COMPLETE STREETS
IN MANCHESTER-BY-THE-SEA

Complete Streets Prioritization Plan:
MassDOT Complete Streets Funding Program
Tier II
August 2017

Complete Streets in Manchester-by-the-Sea

Complete Streets Prioritization Plan: MassDOT Complete Streets Funding Program Tier II

August 2017

Prepared for the Town of Manchester-by-the-Sea, MA
by the Metropolitan Area Planning Council and Toole Design Group

ACKNOWLEDGEMENTS

This study was completed by the Metropolitan Area Planning Council (MAPC) in partnership with Toole Design Group and the Town of Manchester-by-the-Sea. MAPC is Greater Boston's regional planning agency whose mission is to promote smart growth and regional collaboration. Toole Design Group is one of the nation's leading planning and engineering firms specializing in bicycle and pedestrian transportation.

This document was produced with input from Manchester-by-the-Sea's Complete Streets Task Force comprised of Town staff, local residents, and other stakeholders. MAPC would like to particularly thank Town Planner, Sue Brown, for her coordination, input, and support throughout this process. Funding for this study was provided by MassDOT's Complete Streets Funding Program.

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TABLE OF CONTENTS

Figures

Tables

REPORT OVERVIEW

This report is the culmination of a nine-month Complete Streets prioritization planning process in the Town of Manchester-by-the-Sea, MA. The Metropolitan Area Planning Council (MAPC) in partnership with Toole Design Group facilitated the planning process. The following report includes a prioritized list of Complete Streets projects, which the Town of Manchester-by-the-Sea will submit to MassDOT for funding consideration as part of the MassDOT Complete Streets Funding Program. The report also includes a detailed methodology, a map of project locations, and concept sheets for each prioritized project. The appendix includes additional information related to project evaluation and existing conditions in Manchester-by-the-Sea.

The implementation of the prioritized projects can also occur outside the scope of the Complete Streets Funding Program. Prioritized projects that are not funded through the MassDOT program can be incorporated into future active transportation planning efforts in the Town of Manchester-by-the-Sea.

In addition to facilitating the development of a prioritization plan, MAPC was also tasked with the development of a map-based inventory of crosswalk and sidewalk locations to further support the Town's efforts to improve safety and accessibility for all road users, especially pedestrians. The detailed methodology for developing the crosswalk and sidewalk inventory is provided in Appendix D of this report.

PRIORITIZATION PLAN SUMMARY

The final Complete Streets Prioritization Plan includes eighteen prioritized projects located throughout the Town of Manchester-by-the-Sea. The Complete Streets Task Force, residents, and other stakeholders identified the prioritized project locations in the first round of stakeholder engagement. Toole Design Group facilitated site visits to evaluate existing conditions at each of the eighteen locations and developed project concepts for each location. Toole Design Group's recommended interventions range from intersection reconfigurations to the installation of bicycle racks, bicycle lanes, and sidewalk benches. MAPC ranked each project according to an evaluation criteria defined by the Town's Complete Streets Task Force. The criteria included four equally weighted factors: demand, safety, stakeholder input, and opportunities and constraints.

What is a Complete Street?

MassDOT defines a Complete Street as "one that provides safe and accessible options for all travel modes – walking, biking, transit and vehicles – for people of all ages and abilities." Complete Streets increase safety and livability, improve public health, reduce traffic congestion, and increase a community's environmental sustainability. Over 100 municipalities in Massachusetts have passed Complete Streets Policies, which affirm a municipality's commitment to building safe and accessible streets for all road users.

MassDOT Complete Streets Funding Program

In February 2016, MassDOT launched the Complete Streets Funding Program to incentivize municipal best practice in Complete Streets policy and implementation. The program awards up to $50,000 in technical assistance to complete a 5-year Complete Streets Prioritization Plan and up to $400,000 for project construction on locally-owned roadways.

To be eligible for funding, a municipality must pass a Complete Streets Policy and attend a MassDOT Training; develop and submit a Five-Year Prioritization Plan; and submit a Project Construction Application.

Manchester-by-the-Sea completed the first tier of eligibility in 2016 and this report is the culmination of the second tier.

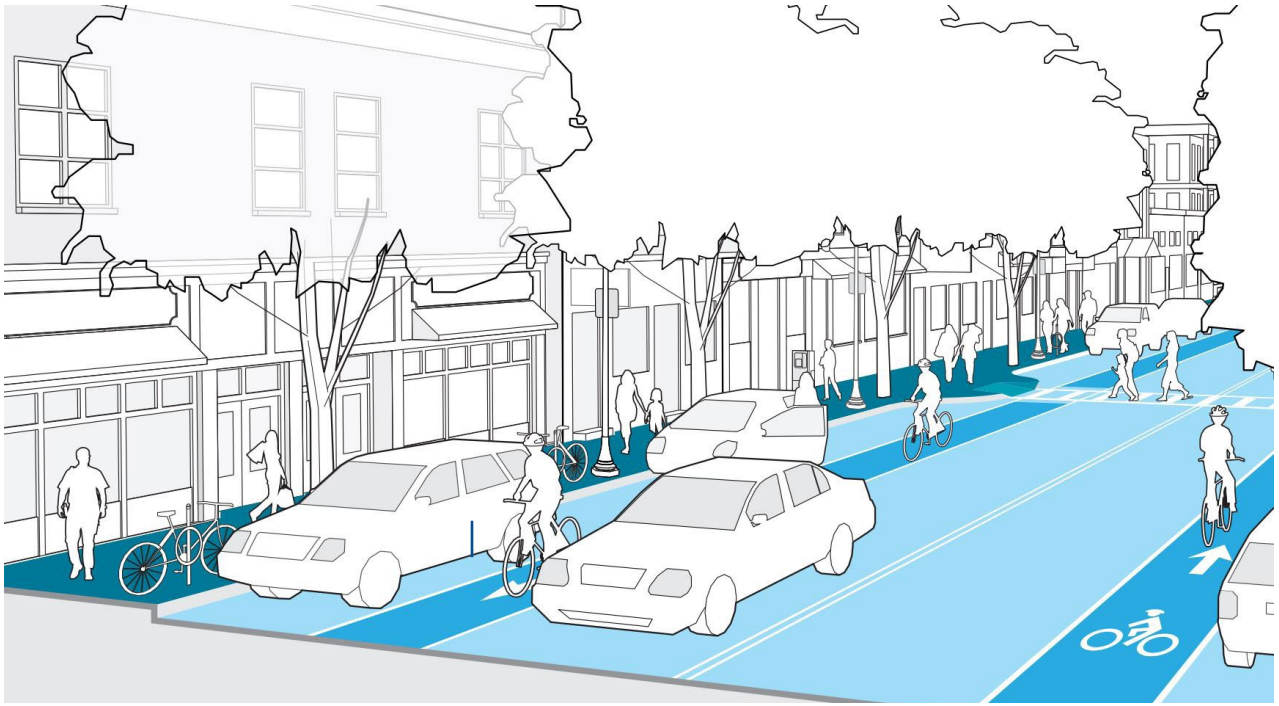


Figure 1: *Boston Complete Streets Guidelines (2013).*

Tier 1

Pass a Complete Streets Policy & Attend MassDOT Training

Tier 2

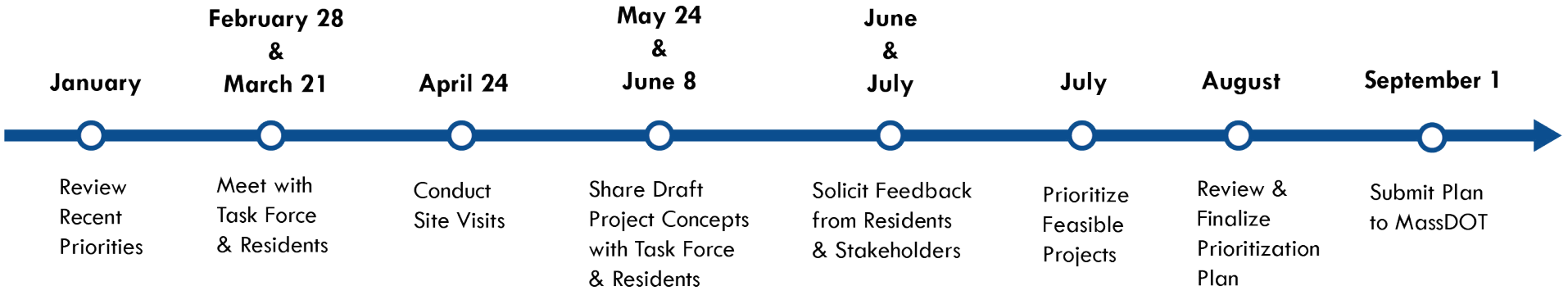
Develop & Submit 5-year Prioritization Plan

Tier 3

Submit a Project Construction Application

TIMELINE

Manchester-by-the-Sea's 2017 Prioritization Plan Timeline



Note: Projects accepted by MassDOT in 2017 will be constructed by end of 2018.

METHODOLOGY

Summary

The Town of Manchester-by-the-Sea's Complete Streets Prioritization Plan is informed by a three-stage process: public engagement with various stakeholder groups, analysis of existing conditions, and application of weighted Evaluation Criteria.

MAPC generated a comprehensive list of potential projects based on Task Force recommendations, public input, and existing local and regional goals. Once identified, project sites were visited and evaluated in the field by the project engineering consultant, Toole Design Group.

Potential projects and draft project concepts were presented to the public and other stakeholders for further input at two public forums. Finally, recommendations and cost estimates for each proposed project were prepared, and the predetermined Evaluation Criteria were applied to each project in order to create the Town's Complete Streets Prioritization Plan.

Figure 2: *Residents and other stakeholders participate in a mapping exercise at the first public forum.*

METHODOLOGY

Figure 3: *Attendees share ideas during a mapping exercise at the first public forum.*

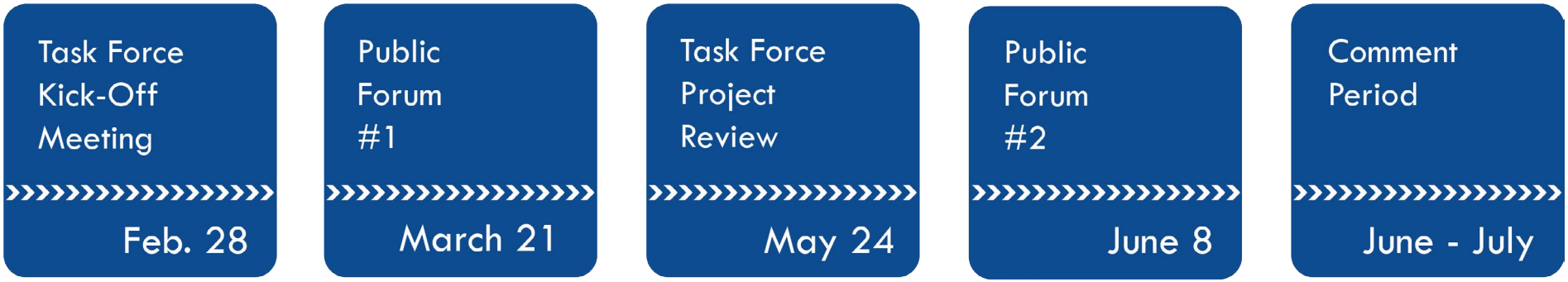
Stakeholder Engagement

Identification of potential project sites in the Town of Manchester-by-the-Sea was guided in large part by a multi-stage stakeholder engagement process involving meetings with the Complete Streets Task Force, public forums with residents and other stakeholders, and a two-month comment period. The timeline is presented below.

Task Force Kick-Off Meeting

The Manchester-by-the-Sea Complete Streets Task Force first convened for a kick-off meeting on February 28, 2017. There were 16 attendees, including representatives from the Town's Department of Public Works, Parks and Recreation Department, and Police Department. Representatives from the Town's Bicycle and Pedestrian Committee, the Downtown Improvement Project, and the Manchester Essex Conservation Trust were also present.

The purpose of this initial Task Force meeting was to discuss and identify potential project locations and develop evaluation criteria to rank projects for the final prioritization plan. Comprised primarily of Town staff and local community leaders, the Task Force had the unique knowledge and ability to make project recommendations informed by crash data, local and regional priorities, as well as resident concerns and suggestions.



Public Forum #1

The second stage of the public engagement process was the Town's first Complete Streets Public Forum, held on March 21, 2017 from 6:30-8:00 p.m. at the Manchester Community Center. Approximately 30 Manchester residents attended, along with several residents from the greater North Shore region. MAPC gave a brief presentation about the MassDOT Complete Streets Funding Program and attendees were then divided into six groups to participate in a mapping exercise to identify their top priority project locations.

Attendees were also asked to identify their primary modes of transportation in Manchester using an interactive display called, "How Do You Get around Manchester-by-the-Sea?" Eighteen attendees indicated that they traveled by auto, nineteen by walking, eight by commuter rail, and twelve by biking (Figure 4).

As part of an hour-long mapping exercise, each group received a map of the Town and photos of improvements eligible for funding through the MassDOT Complete Streets Program. The photos, which depicted a range of traffic and safety measures, transit facilities, bicycle facilities and pedestrian facilities, were intended to help participants visualize the scale and range of potential interventions. Attendees were tasked with marking their Town maps with sticky notes and markers to indicate locations the Town should consider as part of the Complete Streets Prioritization Plan. Specifically, attendees were instructed to identify locations they felt were dangerous or unsafe, or locations where they saw opportunities for future pedestrian, bicycle, or transit improvements. A facilitator was present at each group's table to answer questions and encourage collaboration. After the work session, all attendees reassembled to listen to each group's top three project locations. After the meeting project staff compiled a list of all projects proposed by meeting attendees. Most groups identified projects that would promote improved bicycle and pedestrian connectivity within Town and between existing bicycle and walking trails. Specific intersections located in the Downtown were also identified by many groups as locations where safety improvements were needed.

