favermann Design, to create a branding, marketing, and wayfinding program coined "Sea Scituate".<sup>27</sup> Through researching descriptions and landmarks associated with Scituate, the Town created logos and slogans for directional signs, business directory maps, informational kiosks, and murals that would build upon the Town's character building and improve wayfinding.<sup>28</sup> Branding enforces a sense of arrival, underscores pride of place in the community, and creates the appeal that makes a place a destination.<sup>29</sup> Scituate demonstrated that signage is a powerful tool. Signage could support North Weymouth's marketing and branding efforts, as well as improve wayfinding. By considering its unique landmarks, imagery, and culture, North Weymouth could develop its own branding design to leverage marketing and wayfinding.

## CHAPTER 40R

In 2004, the Massachusetts legislature passed into law Chapter 40R – the Smart Growth Zoning and Housing Production Act. The law incentivizes the creation of zoning

overlay districts that encourage housing production through increased residential density or mixed-use developments with "smart growth characteristics."<sup>30</sup> The largest 40R sites have been successful in attracting development to blighted areas that would normally experience long inception times caused by complex requirements which a 40R overlay would bypass. The creation of a 40R overlay requires a simple majority approval of the local legislative body. Its largest barriers to approval include garnering public support amidst resistance towards denser development or affordable housing, fear of rising school costs, and community fears that they would lose parking. In some locations, however, excessive parking requirements have led to a great surplus of parking spaces—as we mention in our discussion of shared parking.

Currently, 7% of housing units in Weymouth meet the affordability requirements of the state's subsidized housing inventory.<sup>31</sup> A 10% threshold is necessary to avoid a 40B project overriding local zoning. The town has already had a brush with 40B when a developer sought approval for a 67-townhouse development in Idlewell, North Weymouth.<sup>32,33</sup>

Interviews with planners in municipalities that designated a 40R overlay revealed that they zoned for 40R overlays to signal that their cities or areas were open for development. A planner in a suburb with a limited public sewer network said that the 40R requirements for infrastructure encouraged and helped them to build up their municipal wastewater capacity to meet the goals.

The best example of a 40R district that isn't limited to a single, developer-driven project is the Town of Reading's Downtown Smart Growth District, which has seen half a dozen mixed-use projects to date. Reading implemented 40R to gain more control over development, free itself from 40B restrictions, and revitalize its downtown. It has been successful in attracting development through 40R. Smaller or still-emerging adoptions of 40R include the Methuen Center Smart Growth Overlay District; Easthampton 40R District, which encompasses

# LITERATURE REVIEW

TABLE 10: DETAILED SPECIFICATIONS OF GREEN INFRASTRUCTURE TECHNIQUES. ADAPTED FROM ESKIN, 2021.

GI Type	Location	Primary Stormwater Purpose	Primary Challenges	Width	Length	Drainage Area
Bioswale	Upstream building parking lots, setbacks, <del>right-of-ways</del> , backyards	Bio-retention	Appropriate Growing Conditions, Intensive Maintenance	at least 5'	scalable	less than 5 acres
Rain Garden	Public spaces such as a park	Infiltration		scalable	scalable	less than 2 acres
Stormwater Planter	Upstream streets, sidewalks, right-of-way	Water treatment	Salt-tolerant plant selection, Right-of-way Space	scalable	scalable	less than 2 acres
Permeable Pavement	Parking lots, driveways, alleys, sidewalks	Infiltration	Expensive; Intensive Maintenance	at least 2'	scalable	varies
Underground storage chambers for stormwater	Parking lots, driveways, alleys	Infiltration, Detention	Expensive	scalable	scalable	varies
Green roof	Building roof (or wall)	Infiltration	Heavy, Expensive	scalable	scalable	equivalent to the size of the roof/wall
Urban Tree Planting	All Locations	Infiltration, Water Treatment, Velocity Control	Available Space, Time to Maturity	scalable	scalable	varies