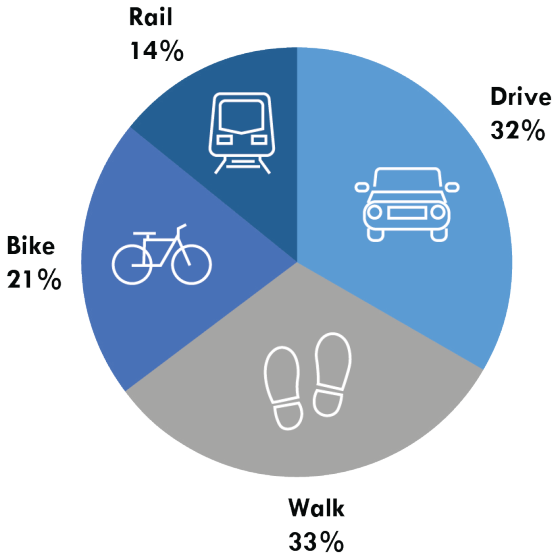


Figure 4: *Attendees at the first public forum shared how they get around Manchester-by-the-Sea.*

Figure 5: *Attendees at the first public forum annotated maps indicating locations where they would like to see street improvements.*

Task Force Project Review

After conducting site visits at the locations identified at the forum (details in following section), Toole Design Group drafted project concepts for all of the potential project locations. The draft project concepts were first presented to the Task Force at the Task Force Project Review meeting on May 24, 2017. Task Force members provided their initial feedback on the draft concepts, and Toole Design Group made adjustments to the concepts based on recommendations from the Task Force.

METHODOLOGY

Public Forum #2

Project concepts were unveiled to the public on June 8, 2017 at the second public forum hosted by Toole Design Group and MAPC at the Manchester Community Center from 6:00-8:00 p.m. Toole Design Group gave a detailed presentation outlining each project concept and fielded questions and comments from the audience. Approximately 20 people attended the forum. After the presentation, attendees had the opportunity to provide feedback on the concepts and vote for their favorites.

Comment Period & Additional Stakeholder Engagement

Based on feedback from attendees at the second public forum, the Town extended the public comment period beyond the public forum. Project concepts were posted on the Town website, and residents and other stakeholders had the opportunity to email their feedback to the Town from late June through the end of July.

MAPC also presented project concepts at the Manchester Master Plan Scenario Open House on June 21, 2017 to provide residents and other stakeholders with additional opportunities to provide feedback on the projects. Approximately 100 people attended the Open House, which was hosted by MAPC at the Manchester Essex Regional Middle and High School from 6:00-8:00 p.m. Project concepts were displayed on easels, and attendees had the opportunity to identify their favorite projects and provide additional written feedback on specific projects. Most attendees at the Open House had not previously been involved in the Complete Streets stakeholder engagement process.

While the Master Plan Scenario process doesn't explicitly address Complete Streets planning, this open house provided a good venue to raise awareness of the Complete Streets Program and solicit additional feedback on project concepts.

Site Visits

Toole Design Group engineers, accompanied by members of the Complete Streets Task Force, visited potential project locations in Manchester-by-the-Sea on April 24, 2017. This fieldwork was intended to provide the consultants with an opportunity to observe the sites, evaluate the concerns posed by residents and the Task Force, measure existing infrastructure, and develop initial suggestions for possible interventions.

Toole Design Group consultants then utilized these field notes and feedback from the stakeholder engagement process to create specific recommendations and cost estimates for each project.

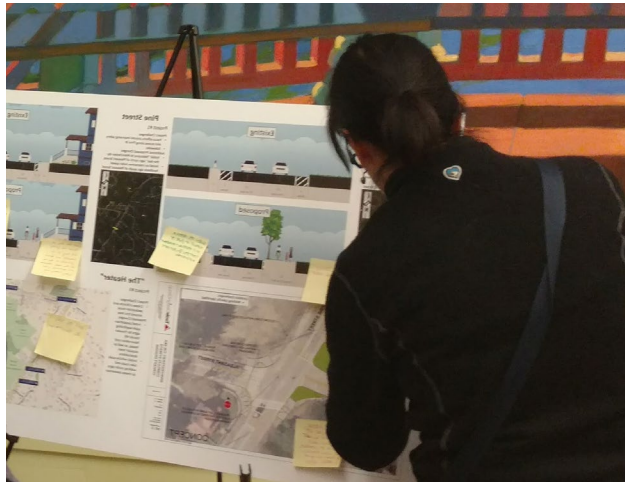


Figure 6: *Attendees provided feedback on projects at the second public forum.*

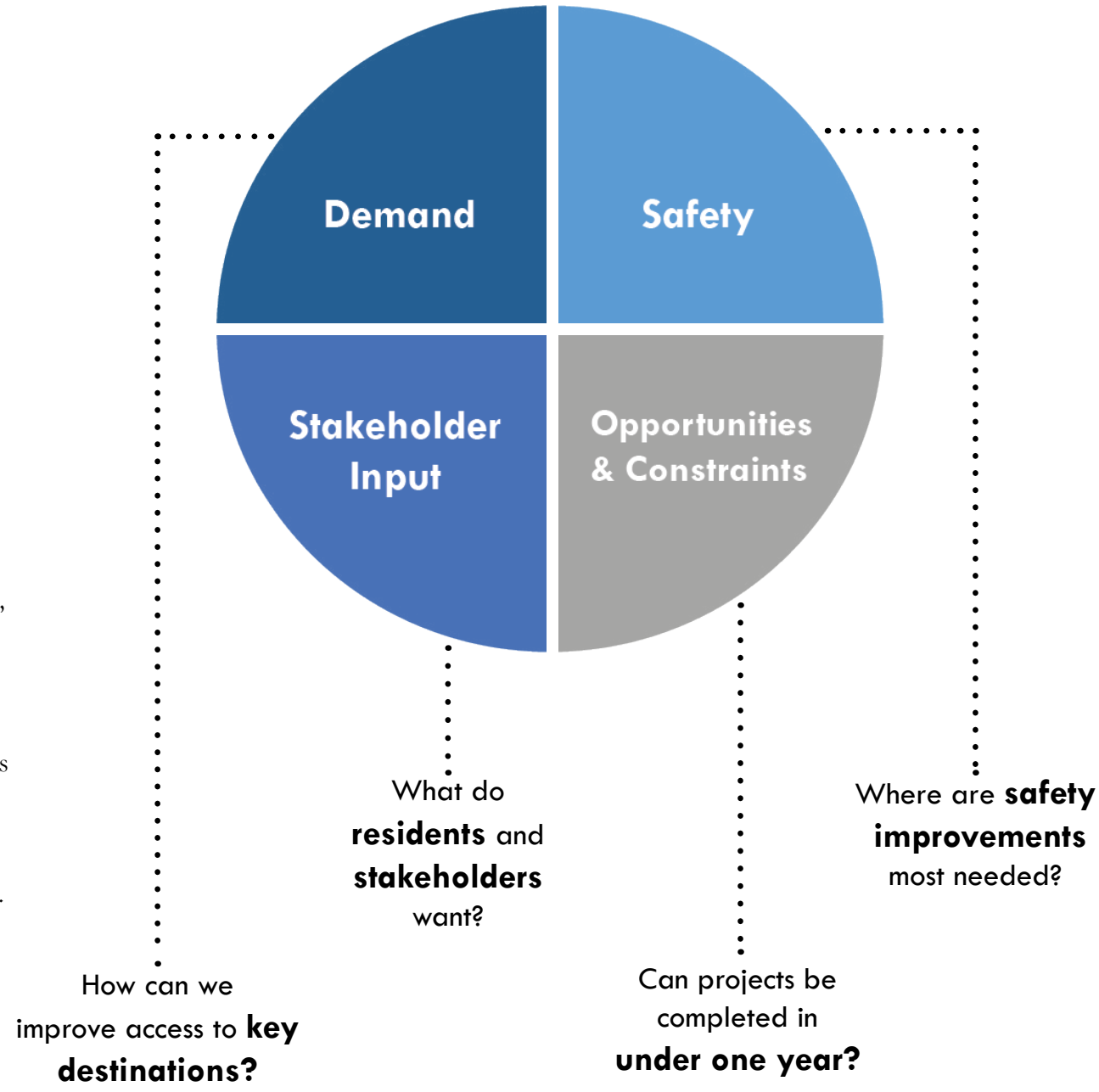
Figure 7: *Toole Design Group conducted site visits at all potential project locations.*

Evaluation Criteria

MassDOT's Complete Streets Funding Program guidelines emphasize the need to develop a strong and consistent methodology for prioritizing projects. The Evaluation Criteria used to rank projects in Manchester-by-the-Sea's Prioritization Plan were selected by the Task Force on February 28, 2017.

The selected criteria, to be weighted equally, include the following factors: Demand, Safety, Stakeholder Input, and Opportunities & Constraints. The following tables (pages 14-16) provide details on the ranking process for all factors within each of the Evaluation Criteria.

There were a total of 20 points available for the Demand criterion, 12 points available for Safety, 15 points available for Stakeholder Input, and 15 points available for Opportunities and Constraints. Each project was assigned points for each of the Evaluation Criteria based on the weighting schemes listed below. For each category, the total number of points received was divided by the total possible, then multiplied by 25%. Final scores were computed by adding the weighted score for each category, then used to determine the ranking of the Prioritization Plan.



METHODOLOGY

Evaluation Criteria Categories

Demand

Factor	Rank	Description
Bike Utility (Local Access Score)	0 1 2 3 4	Lowest Bike Utility Low Bike Utility Moderate Bike Utility High Bike Utility Highest Bike Utility
Sidewalk Gaps (Local Access Score)	0 1 2 3	No Impact: Sidewalks on 1 or both sides No Sidewalks on a Low Utility Road No Sidewalks on a Moderate Utility Road No Sidewalks on a High Utility Road
Proximity* to Downtown	0 1 2 3	No Impact Less than 0.75 mi from downtown Less than 0.50 mi from downtown Less than 0.25 mi from downtown
Proximity* to Schools	0 1 2 3	No Impact Less than 0.75 mi from nearest school Less than 0.50 mi from nearest school Less than 0.25 mi from nearest school
Proximity* to Parks, Trails, or Beaches	0 1 2 3	No Impact Less than 0.75 mi from nearest park, trail, or beach Less than 0.50 mi from nearest park, trail, or beach Less than 0.25 mi from nearest park, trail, or beach
Proximity* to Transit Station	0 1 2 3	No Impact Less than 0.75 mi from transit station Less than 0.50 mi from transit station Less than 0.25 mi from transit station
Regional Trail Connectivity**	0 1	No Impact Connects to a regional bike/ped. trail or route
Total Points Available	**20**	

* "Proximity" is measured by most direct route, either a motorized or non-motorized road or trail

** "Regional Trail Connectivity" indicates that a project intersects or is located on a regional trail

Table 1: *Demand Category of Evaluation Criteria.*

Evaluation Criteria Categories Continued

Safety

Factor	Rank	Description
Proposes Safety Improvement	0 3	No Impact One or more safety improvements proposed
Addresses a Roadway where Vehicular Speeding Occurs*	0 3	No Impact Speeding occurs on daily basis
Addresses Sight Distance Issues	0 3	No Impact Yes
Addresses a Roadway where Pedestrian and Cyclist Crashes have occurred	0 3	No crashes reported One or more ped/bike crashes reported
Total Points Available	**12**	

* As reported by Police Department

Table 2: *Safety Category of Evaluation Criteria.*

Stakeholder Input

Factor	Rank	Description
Identified by Manchester Complete Streets Task Force as a Priority Project (1st round of feedback)	0 1 2 3	Location not identified by Task Force 1 Task Force member identified location 2-3 Task Force members identified location 4 or more Task Force members identified location
Identified by Manchester Complete Streets Task Force as a Priority Project (2nd round of feedback)	0 1 2 3	Location not identified by Task Force 1 Task Force member identified location 2-3 Task Force members identified location 4 or more Task Force members identified location
Identified by Public as a Priority Project (1st round of feedback)	0 1 2 3	No residents identified location 1 resident identified location 2-3 residents identified location 4 or more residents identified location
Identified by Public as Priority Project (2nd Public Forum & Open House)	0 1 2 3	0-1 residents identified location 2-5 residents identified location 5-10 residents identified location 11 or more residents identified location
Aligns with Local and Regional Goals	0 3	No impact/ low priority Project identified in one or more existing plans, studies, or reports
Total Points Available	**15**	

Table 3: *Stakeholder Input Category of Evaluation Criteria.*

METHODOLOGY

Evaluation Criteria Categories Continued

Opportunities & Constraints

Factor	Rank	Description
Construction Cost	0 2 3	Construction cost exceeds $400,000 Construction cost is under $400,000 Construction cost is under $100,000
Design Complexity	0 3	Additional design needed No additional design needed
Timeline Constraints	0 2 3	Design & construction timeline exceeds 1 year Design & construction timeline is between 3 months and 1 year Design & construction timeline is under 3 months
Jurisdictional Constraints	0 3	Not entirely located on Town-owned roadway Located entirely on Town-owned roadway
Cost Reduction due to Existing or Upcoming Projects	0 3	Minimal or No Cost Reduction Cost Reduction
Total Points Available	**15**	

Table 4: *Opportunities & Constraints Category of Evaluation Criteria.*

Crosswalk & Sidewalk Inventory

In addition to developing the Prioritization Plan, MAPC also conducted a crosswalk and sidewalk inventory for the Town of Manchester-by-the-Sea.