## Environmental Justice Communities Along the Bridge Street Corridor

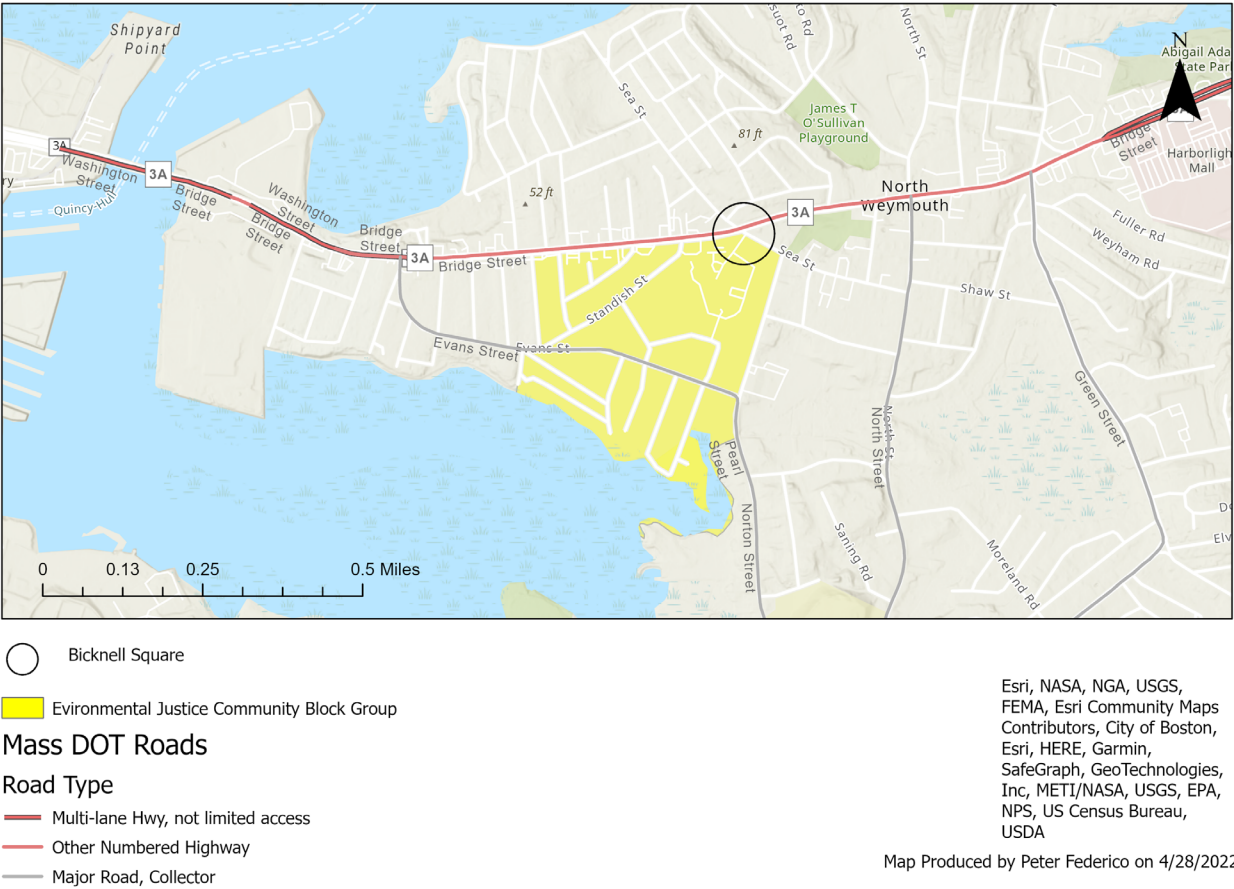


FIGURE 53. ENVIRONMENTAL JUSTICE COMMUNITIES ALONG BRIDGE STREET. A MINORITY EJ BLOCK GROUP IS ADJACENT TO BICKNELL SQUARE AND EXTENDS SOUTH TOWARDS MILL COVE. MAP BY PETER FEDERICO.

its downtown and has seen two approved projects; South Hadley's Newton-Lyman St 40R District, which has attracted at least one subsidized development proposal; and the City of Brockton, which has approved several 40R projects in its downtown.

In the case of Reading and other communities resistant to 40R, good design standards and the use of historic precedents have been important in the ultimate implementation of 40R. Another important factor was that the parcels to which the 40R overlay district was applied were generally agreed to have been blighted and thus redevelopment was welcomed. Given the common resistance to change, starting out with a small area might be best for trying a 40R overlay.