Crosswalk Inventory

To develop the crosswalk inventory, MAPC staff first used Google and Bing aerial photography and streetview to identify the location of the town's 74 crosswalks. Using a Garmin GPS device and the mobile phone application Survey123, MAPC staff collected data at all existing crosswalk locations. See Appendix D for details on specific data collected. The data were uploaded into ArcMap (GIS software) and saved as shapefiles for the Town to utilize and update as needed.

Two shapefiles have been created as part of the crosswalk inventory. One shapefile contains line segments indicating the location of each crosswalk from the point at which the crosswalk terminates at a ramp or sidewalk to the opposite end of the crosswalk. The second shapefile contains points indicating the location at which the crosswalk intersects a ramp, sidewalk, or side of the road. At each of these point locations, specific data on the condition of the ramp (or absence of ramp) are stored.

Each crosswalk has been given a unique numerical identification number. Specific crosswalk data (for example, whether the crosswalk ramps are ADA compliant, etc.) are stored within the attribute table of the shapefiles. Maps of the crosswalk locations are provided in Appendix D.

Sidewalk Inventory

MAPC updated and built upon MassDOT's Sidewalk GIS layer to provide the Town with a more accurate sidewalk shapefile. Updates were made to the sidewalk shapefile lines using Google and Bing aerial photography and streetview. MassDOT's Sidewalk GIS layer follows the MassDOT road network layer and does not indicate which side of the road the sidewalk is located. The updated shapefile, created by MAPC, includes the location of all sidewalks in the Town.

For example, on streets where there are sidewalks on both sides of the street, lines have been drawn on both sides of the road network layer. While more detailed sidewalk data collection is needed (for example: data regarding condition, ADA compliance, etc.), the updated sidewalk shapefile provides a more accurate inventory of the location of sidewalks in Manchester-by-the-Sea.

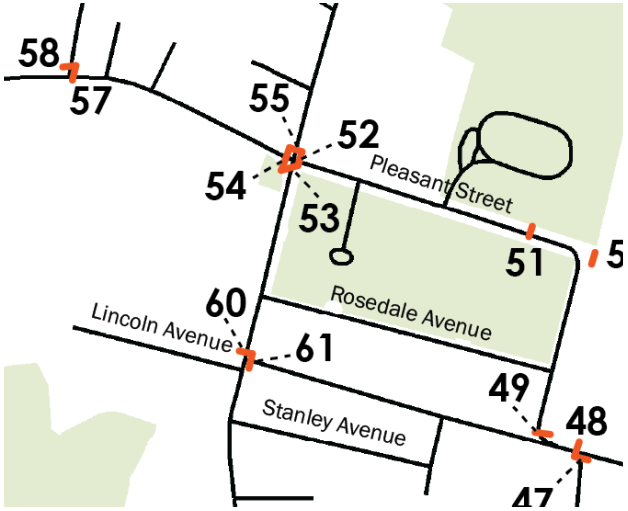


Figure 8: *Sample of Crosswalk GIS data.*

PRIORITIZATION PLAN

massDOT

Complete Streets Funding Program Project Prioritization Plan

Municipality Manchester-by-the-Sea
MassDOT District 4
Date 10/26/2017
Name/Title Sue Brown, Town Planner

Project Details			EJ	Complete Streets Location			Project Origin and Type		Complete Streets Needs								Complete Streets Funding Request			Construction Schedule	
Rank	Project Name	Project Description	Environmental Justice Population	Project Limits	Project Start Location: X,Y Coordinates (MA State Plane meter)	Project End Location: X,Y Coordinates (MA State Plane meter)	Complete Streets Project Origin (planning documentation or supporting analysis)	Complete Streets Project Type (refer to the Eligible Projects Worksheet)	Safety	ADA Accessibility	Pedestrian Mobility	Bicycle Mobility	Transit Operations and Access	Vehicular Operations	Freight Operations	Will this project be in Coordination with other Communities? (list, if applicable)	Total Estimated Project Cost	Complete Streets Funding Requested	Other Funding Source(s) and Amount (if applicable)	Anticipated Construction Duration (number of months)	Desired Construction Start Date (month/year)
1	Beach St. & Union St. Pedestrian Improvement	Install pedestrian refuge medians; Enforce "no parking" within 20' of crosswalk on Union St. using pavement markings; Install yield markings & extend curb line in front of gas station	No	Intersection of Beach Street and Union Street	259922, 925203	N/A	CS Needs Assessment	S1, S6, S13, S14, S17, P2, P3, P7, P8, P9, P16	X	X	X			X	X	No	$ 30,111	$ 27,374	$ 2,737	4	Apr 2018
2	Central St., Union St., & School St. Pedestrian and Traffic Safety Improvement	Curb extensions; Repaint & move crosswalks; install yield markings; Install parking signs and potentially install back-in parking	No	Intersection of Central Street, School and Union Street, and additional street improvements on Central St.	259787, 925234	N/A	CS Needs Assessment	S1, S6, S7, S13, S14, P2, P3, P8, P9, P16	X	X	X			X		No	$ 50,369	$ 45,790	$ 4,579	4	Sep 2018
3	Washington St., Summer St., & Sea St. Pedestrian and Traffic Safety Improvement	Extend curb line and sharpen curve radius; Convert Sea St. to one-way eastbound; Install RRFB on Summer St.; Restripe centerline to improve guidance on Summer St; Extend curb on Washington with pavement markings & flexposts	No	Intersection of Washington Street, Summer Street, and Sea Street	260141, 925225	N/A	CS Needs Assessment	S1, S6, S13, S16, P2, P3, P8, P9, P11, P12, P16	X	X	X			X		No	$ 52,677	$ 47,888	$ 4,789	2	Apr 2018
4	Pine St., Central St., & Bridge St. Tactical Roundabout	Install tactical roundabout; install tactical diverter with pavement markers and flex posts; install curb extensions and ADA compliant curb ramps; stripe new crosswalks	No	Intersection of Pine Street, Central Street, and Bridge Street	259544, 925168	N/A	CS Needs Assessment	S6, S13, S18, P2, P3, P8, P9, P16	X	X	X			X	X	No	$ 27,831	$ 25,301	$ 2,530	4	Apr 2018
5	Route 127 Corridor Improvement	Install interactive radar speed feedback sign west of Ashland Ave. and east of Spy Rock Hill; Add sharrows and adjust lane/buffer width	No	Route 127 corridor from Harbor St. to Beach St. in Downtown MBTS	258664, 924521	259921, 925204	CS Needs Assessment	S5, B8	X			X		X		No	$ 27,600	$ 27,600	$ -	1	Apr 2018
6	School St. Corridor Improvement	One or two-way street options. Two-way option includes narrowed vehicular lane widths and sharrows; one-way option includes construction of shared use path. Both options include installation of interactive feedback sign south of Pleasant St.	No	School Street corridor from Central St. to Route 128	259787, 925234	260246, 926689	CS Needs Assessment	S5, S17, B8 or B10	X			X				No	$ 30,000	$ -	$ 30,000	1	Jul 2019
7	Norwood Ave. & Brook St. Pedestrian and Traffic Safety Improvement	Install "Do not enter" sign to Norwood; Extend Brook St. stop bar; Extend curb/sidewalk at NE corner of intersection	No	Intersection of Norwood Ave and Brook Street	260121, 925517	N/A	CS Needs Assessment	S1, S6, S13, P2, P3, P8, P10, P13	X	X	X			X		No	$ 15,615	$ 14,195	$ 1,420	3	Jun 2018
8	Pine Street Corridor Improvement	Install shared-use path; Improve safety; Welcome to Manchester sign; Interactive radar speed sign (south of Pleasant St.)	No	Pine Street corridor from Central St. to Rockwood Height Rd.	259543, 925168	258470, 926650	CS Needs Assessment	S5, S17, B10	X	X	X	X		X	X	No	$ 1,056,455	$ -	$ 1,056,455	4.5	2020, 2021, 2022
9	Washington St. & Norwood Ave. Pedestrian and Traffic Safety Improvement	Narrow existing slip by extending median; Adjust stop bar locations; Extend curb with pavement markings at North St. and Norwood Ave.	No	Intersection of Washington Street and Norwood Ave	260106, 925291	N/A	CS Needs Assessment	S6, S13, S14, S17	X					X		No	$ 11,631	$ 10,574	$ 1,057	3	Aug 2018
10	Tappan St. & Sea St. Pedestrian and Traffic Safety Improvement	Convert to one-way; Install "Do Not Enter" signs; Construct sidewalk	No	Sea St. from Summer St. to Tappan St. and entire length of Tappan St.	260142, 925222	260050, 924916	CS Needs Assessment	S17, S0, P5	X		X			X		No	$ 111,307	$ 101,188	$ 10,119	4	Aug 2018
11	Harbor St. & Bridge St. Pedestrian and Traffic Safety Improvement	Relocate crosswalks/ped signs; Install RRFBs; Extend sidewalks; Eliminate right turn slip lane; Align Harbor St & Bridge St. approach	No	Intersection of Harbor Street and Bridge Street	258660, 924520	N/A	CS Needs Assessment	S1, S6, S13, S14, S16, P2, P3, P5, P9, P11, P12	X	X	X			X		No	$ 102,198	$ 92,907	$ 9,291	4	Aug 2018
12	Beach St. & Summer St. Pedestrian and Bicycle Safety Improvement	Install sharrows along Beach St. & downtown; Add yield pavement markings and signs to alert motorists to crosswalks	No	Intersection of Beach Street and Summer Street	259920, 925133	N/A	CS Needs Assessment	S7, B8	X		X	X		X		No	$ 1,010	$ 1,010	$ -	1	Sep 2018

MassDOT spreadsheet continued

Complete Streets Funding Program Project Prioritization Plan

Municipality	Manchester-by-the-Sea	**Date**	10/26/2017
MassDOT District	4	**Name/Title**	Sue Brown, Town Planner

Project Details			EJ	Complete Streets Location			Project Origin and Type		Complete Streets Needs								Complete Streets Funding Request			Construction Schedule	
Rank	**Project Name**	**Project Description**	**Environmental Justice Population**	**Project Limits**	**Project Start Location: X,Y Coordinates** (MA State Plane meter)	**Project End Location: X,Y Coordinates** (MA State Plane meter)	**Complete Streets Project Origin** (planning documentation or supporting analysis)	Complete Streets Project Type (refer to the Eligible Projects Worksheet)	Safety	ADA Accessibility	Pedestrian Mobility	Bicycle Mobility	Transit Operations and Access	Vehicular Operations	Freight Operations	**Will this project be in Coordination with other Communities?** (list, if applicable)	**Total Estimated Project Cost**	**Complete Streets Funding Requested**	**Other Funding Source(s) and Amount** (if applicable)	**Anticipated Construction Duration** (number of months)	**Desired Construction Start Date** (month/year)
13	Pine St., Pleasant St., & School Street Pedestrian and Bicycle Wayfinding Project	Create bike/ped route around loop; Install ped-scale wayfinding for Powder House Hill Reservation Trailheads, as well as popular town destinations; Install vehicle-scale bike/walk route signs	No	Pleasant St., Pine St., and School St. (triangle)	259047, 926103	N/A	CS Needs Assessment	B7, P4			X	X				No	$ 1,806	$ -	$ 1,806	1	May 2019
14	Bike Rack Installations	Install bike racks in key downtown locations	No	Various downtown locations: Central Street at Town Hall, Tucks Point Road at Manchester Yacht Club, Beach Street at Summer Street	Various	N/A	CS Needs Assessment	B3				X				No	$ 5,640	$ 5,640	$ -	1	Sep 2018
15	Bench Installations	Install benches in key locations around town	No	Various locations: Two on Beach St at Masconomo Park; 3 on School St at Desmond Ave, Vine St, and Rosedale Ave; 3 on Pine St at Deer Hill Rd, Powder House Hill Reservation, and Walker Road; one at Pleast Grove Cemetery	Various	N/A	CS Needs Assessment	P0			X					No	$ 18,000	$ -	$ 18,000	1	Apr 2019
16	Beach St. Shared Use Path	Install shared-use path to improve bikeability to Singing Beach	No	Beach Street corridor from Union St. to Singing Beach	259922, 925202	260746, 924670	CS Needs Assessment	B10	X	X	X	X				No	$ 158,400	$ -	$ 158,400	3	Apr 2019
17	Pine St. & Pleasant St. Pedestrian and Traffic Safety Improvement	Install ADA compliant curb ramps; Remove left turn bay on Pleasant; Upgrade stop signs with solar flashers & remove overhead warning beacons; Eliminate slip lane and extend curb on Walker Rd. (create	No	Intersection of Pine Street and Pleasant Street	259047, 926103	N/A	CS Needs Assessment	S1, S3, S10, S13, S17, P2, P3, P9, P10, P13	X	X	X			X	X	No	$ 59,374	$ -	$ 59,374	4	Apr 2019
18	School St. & Lincoln St.	Install crosswalk with ADA compliant curb ramps; Install RRFBs	No	Intersection of School Street and Lincoln Street	259883, 925932	N/A	CS Needs Assessment	S1, P2, P3, P9, P12	X	X	X			X		No	$ 28,017	$ -	$ 28,017	2	Jul 2019
19																					
20																					
21																					
22																					
23																					
24																					
25																					
26																					
27																					

Table 5: *Prioritization Plan submitted to MassDOT*

APPENDIX

Appendix A: Project Ranking Details

Appendix B: Project Concepts

Appendix C: Local Access Scores & Maps

Appendix D: Crosswalk & Sidewalk Inventory

APPENDIX A:
PROJECT RANKING DETAILS

PROJECT RANKING

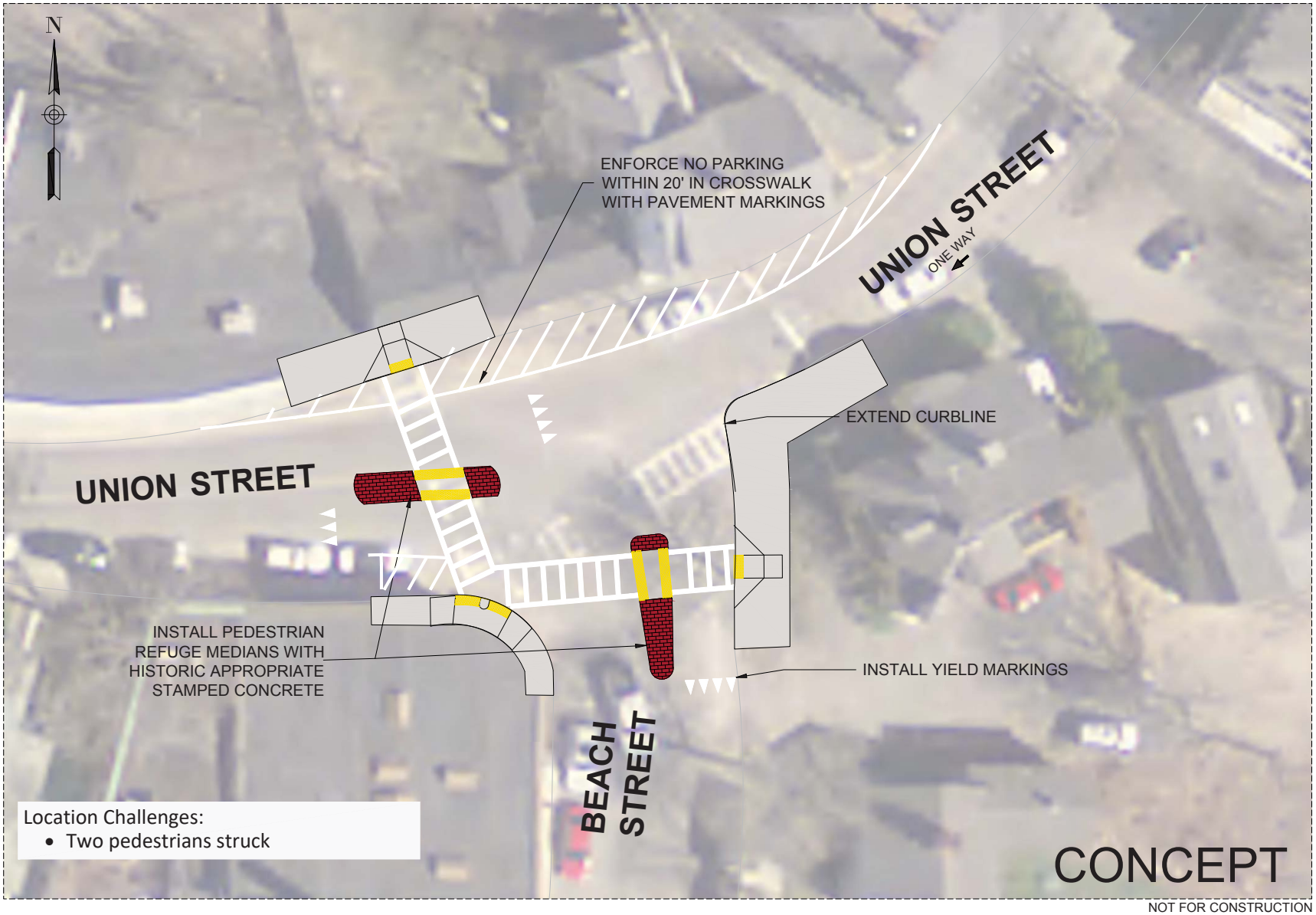
Rank	Project Location	Final Score	Demand			Safety			Stakeholder Input			Opportunities & Constraints		
			Points	Total	Score	Points	Total	Score	Points	Total	Score	Points	Total	Score
1	**Beach St. & Union St.**	**0.675**	15	20	0.188	9	12	0.188	10	15	0.167	8	15	0.133
2	**Central St., Union St., & School St.**	**0.608**	16	20	0.200	6	12	0.125	9	15	0.150	8	15	0.133
3	**Washington St., Summer St., & Sea St.**	**0.604**	13	20	0.163	6	12	0.125	11	15	0.183	8	15	0.133
4	**Pine St., Central St., & Bridge St.**	**0.596**	15	20	0.188	6	12	0.125	9	15	0.150	8	15	0.133
5	**Route 127**	**0.583**	15	20	0.188	3	12	0.063	8	15	0.133	12	15	0.200
6	**School St.**	**0.519**	16.5	20	0.206	3	12	0.063	3	15	0.050	12	15	0.200
7	**Norwood Ave. & Brook St.**	**0.517**	14	20	0.175	6	12	0.125	5	15	0.083	8	15	0.133
8	**Pine Street Corridor**	**0.508**	17	20	0.213	3	12	0.063	9	15	0.150	5	15	0.083
9	**Washington St. & Norwood Ave.**	**0.504**	13	20	0.163	6	12	0.125	5	15	0.083	8	15	0.133
10	**Tappan St. & Sea St.**	**0.488**	13	20	0.163	6	12	0.125	5	15	0.083	7	15	0.117
11	**Harbor St. & Bridge St.**	**0.442**	8	20	0.100	6	12	0.125	5	15	0.083	8	15	0.133
12	**Beach St. & Summer St.**	**0.429**	12	20	0.150	3	12	0.063	1	15	0.017	12	15	0.200
13	**Pine St., Pleasant St., & School Street**	**0.425**	14	20	0.175	0	12	0.000	3	15	0.050	12	15	0.200
14	**Bike Racks**	**0.408**	14	20	0.175	0	12	0.000	2	15	0.033	12	15	0.200
15	**Benches**	**0.404**	15	20	0.188	0	12	0.000	1	15	0.017	12	15	0.200
16	**Beach St.**	**0.396**	12	20	0.150	3	12	0.063	4	15	0.067	7	15	0.117
17	**Pine St. & Pleasant St.**	**0.358**	5	20	0.063	3	12	0.063	6	15	0.100	8	15	0.133
18	**School St. & Lincoln St.**	**0.354**	10	20	0.125	3	12	0.063	2	15	0.033	8	15	0.133

Table 6: *Final project rank is based on four equally weighted evaluation criteria.*

APPENDIX B:
PROJECT CONCEPTS

PROJECT CONCEPT # 1

Beach St. & Union St.



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COMPLETE STREETS
CONCEPT DESIGNS

NOT TO SCALE

PREPARED: TD
CHECKED: AB
DATE
06/08/2017
REV 1 -
REV. 2 -
REV. 3 -
SHEET NAME
BEACH ST &
UNION ST

PROJECT CONCEPT # 1

Beach St. & Union St.

Project Costs & Timelines

Draft Project Construction Details			
Construction Timeline:	120 days	Additional Design:	YES
Design/Study Timeline:	90 days	Additional Studies:	NO

Per Unit Cost

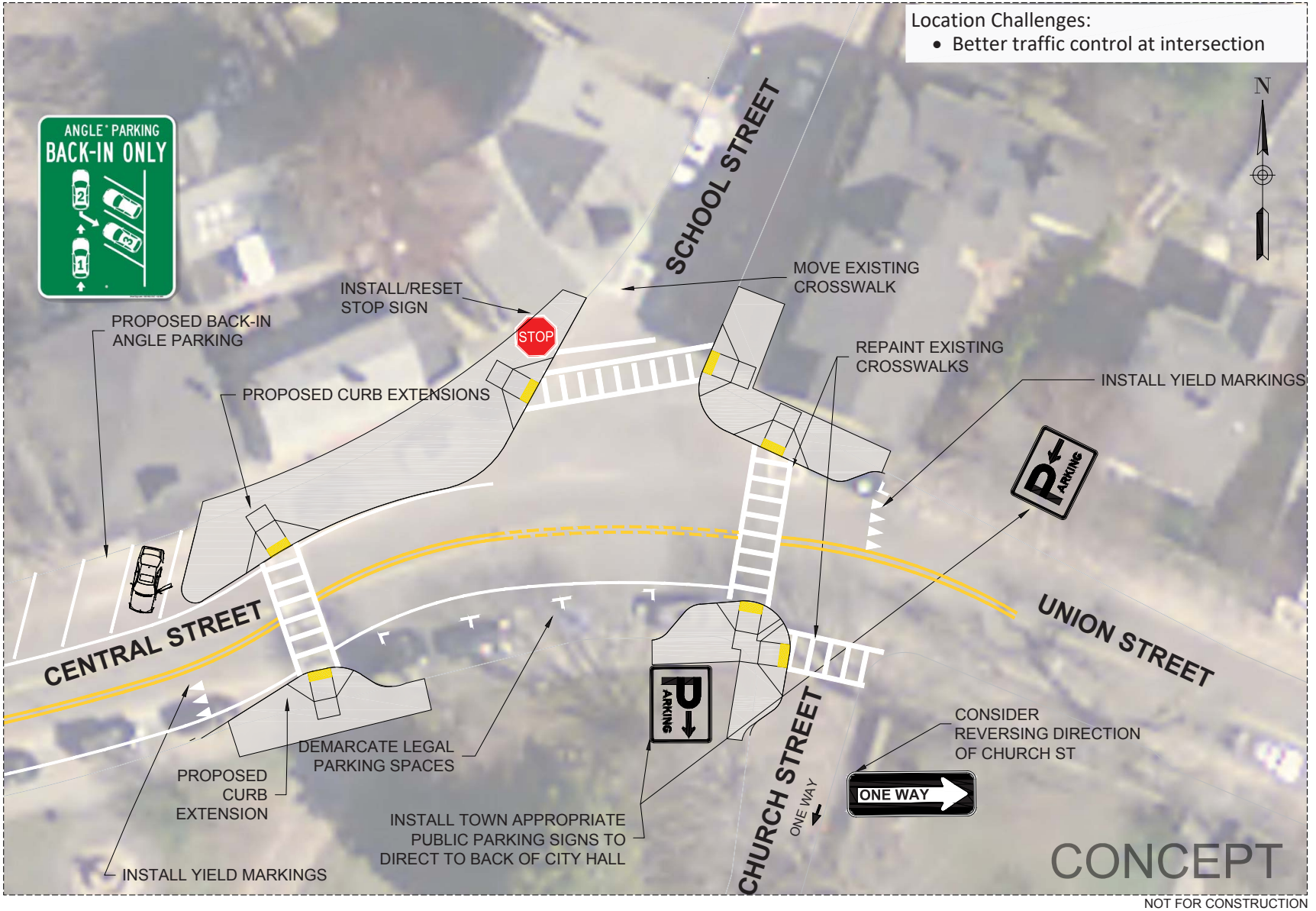
Item	Unit Price	Unit	Quantity	Est. Capital Costs
Stamped Concrete	$ 20.00	/SF	255	$ 5,100
ADA Ramp	$ 3,000.00	/EA	3	$ 9,000
Curb Extension	$ 100.00	/SY	70	$ 7,044
Detectable Warning Pad	$ 100.00	/EA	4	$ 400
Cross Walks & Stop Lines Refl. White (THERMOPLASTIC)	$ 2.25	/SF	430	$ 968
6" Reflectorized White Line (THERMOPLASTIC)	$ 1.00	/FT	300	$ 300

Note: *Prices are estimated for construction only, and do not include design or additional studies. Estimates are for Prioritization Plan comparisons only.*

Sub-total	$	22,812
Contingency	$	4,562
Total	$	**27,374**

PROJECT CONCEPT # 2

Central St., Union St., & School St.



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REV 1 -
REV. 2 -
REV. 3 -
SHEET NAME
CENTRAL ST,
UNION ST &
SCHOOL ST

PROJECT CONCEPT # 2

Central St., Union St., & School St.