The requirements and incentives for both developers and municipalities for adopting a 40R district are laid out in Table 9.<sup>34</sup>

### **3. CLIMATE RESILIENCE**

**The following is a glossary for climate resilience terms and relevant policies.**

#### **Urban Heat Island (UHI)**

The term is used to describe the environmental phenomenon that occurs when natural land cover is replaced by dense, usually impervious, materials such as pavement and buildings. These, and other, surfaces usually have the ability to absorb and retain heat at a higher rate than natural land. Due to denser construction in cities, urban areas like commercial corridors exhibit a higher degree of UHI. Additionally, UHI has an array of health consequences for inhabitants of cities, such as decreased air quality, and higher risk of persons experiencing extreme heat exhaustion and other heat-related illnesses. The impacts of climate change will increase the severity of the UHI effect.<sup>35 36</sup>

#### **Weymouth Hazard Mitigation Plan**

This plan identified the top climate hazards of concern in Weymouth, which include

coastal flooding, extreme storms, extreme temperatures, drought and sea level rise. It is projected that there will be, at least, a three-foot increase in sea levels by 2100. This impacts the vulnerability of the shoreline, but also the extent to which inland flooding occurs up to Bridge Street. To this point, the intrusion of saltwater from the ocean onto land will increase and so will the damages caused by saltwater encroachment. Extreme storms greater than 1 inch of precipitation will exacerbate existing stormwater management issues and inland flooding will increase. Drought-tolerant planning strategies will be crucial to reducing the impacts of extreme heat and the UHI effect.<sup>37</sup>

#### **Nature-based Solutions**

Nature based solutions (NBS) are strategies, such as open space preservation, ecosystem restoration and low-impact development, that help mitigate and reduce environmental hazards, such as flooding and heat island effects. Implementing NBS also has municipal benefits, which include avoided costs from natural disasters, enhanced community safety and an array of co-benefits in the form of environmental services. The National Institute of Building Sciences (NIBS) released a finding that every \$1 invested in disaster mitigation by three federal agencies saves society \$6.<sup>38</sup>

#### **Green Infrastructure:**

Green infrastructure allows communities to manage stormwater in a manner that is environmentally sustainable by filtering and absorbing stormwater at its point of contact. The following is a glossary explaining several green infrastructure terms.

#### **Rain Garden**

A type of green infrastructure that slows the movement of stormwater during rain events by capturing water in small, sunken areas of land. They are most often found near roads or buildings and aim to capture water from roofs, streets and sidewalks. Native plants within the garden mimic the natural ways water

flows through land and is absorbed. An added benefit is that rain gardens also add aesthetic value to an area.<sup>39</sup>

**Bioswales**

A bioswale is a smaller version of a rain garden that is better suited to accommodate small spaces, like the area between a road and a sidewalk, traffic islands, or in parking lots due to their narrow design. They serve the same purpose as a rain garden of capturing, storing and slowly releasing stormwater.<sup>40</sup>

**Green Roof Systems**

To decrease the amount of stormwater runoff, green roofs are affixed with growing media—the material in which plants grow in—and plants that help improve the infiltration of water. They are most cost-effective in dense urban environments and have the best results when they are applied to large industrial buildings.<sup>41</sup>

**Permeable Surfaces**

Permeable surfaces reduce the amount of stormwater runoff and impacts of flooding by facilitating the infiltration of water at a rapid pace from the soil surface, through the ground and into the water table. They are commonly made from hollow concrete pavers, permeable asphalt, brick, and interlocking pavers in over materials , and are particularly useful in areas that are prone to flooding and icing.<sup>42</sup>

**Urban Tree Canopy**

Trees improve the health of their surrounding environments, including human physical and mental health and well-being. Planting Trees along roadways to create a canopy also helps slow down traffic and improve safety for pedestrians and cyclists. Tree canopies considerably reduce the high temperatures associated with urban heat island effect.<sup>43</sup>

Table 10 lays out in more detail the challenges and opportunities associated with each of the aforementioned green

infrastructure techniques.

**ENVIRONMENTAL JUSTICE**


Figure 24 is a map that shows environmental justice communities along the Bridge Street Corridor. The area in yellow identifies a Minority Environmental Justice Block group according to Mass GIS information. Minority groups often live closer to environmental hazards, and experience increased land surface temperatures and decreased air quality. About a quarter of the length of the Bridge Street corridor is under the designation, and indicates a need for green infrastructure.