Project Costs & Timelines

Draft Project Construction Details			
Construction Timeline:	120 days	Additional Design:	YES
Design/Study Timeline:	120 days	Additional Studies:	NO

Per Unit Cost

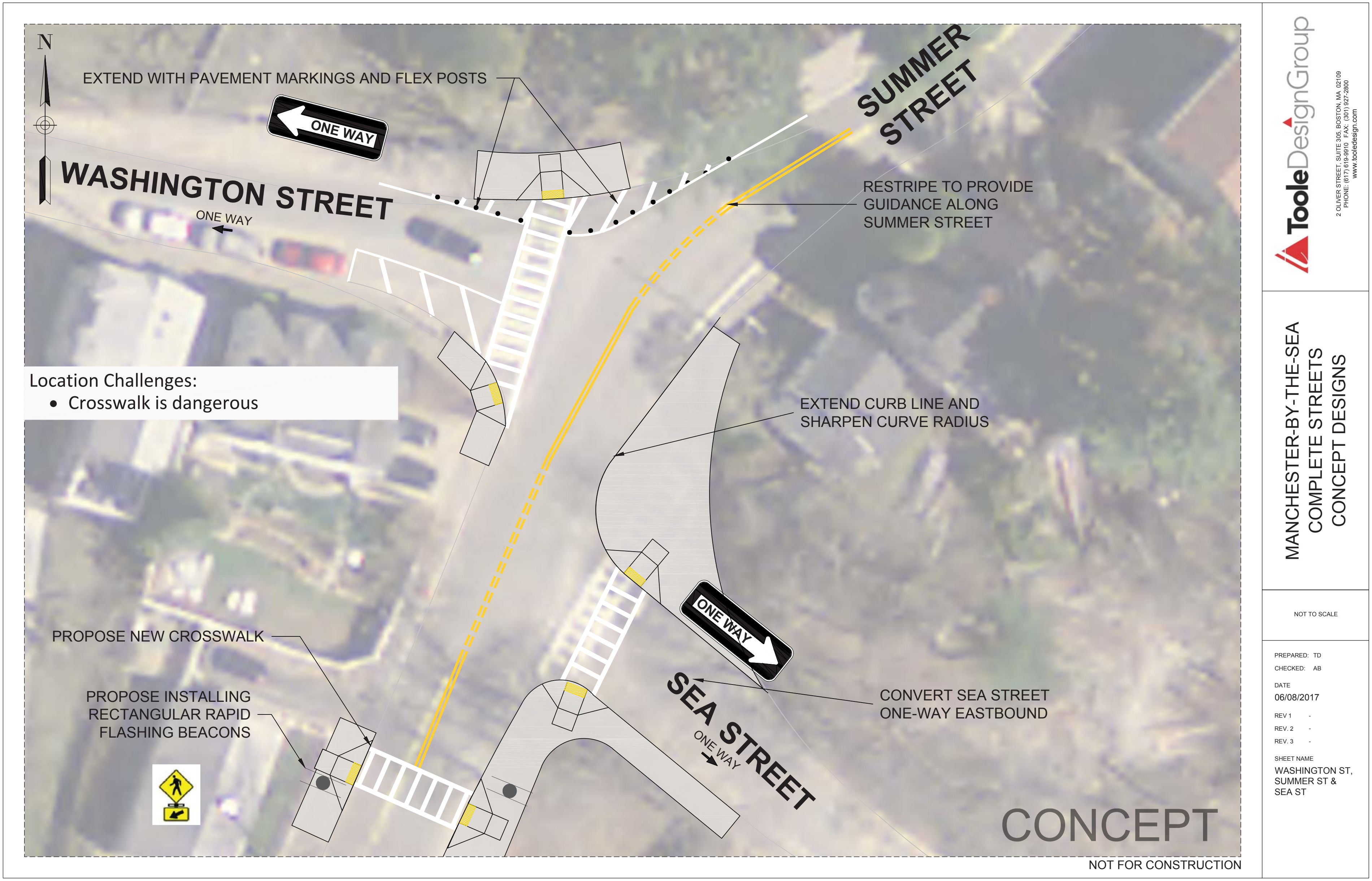
Item	Unit Price	Unit	Quantity	Est. Capital Costs
Curb Extension	$ 100.00	/EA	354	$ 35,422
Sign	$ 65.00	/EA	3	$ 195
Post	$ 150.00	/EA	3	450
Sign Post Removed & Reset	$ 200.00	/EA	1	200
Cross Walk & Stop Lines Refl. White (THERMOPLASTIC)	$ 2.25	/SF	467	$ 1,051
6" Reflectorized White Line (THERMOPLASTIC)	$ 1.00	/FT	240	$ 240
6" Reflectorized Yellow Line (THERMOPLASTIC)	$ 1.00	/FT	600	$ 600

Note: *Prices are estimated for construction only, and do not include design or additional studies. Estimates are for Prioritization Plan comparisons only.*

Sub-total	$	38,158
Contingency	$	7,632
Total	$	**45,790**

PROJECT CONCEPT # 3

Washington St., Summer St., & Sea St.



PROJECT CONCEPT # 3

Washington St., Summer St., & Sea St.

Project Costs & Timelines

Draft Project Construction Details			
Construction Timeline:	60 days	Additional Design:	YES
Design/Study Timeline:	90 days	Additional Studies:	NO

Per Unit Cost

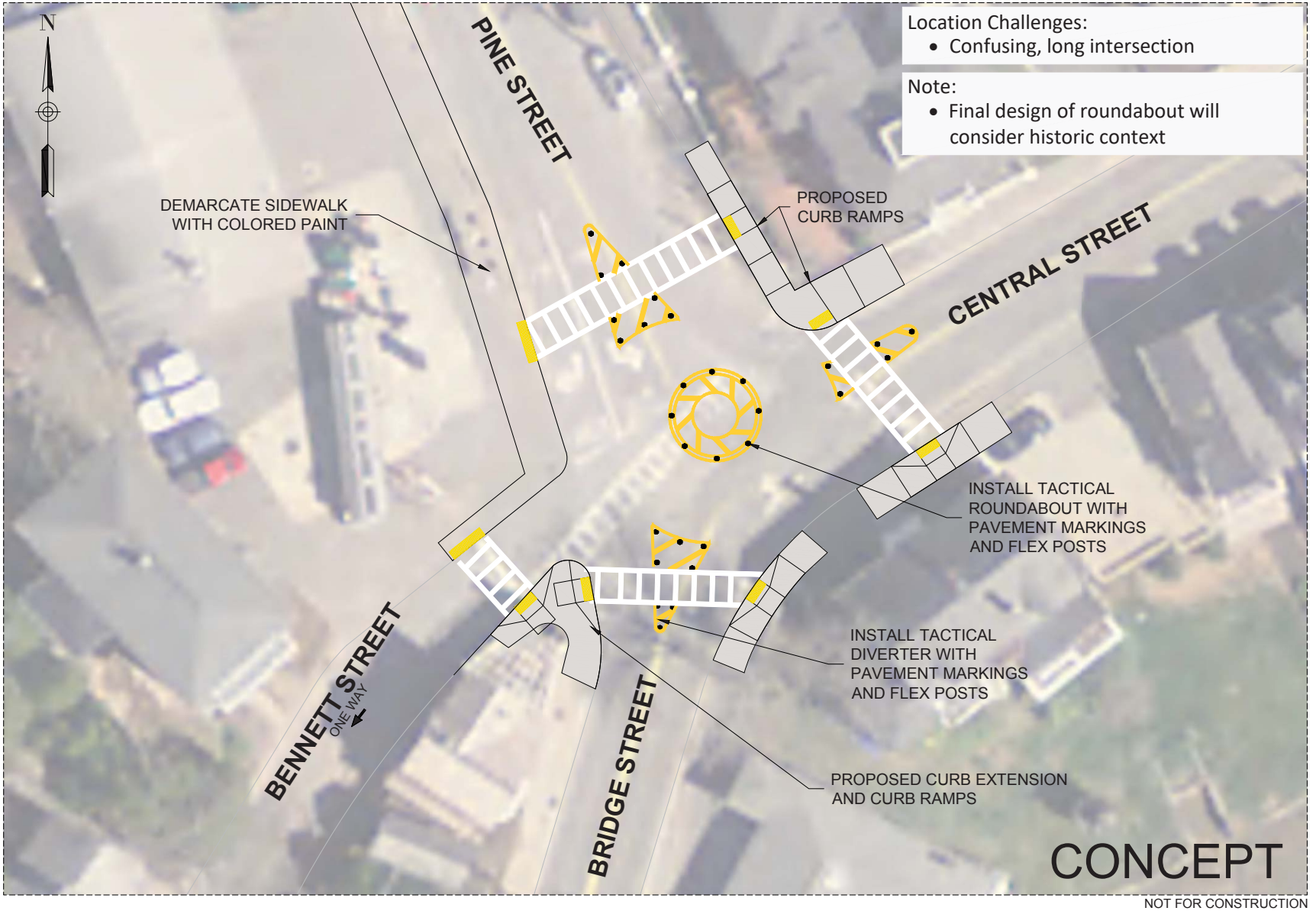
Item	Unit Price	Unit	Quantity	Est. Capital Costs
ADA Ramp	$ 3,000.00	/EA	5	$ 15,000
Curb Extension	$ 100.00	/SY	155	$ 15,456
RRFB	$ 7,500.00	/EA	1	$ 7,500
Flexpost - FG336	$ 50.00	/EA	14	$ 700
Cross Walks & Stop Lines Refl. White (THERMOPLASTIC)	$ 2.25	/SF	334	$ 752
6" Reflectorized White Line (THERMOPLASTIC)	$ 1.00	/FT	200	$ 200
6" Reflectorized Yellow Line (THERMOPLASTIC)	$ 1.00	/FT	300	$ 300

Note: *Prices are estimated for construction only, and do not include design or additional studies. Estimates are for Prioritization Plan comparisons only.*

Sub-total	$	39,907
Contingency	$	7,981
Total	$	**47,888**

PROJECT CONCEPT # 4

Pine St., Central St., & Bridge St.



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REV. 2 -
REV. 3 -
SHEET NAME
PINE ST, CENTRAL ST & BRIDGE ST

PROJECT CONCEPT # 4

Pine St., Central St., & Bridge St.

Project Costs & Timelines

Draft Project Construction Details			
Construction Timeline:	120 days	Additional Design:	YES
Design/Study Timeline:	150 days	Additional Studies:	YES

Per Unit Cost

Item	Unit Price	Unit	Quantity	Est. Capital Costs
ADA Ramp	$ 3,000.00	/EA	6	$ 18,000
Flexpost - FG336	$ 50.00	/EA	29	$ 1,450
Cross Walks & Stop Lines Refl. White (THERMOPLASTIC)	$ 2.25	/SF	504	$ 1,134
6" Reflectorized Yellow Line (THERMOPLASTIC)	$ 1.00	/FT	300	$ 300
Detectable Warning Pad	$ 100.00	/EA	2	$ 200

Note: *Prices are estimated for construction only, and do not include design or additional studies. Estimates are for Prioritization Plan comparisons only.*

Sub-total	$	21,084
Contingency	$	4,217
Total	$	**25,301**

PROJECT CONCEPT # 5

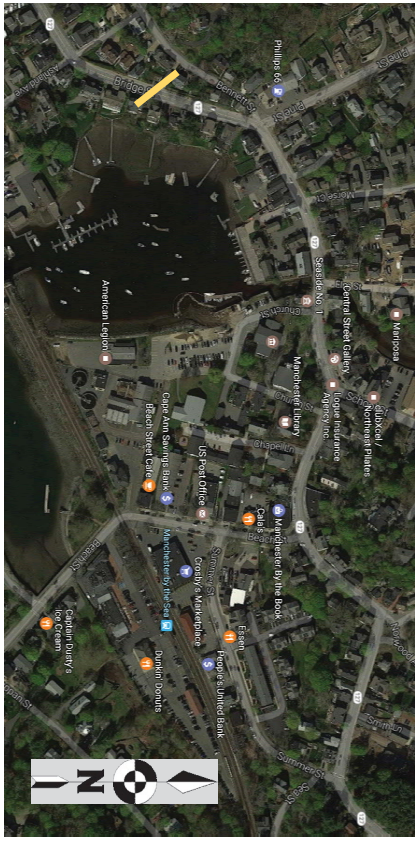
Route 127

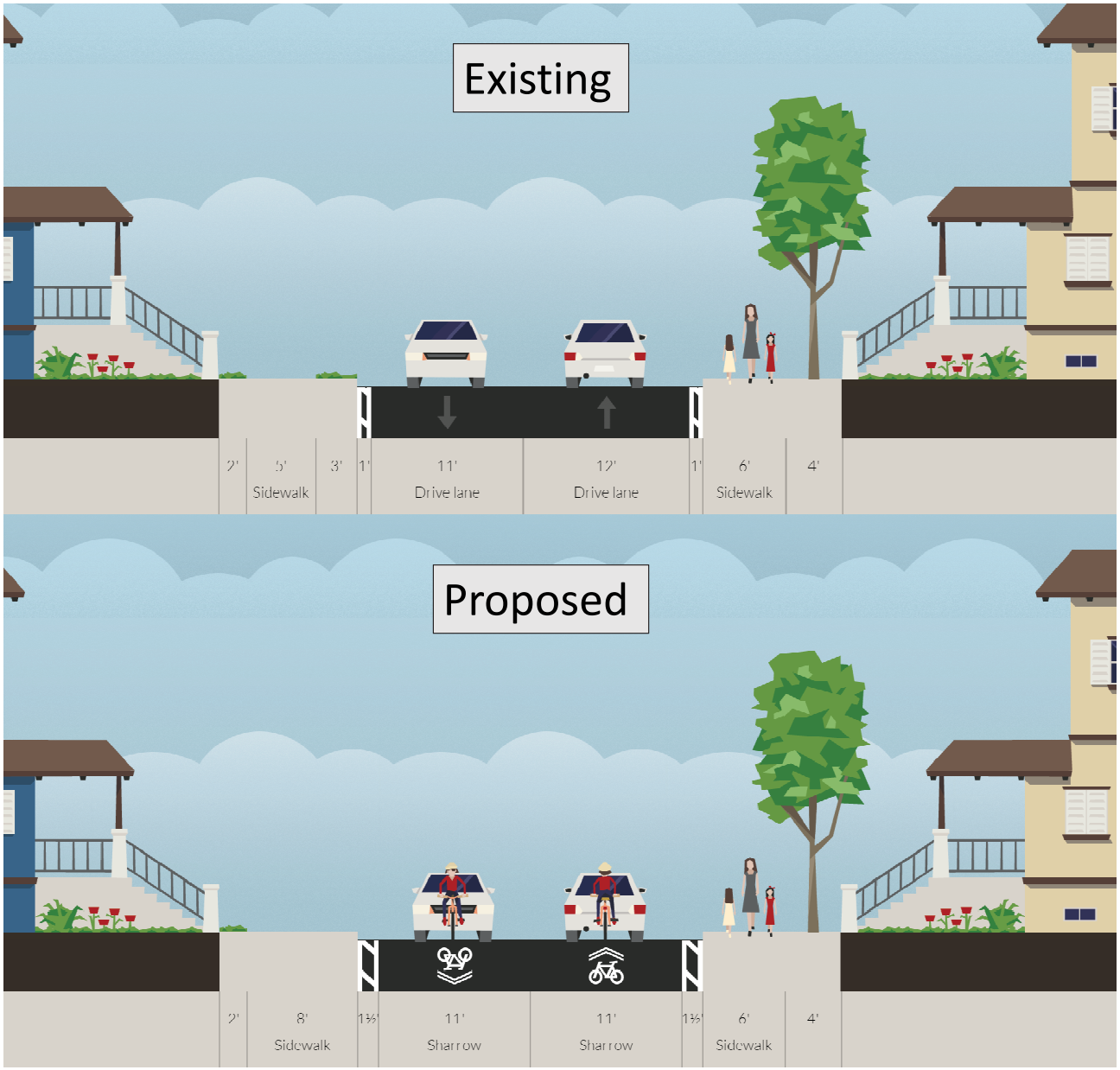
Project Challenges:

- Traffic Calming Needed

Additional Proposed Changes:

- Install an interactive radar speed feedback sign west of Ashland Avenue
- Install an interactive radar speed feedback sign east of Spy Rock Hill





Project Costs & Timelines

Draft Project Construction Details			
Construction Timeline:	30 days	Additional Design:	NO
Design/Study Timeline:	0 days	Additional Studies:	NO

Per Unit Cost

Item	Unit Price	Unit	Quantity	Est. Capital Costs
Shared Lane Markings	$ 300.00	/EA	30	$ 9,000
Speed Feedback Sign	$ 7,000.00	/EA	2	$ 14,000

Note: *Prices are estimated for construction only, and do not include design or additional studies. Estimates are for Prioritization Plan comparisons only.*

Sub-total	$	23,000
Contingency	$	4,600
Total	$	**27,600**

PROJECT CONCEPT # 6

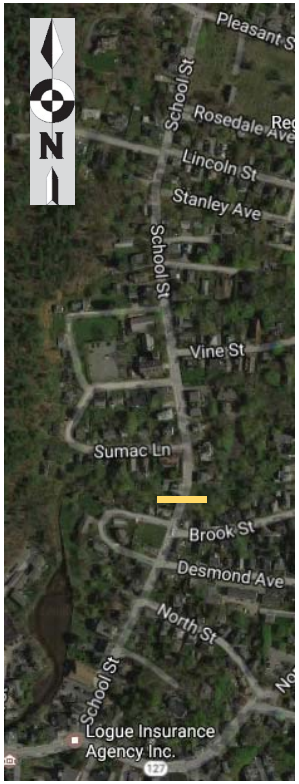
School St. Option A

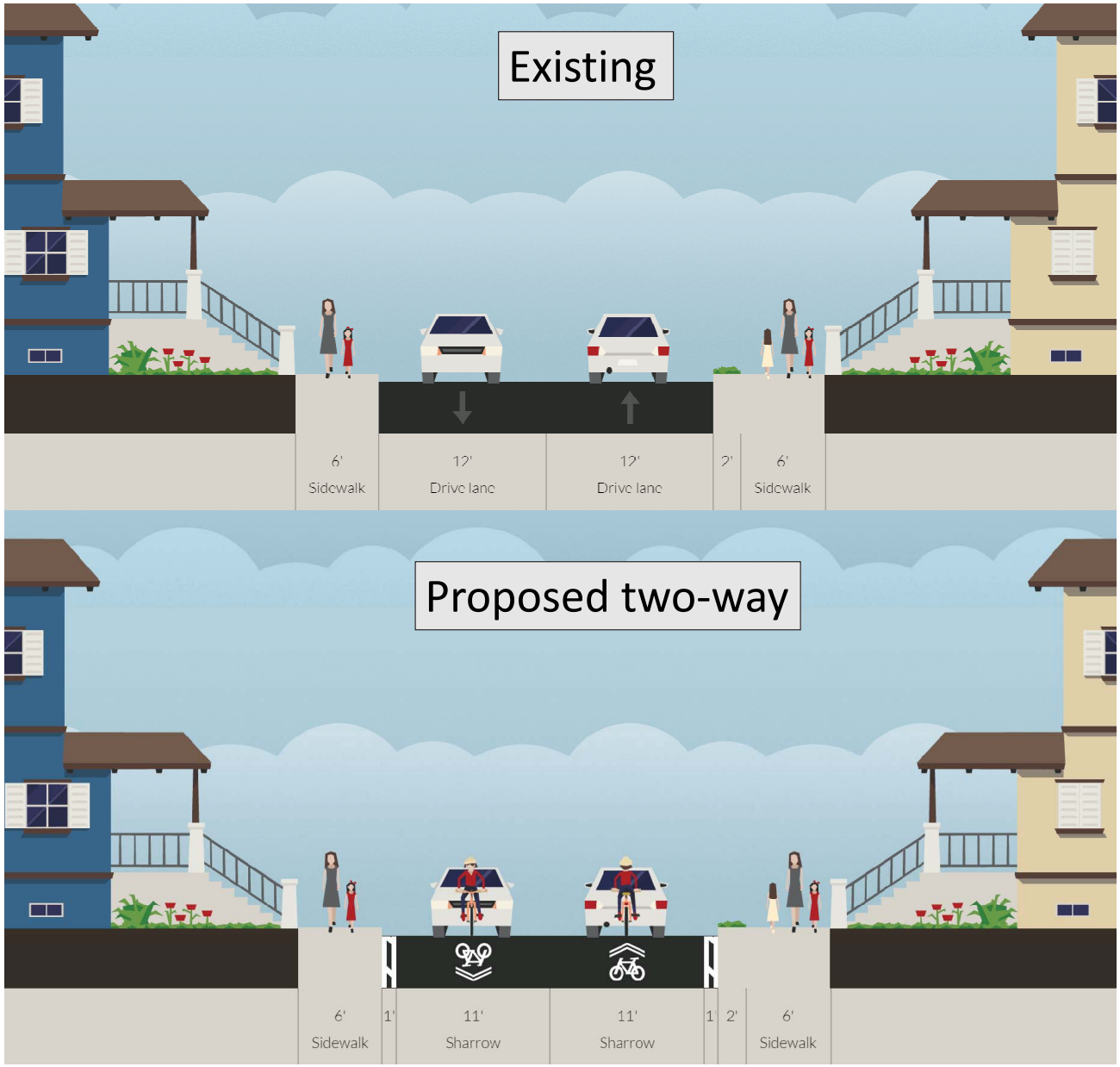
Project Challenges:

- Traffic calming needed

Additional Proposed Changes:

- Install “Welcome to Manchester-By-the-Sea” sign north of Pleasant Street.
- Install an interactive radar speed feedback sign south of Pleasant Street





Project Costs & Timelines

Draft Project Construction Details

See Page 39

Per Unit Cost

See Page 39

See Page 39

PROJECT CONCEPT # 6

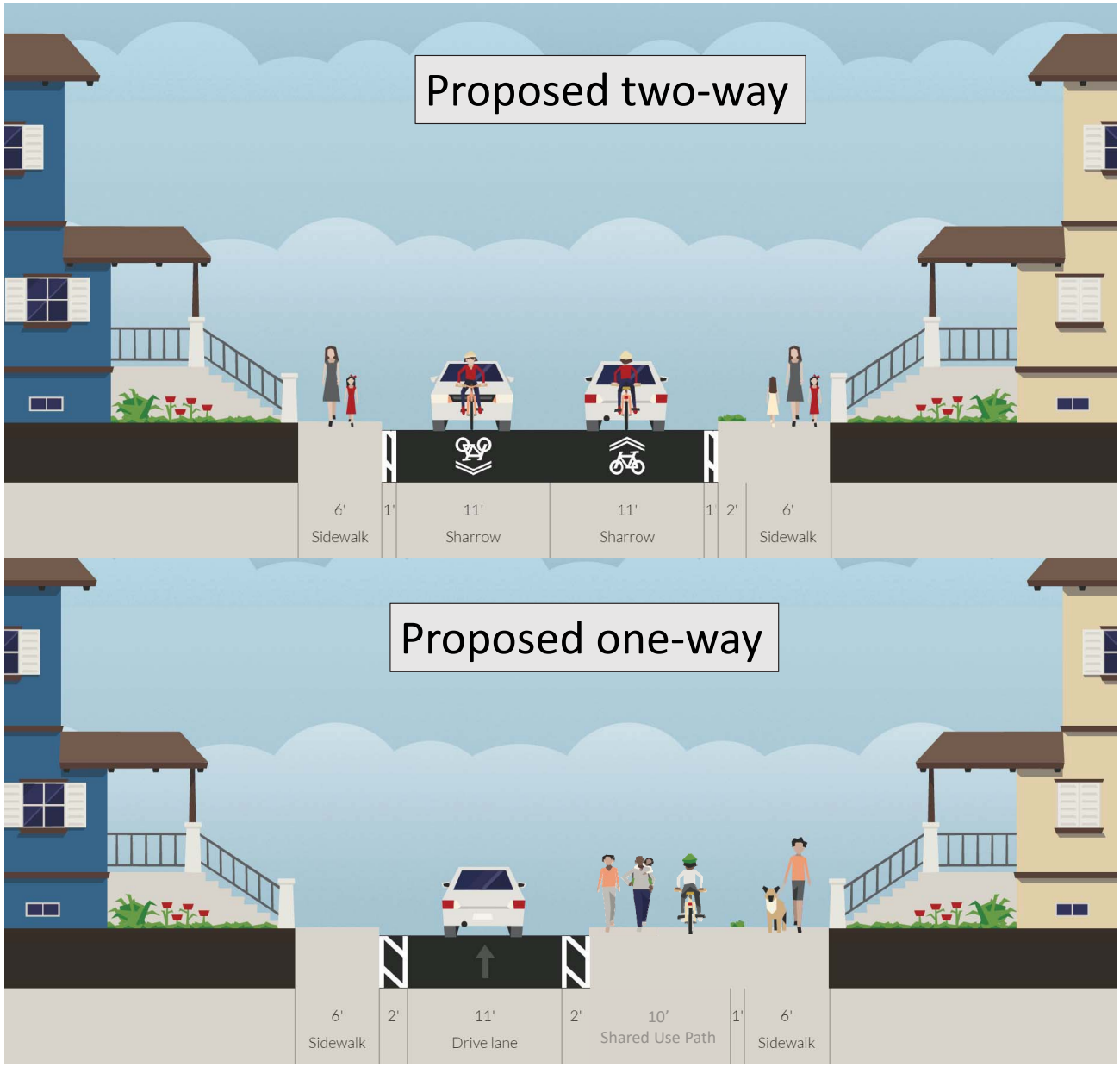
School St. Option B

Project Challenges:

- Traffic calming needed

Additional Proposed Changes:

- Install “Welcome to Manchester-By-the-Sea” sign north of Pleasant Street.
- Install an interactive radar speed feedback sign north of Pleasant Street



PROJECT CONCEPT # 6

School St. Option A or B

Project Costs & Timelines

Draft Project Construction Details			
Construction Timeline:	30 days	Additional Design:	NO
Design/Study Timeline:	0 days	Additional Studies:	NO

Per Unit Cost

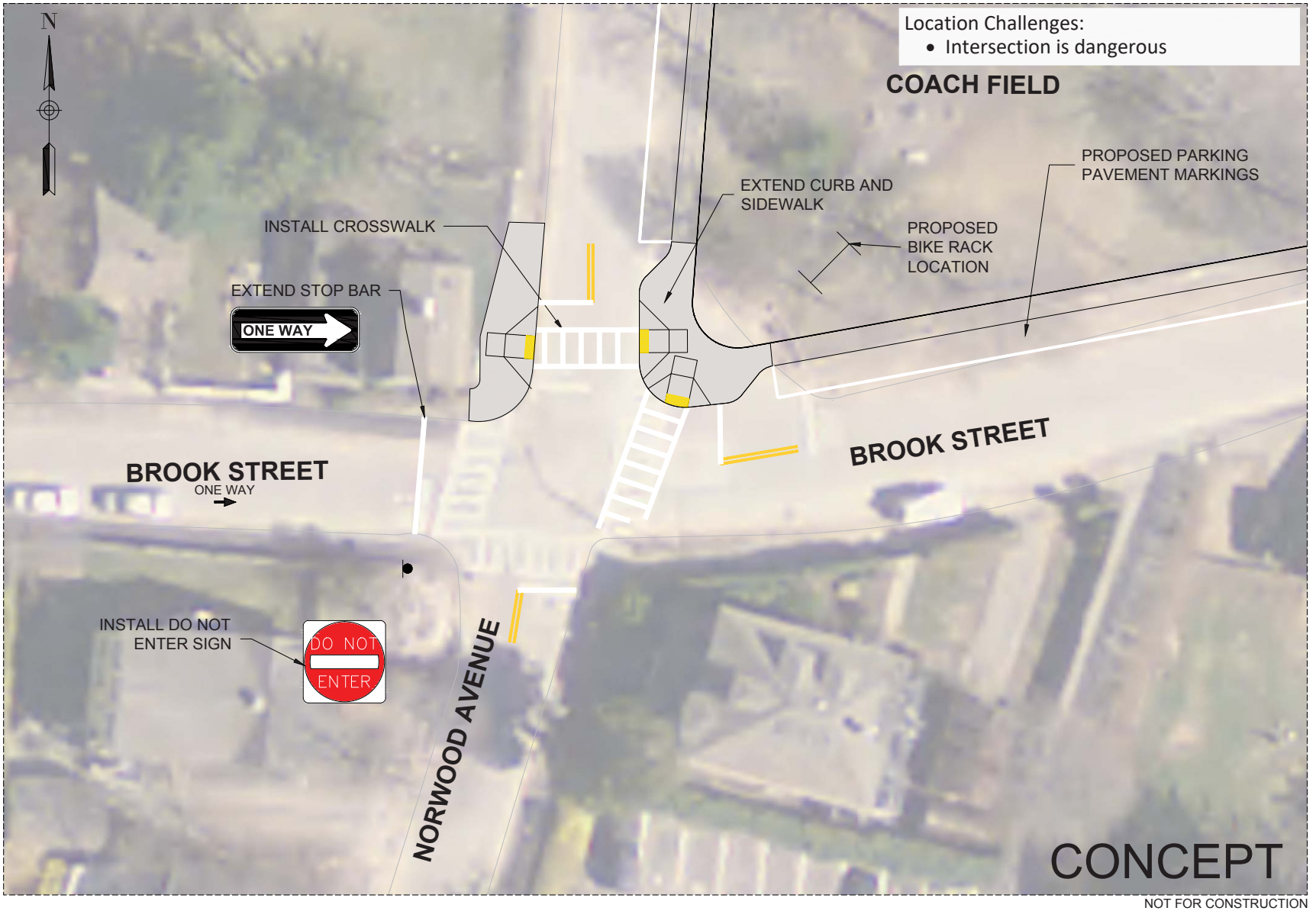
Item	Unit Price	Unit	Quantity	Est. Capital Costs
Shared Lane Markings	$ 300.00	/EA	40	$ 12,000
6" Reflectorized White Line (THERMOPLASTIC)	$ 1.00	/FT	6,000	$ 6,000
Speed Feedback Sign	$ 7,000.00	/EA	1	$ 7,000