**2. MULTIMODAL TRANSPORTATION**

**Shared Parking**

Shared parking is one possible solution aimed at reducing the amount of impervious surfaces and the space taken up by parking lots, thereby increasing the total land available for commercial or residential use. High off-street parking requirements tied to individual parcels create opportunity costs for the development of desirable commercial uses. Each surface parking space takes up at least 300 square feet, including its share of circulation aisles, entrances, and exits. The developable area of a site is thus reduced, resulting in a loss of allowable building area. On smaller lots, this may render a development financially infeasible. Such an impediment to density reduces commercial activity, leading to reduced tax revenues along a corridor. Reduced activity and population – residents, shoppers, and visitors – further impact an area's walkability and aesthetic value, harming important drivers in the demand for mixed uses, including desirable retail.<sup>44</sup>

A solution to this problem is shared parking. Shared parking entails approving the same off-street parking spaces for two or more land uses, either through agreement on the same parcel or in a designated lot within walking distance. It is typically possible when the peak parking demand of the different uses occur at different times of the day, if the various land uses are



within close walking proximity, or where the division of parking spaces is a net decrease from the combined total use of each user's individual off-street parking requirements.<sup>45</sup>

The benefits of a shared parking agreement are as follows:

- Creates efficiency gains in the supply of parking by maximizing the use of existing lots.<sup>46</sup>
- Supports the viability of businesses who cannot normally meet their peak parking needs on site.
- Attracts developers as they will save costs through meeting reduced parking requirements while gaining space to develop other uses.
- Benefits property owners as they can optimize their land use.
- Supports infill development.
- Creates more walkable, safe, and active areas.

In the case of private-private shared parking agreements, their benefits are realized at no cost to the taxpayer.

Opposition to shared parking often stems from conventional planning dogma, which asserts that communities desire the greatest possible supply of parking provided at the lowest possible price, which often leads to large stretches of empty parking. However, the use of shared parking between sites as opposed to standard off-street parking requirements can in fact reduce the total amount of parking by 40 to 60%. Thus, a municipality could enjoy the benefits of reducing the amount of land used for parking while still meeting parking demand through shared parking agreements.<sup>47</sup>

Furthermore, several concerns of local stakeholders over the implementation of shared parking could be addressed through considering the following factors. Should an owner providing shared access express concerns over opening their property up for shared parking, access could be restricted to the employees of the other party. This can provide expanded parking to the owner

seeking more parking, while allowing the shared parking provider to retain control over accountability.<sup>48</sup>

In some cases, a third-party operator may be invited to manage shared parking. This would further support the efficient use of available parking. To address concerns that shared parking leaves one party at the mercy of their parking provider, a minimum 90-day termination clause can be included in the agreement. Should the provider pull out of its agreement, the 90-day clause gives the party losing its shared parking adequate time to obtain other leasing options.

Municipal governments could build support for and acceptance of private-to-public or private-to-private agreements through various ways. This could include:

- A parking database to connect parties to each other.
- Educational and marketing materials about benefits.
- Wayfinding and signage standards.
- Insurance and liability information
- Information about precedents.
- Sample language and agreements.<sup>49</sup>

In Weymouth, consideration has already been made towards shared parking in the Village Center Overlay Districts outside of North Weymouth, in recognition that parking requirements may hamper the development of village-style land use and development. In the Village Center Overlay Districts, applicants may apply to reduce the number and/or location of their required parking spaces should they be able to prove that the additional demand for such spaces can be reasonably met without placing an undue burden on existing facilities through site plan review or special permit.<sup>50</sup>

## Road Diet

A Road diet is a traffic calming measure used to alleviate safety concerns and provide the space needed to accommodate other modes of transportation apart from the automobile. It often involves the removal of two through-travel lanes and the addition of one center turn

lane.<sup>51</sup> Long stretches of arterial roadways, four-leg intersections, strip commercial uses, and big box stores have been found to be major crash risk locations, as they create conditions for car and pedestrian crashes. This is due to the high number of lanes for pedestrians to cross without shelter, left-turn crashes caused by motorists feeling pressure from following motorists and turning early, and other causes of incidents.<sup>52</sup>

Pedestrian-scaled roads—including road diets, are able to lower crash incidents by reducing the aforementioned risks.<sup>53</sup> Studies have shown that there is a 19 to 47 percent reduction in overall car crashes when a road diet is implemented on an undivided four-lane road.<sup>54</sup> A road diet accomplishes this by reducing the speed differential between cars. The speed differential on a three-lane road after a road diet is limited to that of the lead vehicle in a given lane, and the presence of a protected turning lane gives drivers the space needed to correctly time their turns. Furthermore, side-street traffic is able to merge with the roadway with increased comfort and safety as there are fewer lanes to cross, further reducing traffic on side-streets.

Finally, reallocating space from travel lanes, frees up room for sidewalks, bike lanes and traffic islands, diversifying the types of transportation that a road can handle.<sup>55</sup>

A case study of a successful road diet can be found in Reading, MA, where planners converted a four-lane segment of Route 28 into a three-lane street with shoulders and a left-turn lane through the center. While Reading motorists had initially believed that reducing the amount of lanes would lead to more congestion, this assertion would be disproven by traffic data collected by MassDOT, which found that the road diet had in fact cut down the traffic time needed to travel the length of Reading's Main Street. More importantly, the road diet was successful in reducing the amount of crashes from 31 in 2019 to seven crashes during the first seven months of 2021.<sup>56</sup>

## Roundabouts

There is a common misconception that all circular intersections are synonymous with each other, but roundabouts, rotaries, and traffic circles are different types of traffic calming measures that entail different design aspects. A roundabout is a traffic calming measure that uses yielded roadways and prevents full-stop turns. A rotary is a circular intersection that most Americans are adverse to. Rotaries are the original and traditional form of circular intersections that often require lane changes.<sup>57</sup> Due to the frequent lane changes and circulating traffic yielding to entering traffic, rotaries are often more dangerous for drivers and pedestrians as they often create congestion within the circular intersection.<sup>58</sup> Therefore, the traditional, or outdated, rotary is much less effective as a traffic calming measure as compared to the more modern, and safer, roundabout.<sup>59</sup>

A traffic circle is a circular intersection that relies on traffic signals to control traffic within the intersection. Signalized traffic circles, similar to the older rotaries, are less effective than the modern roundabout. Signalized traffic circles rely on traffic signals to control entering traffic. Therefore, traffic circles rely on full-stop traffic to control circular intersection entrances, compared to the safer yielding control methods as used in modern roundabouts. Based on this information, a roundabout is best fit for the intersection at Bridge, Neck, and Green streets in North Weymouth, as it is the safest and best option for circular intersections.

A roundabout is best placed at intersections of two or more streets to minimize competing traffic movements.<sup>60</sup> Roundabouts are effective traffic calming tools because they allow the yielding control of entering traffic, they slow traffic speeds by geometrically curving the road, and provide room for landscape buffers. Furthermore, they are natural points for accessible pedestrian crosswalks. These benefits provide safety measures to ensure that driver and pedestrian safety is maintained. Overall, there are fewer crashes experienced at roundabouts compared to

traditional intersections. Mass DOT reports that roundabouts see fewer vehicle-to-vehicle crashes, but see more singular crashes into fixed objects.<sup>61</sup>

There are two types of modern roundabouts that should be considered for the intersection at Neck and Green streets: single lane and multilane for circular intersections, both having similar design elements. The main difference between a single-lane and multi-lane roundabout is that there is no need for lane shifting in single-lane, making a single-lane roundabout safer for pedestrians and cyclists.<sup>62</sup> Multi-lane roundabouts should use land-use arrows, but with caution. In roundabouts, there are more fixed-object single-vehicle crashes than vehicle-vehicle crashes, therefore, it is recommended that walls, trees, signs and other fixed objects are not included in roundabout designs.