Note: *Prices are estimated for construction only, and do not include design or additional studies. Estimates are for Prioritization Plan comparisons only.*

Sub-total	$	25,000
Contingency	$	5,000
Total	$	**30,000**

PROJECT CONCEPT # 7

Norwood Ave. & Brook St.



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DATE
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REV 1 -
REV. 2 -
REV. 3 -
SHEET NAME
NORWOOD AVE &
BROOK ST

PROJECT CONCEPT # 7

Norwood Ave. & Brook St.

Project Costs & Timelines

Draft Project Construction Details			
Construction Timeline:	90 days	Additional Design:	YES
Design/Study Timeline:	90 days	Additional Studies:	NO

Per Unit Cost

Item	Unit Price	Unit	Quantity	Est. Capital Costs
ADA Ramp	$ 3,000.00	/EA	1	$ 3,000
Curb Extension	$ 100.00	/SY	63	$ 6,256
Sign	$ 65.00	/EA	2	$ 130
Post	$ 150.00	/EA	2	$ 300
Bike Rack	$ 700.00	/EA	1	$ 700
Cross Walks & Stop Lines Refl. White (THERMOPLASTIC)	$ 2.25	/SF	275	$ 619
6” Reflectorized White Line (THERMOPLASTIC)	$ 1.00	/FT	725	$ 725
6” Reflectorized Yellow Line (THERMOPLASTIC)	1.00	/FT	100	$ 100

Note: *Prices are estimated for construction only, and do not include design or additional studies. Estimates are for Prioritization Plan comparisons only.*

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Sub-total	$	11,829
Contingency	$	2,366
Total	$	**14,195**

PROJECT CONCEPT # 8

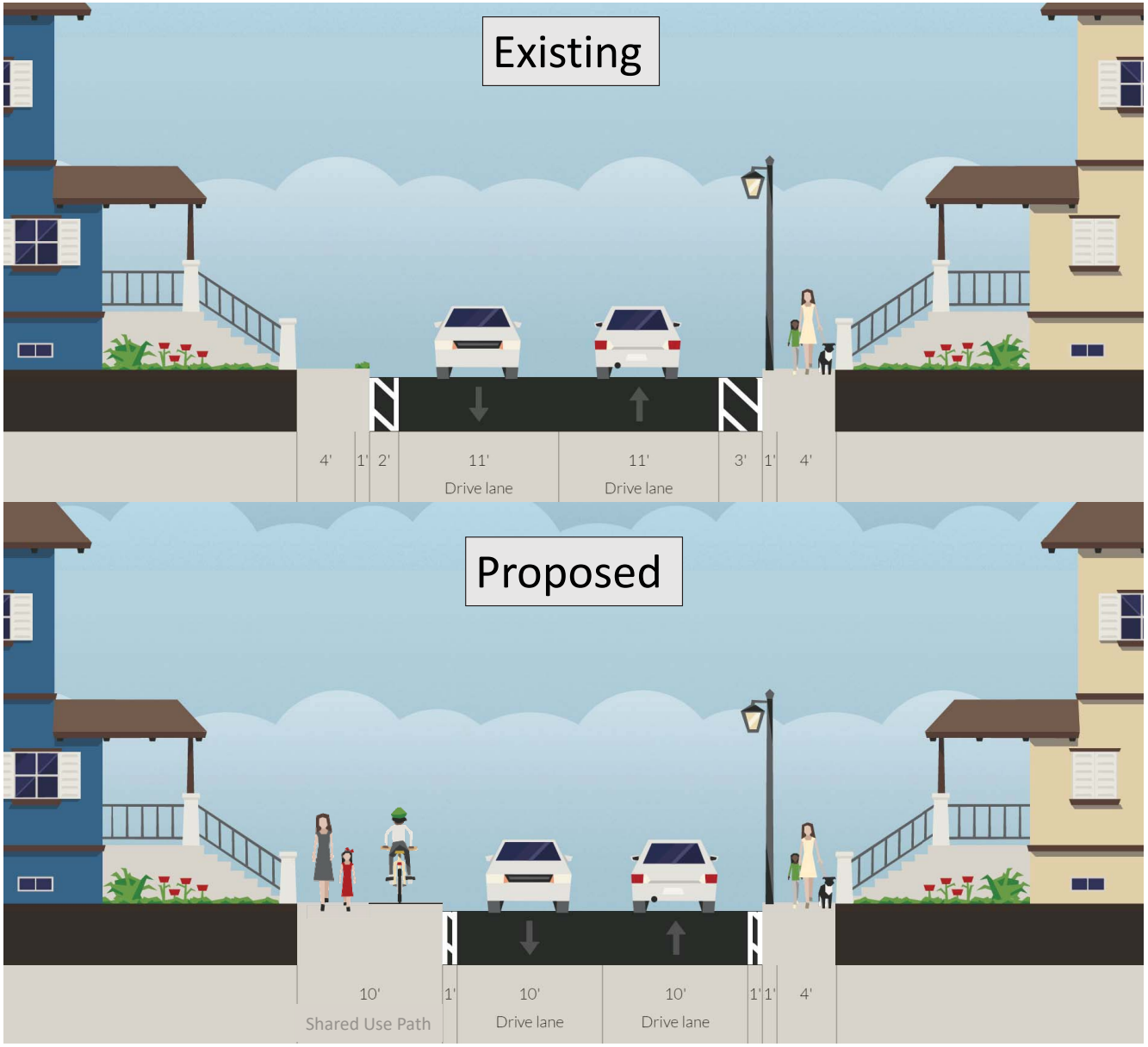
Pine St. Corridor

Project Challenges:

- Focus efforts around improving safety and access along Pine St
- Sidewalks

Additional Proposed Changes:

- Install “Welcome to Manchester-By-the-Sea” sign north of Pleasant Street.
- Install an interactive radar speed feedback sign south of Pleasant Street



PROJECT CONCEPT # 8

Pine St. Corridor

Project Costs & Timelines

Draft Project Construction Details			
Construction Timeline:	150 days	Additional Design:	YES
Design/Study Timeline:	120 days	Additional Studies:	NO

Per Unit Cost

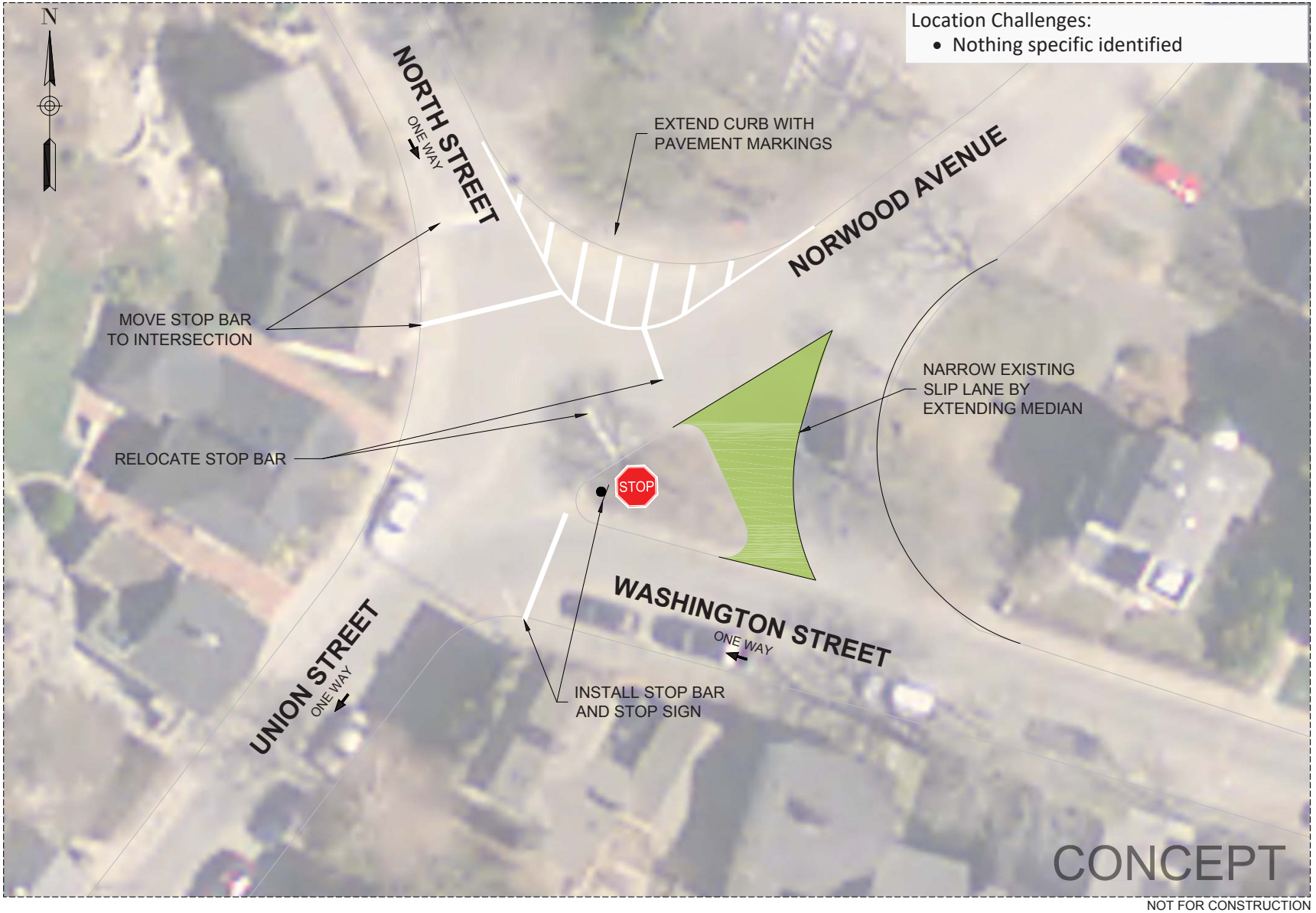
Item	Unit Price	Unit	Quantity	Est. Capital Costs
Sidewalk Reconstruction	$ 125.00	/SY	6333	$ 791,625
Sign	$ 65.00	/EA	8	$ 520
Post	$ 150.00	/EA	8	$ 1,200
Speed Feedback Sign	$ 7,000.00	/EA	1	$ 7,000

Note: *Prices are estimated for construction only, and do not include design or additional studies. Estimates are for Prioritization Plan comparisons only.*

Sub-total	$	800,345
Contingency	$	160,069
Total	$	**960,414**

PROJECT CONCEPT # 9

Washington St. & Norwood Ave.



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DATE
06/08/2017
REV 1 -
REV. 2 -
REV. 3 -
SHEET NAME
WASHINGTON ST
& NORWOOD AVE

PROJECT CONCEPT # 9

Washington St. & Norwood Ave.