### **Sidewalk Improvements**

To ensure that sidewalks are adequate for pedestrian use, the implementation of different zones will help maximize the utility of the walkways. Three zones are required within the width of a sidewalk: the Clear Zone, the Tree Zone, and the Frontage Zone.<sup>63</sup> The Clear Zone requires at least 6 feet of unobstructed sidewalk, to allow pedestrians adequate walking space. The Tree Zone includes trees and other landscaping, benches, bike racks, and space for sidewalk dining. This zone requires 5 to 8 feet of width to create shaded spaces with trees and rest areas for pedestrians. Finally, the frontage zone, or the area in front of businesses along the sidewalk area, requires 3 feet of width to define the space between shop and street. In this zone, the 3-foot width can include book tables, clothing racks, and more sidewalk dining space.<sup>64</sup>

### **Transportation Art**

Transportation art is graphic or sculptural artwork that is installed at an engineered transportation feature.<sup>65</sup> In the case of Weymouth, we have recommended graphic art such as murals and painted bump outs along Bridge Street. Transportation art is an effective

low-cost method to connect neighborhood locations such as schools and parks with streets while prioritizing non-motorized users. Its key selling point is its ability to engage the creativity of a neighborhood.

By channeling the creative output of a neighborhood, transportation art builds passion and enthusiasm for walkability, creating the community buy-in needed to eventually install hard infrastructure solutions such as roundabouts and traffic islands.<sup>66</sup> A study conducted by Bloomberg Philanthropies covering 17 sites found a 17% reduction in total crashes in areas where transportation art was installed, and a corresponding 37% fewer crashes that resulted in injuries and 50% fewer crashes involving pedestrians and cyclists.<sup>67</sup>

This reduction is in large part due to the ability of transportation art to decrease risky behavior from both motorists and pedestrians. Pedestrians were found to be less likely to jaywalk and drivers were 27% more likely to yield to pedestrians when there was art on the road.<sup>68</sup>

In Natick, MA, town planners worked with the Natick Center Cultural District to commission transportation art as part of a wider traffic calming package that included sidewalk bump-outs and flexible posts. They held a competition open to local artists, with 14 artists submitting 25 entries. The ten finalists were issued grants of up to \$1,800 to design and paint their winning designs on the pavement.<sup>69</sup>

### **Bicycle Infrastructure**

A key feature of a successful multimodal municipality includes well-developed bicycle infrastructure. Roadways with high volumes of traffic and incomplete bike networks pose a dangerous threat to cyclists as well as motorists. Exposure to high-speed traffic, poor pavement quality, multi-lane intersections, and discontinuous bikeways are just a few factors that contribute to the dangerous-nature of improper bicycle infrastructure.<sup>70</sup> Since cycling on heavily trafficked roads is extremely dangerous, Massachusetts has adapted the

Vision Zero policies - a systemic approach to reducing fatal and serious injury crashes by identifying underlying causes.<sup>71</sup> The Vision Zero policies are in line with the Federal Highway Administration's Zero Death Goal; a national goal to reduce and eliminate fatal and serious injuries on roadways. The Pedestrian and Bicycle Network and Priority Plan in Reading, MA is a leading example of the implementation of Vision Zero policies, policies put in place to make the streets safer for multimodal transportation.<sup>72</sup> The Town of Reading plans to implement bike lane marking and bike sign installation along Route 28, the same roadway that saw the success of the road diet program as previously mentioned.

There are many different styles of bike lanes that provide options for municipalities to consider. Bicycle infrastructure includes, but is not limited to, cycle tracks, buffered bike lanes, shared lanes, and bicycle signage.<sup>73</sup> A cycle track is a form of bicycle infrastructure that is physically separated from vehicle traffic, parking areas, and sidewalks.<sup>74</sup> Cycle tracks provide a higher level of security for cyclists and pedestrians due to the separation from vehicle traffic. Another form of bicycle infrastructure with a higher level of cyclist and pedestrian security is buffered bike lanes. Buffered bike lanes are conventional bike lanes that provide a buffer space between the bike lane and vehicle roadway. Buffered bike lanes are usually pavement-marked and lack physical separation from traffic.<sup>75</sup> They are best placed along streets with high volumes of traffic, travel speeds, and those with a narrow right-of-way. Another style of bicycle infrastructure is shared lanes. Shared lanes, also referred to as "sharrows," are bicycle lanes that share the road space with vehicles. Shared lanes are not as safe as cycle tracks, but pavement markings reinforce the cyclists' right to use the road.<sup>76</sup> Finally, signage is another important piece of bicycle infrastructure; it provides visual aid to guide cyclists and motorists, and reinforce the shared use of public roadways.

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