Project Costs & Timelines

Draft Project Construction Details			
Construction Timeline:	90 days	Additional Design:	YES
Design/Study Timeline:	90 days	Additional Studies:	NO

Per Unit Cost

Item	Unit Price	Unit	Quantity	Est. Capital Costs
Median Refuge Island	$ 100.00	/SY	84	$ 8,400
Cross Walks & Stop Lines Refl. White (THERMOPLASTIC)	$ 2.25	/SF	52	$ 117
6" Reflectorized White Line (THERMOPLASTIC)	$ 1.00	/FT	80	$ 80
Sign	$ 65.00	/EA	1	$ 65
Post	$ 150.00	/EA	1	$ 150

Note: *Prices are estimated for construction only, and do not include design or additional studies. Estimates are for Prioritization Plan comparisons only.*

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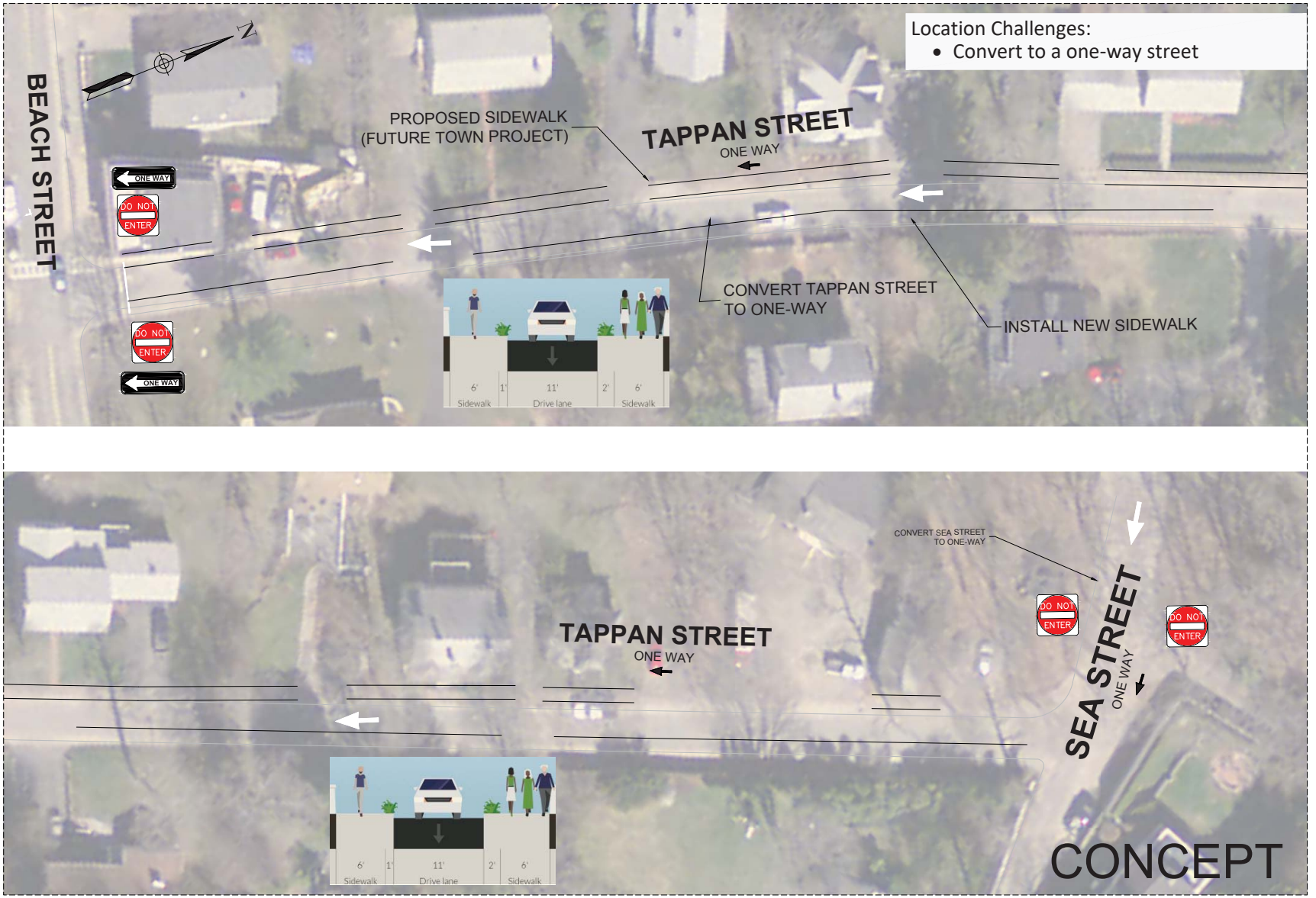
Sub-total	$	8,812
Contingency	$	1,762
Total	$	**10,574**

PROJECT CONCEPT # 10

Tappan St. & Sea St.



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MANCHESTER-BY-THE-SEA
COMPLETE STREETS
CONCEPT DESIGNS

10 20 40
NOT TO SCALE

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CHECKED: AB
DATE
06/08/2017
REV 1 -
REV. 2 -
REV. 3 -
SHEET NAME
TAPPAN ST AND SEA STREET

PROJECT CONCEPT # 10

Tappan St. & Sea St.

Project Costs & Timelines

Draft Project Construction Details			
Construction Timeline:	120 days	Additional Design:	YES
Design/Study Timeline:	150 days	Additional Studies:	YES

Per Unit Cost

Item	Unit Price	Unit	Quantity	Est. Capital Costs
Sidewalk Reconstruction	$ 125.00	/SY	667	$ 83,333
Sign	$ 65.00	/EA	6	$ 390
Post	$ 150.00	/EA	4	$ 600

Note: *Prices are estimated for construction only, and do not include design or additional studies. Estimates are for Prioritization Plan comparisons only.*

Sub-total	$	84,323
Contingency	$	16,865
Total	$	**101,188**

PROJECT CONCEPT # 11

Harbor St. & Bridge St.

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MANCHESTER-BY-THE-SEA
COMPLETE STREETS
CONCEPT DESIGNS

NOT TO SCALE

PREPARED: TD
CHECKED: AB
DATE
06/08/2017
REV 1 -
REV. 2 -
REV. 3 -
SHEET NAME
HARBOR ST & BRIDGE ST

PROJECT CONCEPT # 11

Harbor St. & Bridge St.

Project Costs & Timelines

Draft Project Construction Details			
Construction Timeline:	120 days	Additional Design:	YES
Design/Study Timeline:	90 days	Additional Studies:	NO

Per Unit Cost

Item	Unit Price	Unit	Quantity	Est. Capital Costs
Curb Extension	$ 100.00	/SY	592	$ 59,167
ADA Ramp	$ 3,000.00	/EA	1	$ 3,000
RRFB	$ 7,500.00	/EA	2	$ 15,000
Cross Walk & Stop Lines Refl. White (THERMOPLASTIC)	$ 2.25	/SF	96	$ 216
6" Reflectorized Yellow Line (THERMOPLASTIC)	$ 1.00	/FT	40	$ 40

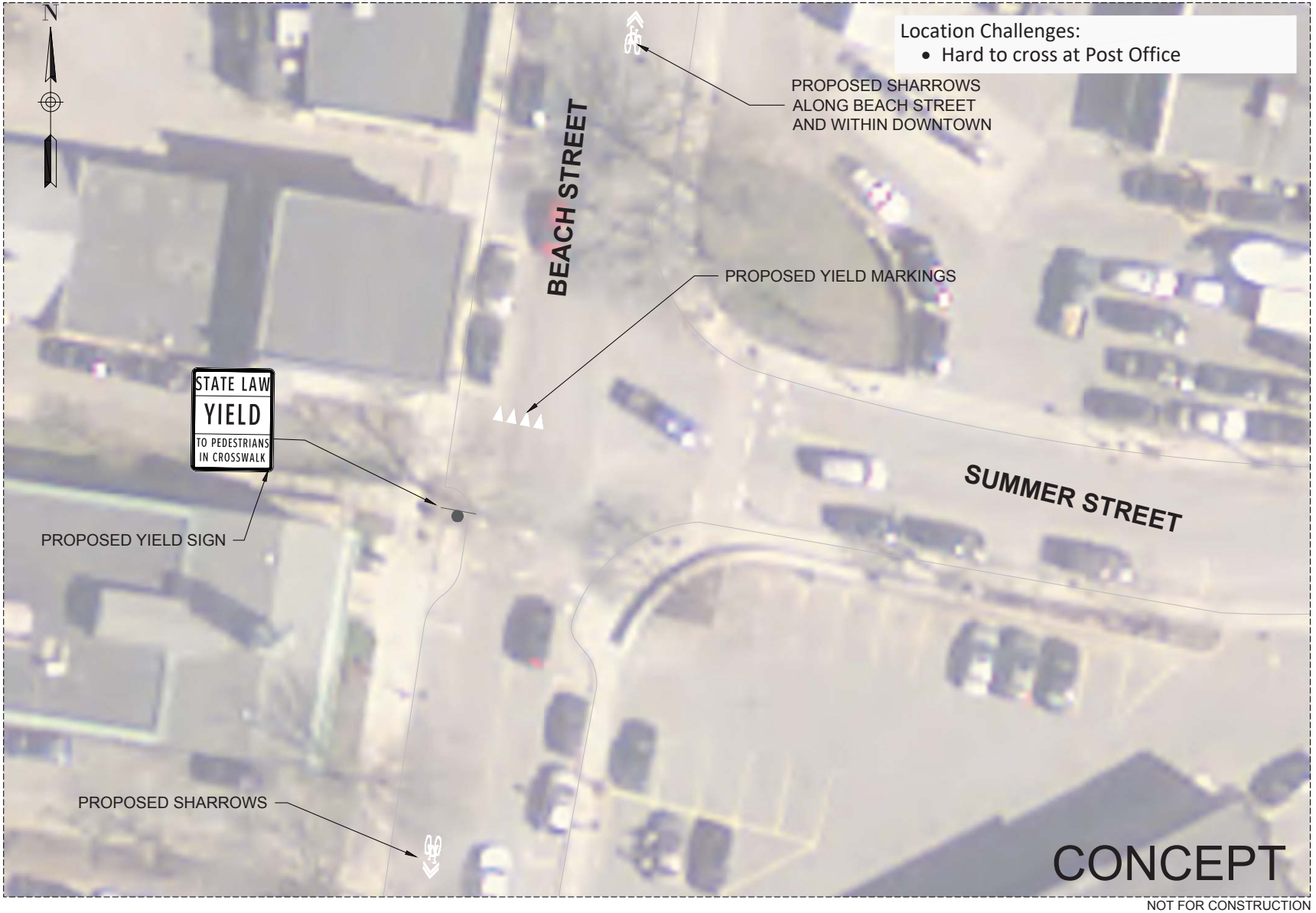
Note: *Prices are estimated for construction only, and do not include design or additional studies. Estimates are for Prioritization Plan comparisons only.*

Toole Design Group

Sub-total	$	77,423
Contingency	$	15,485
Total	$	**92,907**

PROJECT CONCEPT # 12

Beach St. & Summer St.



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MANCHESTER-BY-THE-SEA
COMPLETE STREETS
CONCEPT DESIGNS

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REV. 2 -
REV. 3 -
SHEET NAME
BEACH ST & SUMMER ST

PROJECT CONCEPT # 12

Beach St. & Summer St.

Project Costs & Timelines

Draft Project Construction Details			
Construction Timeline:	30 days	Additional Design:	NO
Design/Study Timeline:	0 days	Additional Studies:	NO

Per Unit Cost

Item	Unit Price	Unit	Quantity	Est. Capital Costs
Cross Walks & Stop Lines Refl. White (THERMOPLASTIC)	$ 2.25	/SF	12	$ 27
Shared Lane Markings	$ 300.00	/EA	2	$ 600
Sign	$ 65.00	/EA	1	$ 65
Post	$ 150.00	/EA	1	$ 150

Note: *Prices are estimated for construction only, and do not include design or additional studies. Estimates are for Prioritization Plan comparisons only.*

Sub-total	$	842
Contingency	$	168
Total	$	**1,010**

PROJECT CONCEPT # 13

Pine St., Pleasant St., & School St.

"The Heater"

Project Challenges:

- Create a bicycle and pedestrian route around this loop

Proposed Changes:

- Install pedestrian-scale wayfinding signs for Powder House Hill Reservation trail heads, as well as popular town destinations
- Install vehicle-scale bike route and walking route signs to create awareness

PROJECT CONCEPT # 13

Pine St., Pleasant St., & School St.

Project Costs & Timelines

Draft Project Construction Details

Construction Timeline:	30 days	Additional Design:	NO
Design/Study Timeline:	0 days	Additional Studies:	NO

Per Unit Cost

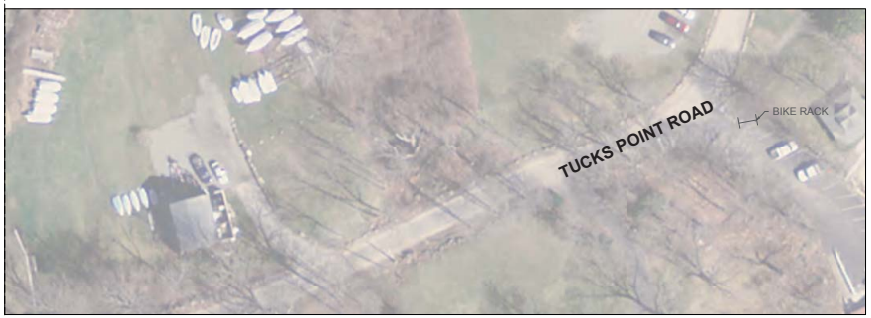
Item	Unit Price	Unit	Quantity	Est. Capital Costs
Sign	$ 65.00	/EA	7	$ 455
Post	$ 150.00	/EA	7	$ 1,050

Note: *Prices are estimated for construction only, and do not include design or additional studies. Estimates are for Prioritization Plan comparisons only.*

Sub-total	$	1,505
Contingency	$	301
Total	$	**1,806**

PROJECT CONCEPT # 14

Bike Racks - Various Locations



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MANCHESTER-BY-THE-SEA
COMPLETE STREETS
CONCEPT DESIGNS

NOT TO SCALE

PREPARED: TD
CHECKED: AB
DATE
06/08/2017
REV 1 -
REV. 2 -
REV. 3 -
SHEET NAME
BIKE RACKS

PROJECT CONCEPT # 14

Bike Racks - Various Locations

Project Costs & Timelines

Draft Project Construction Details			
Construction Timeline:	30 days	Additional Design:	NO
Design/Study Timeline:	0 days	Additional Studies:	NO

Per Unit Cost

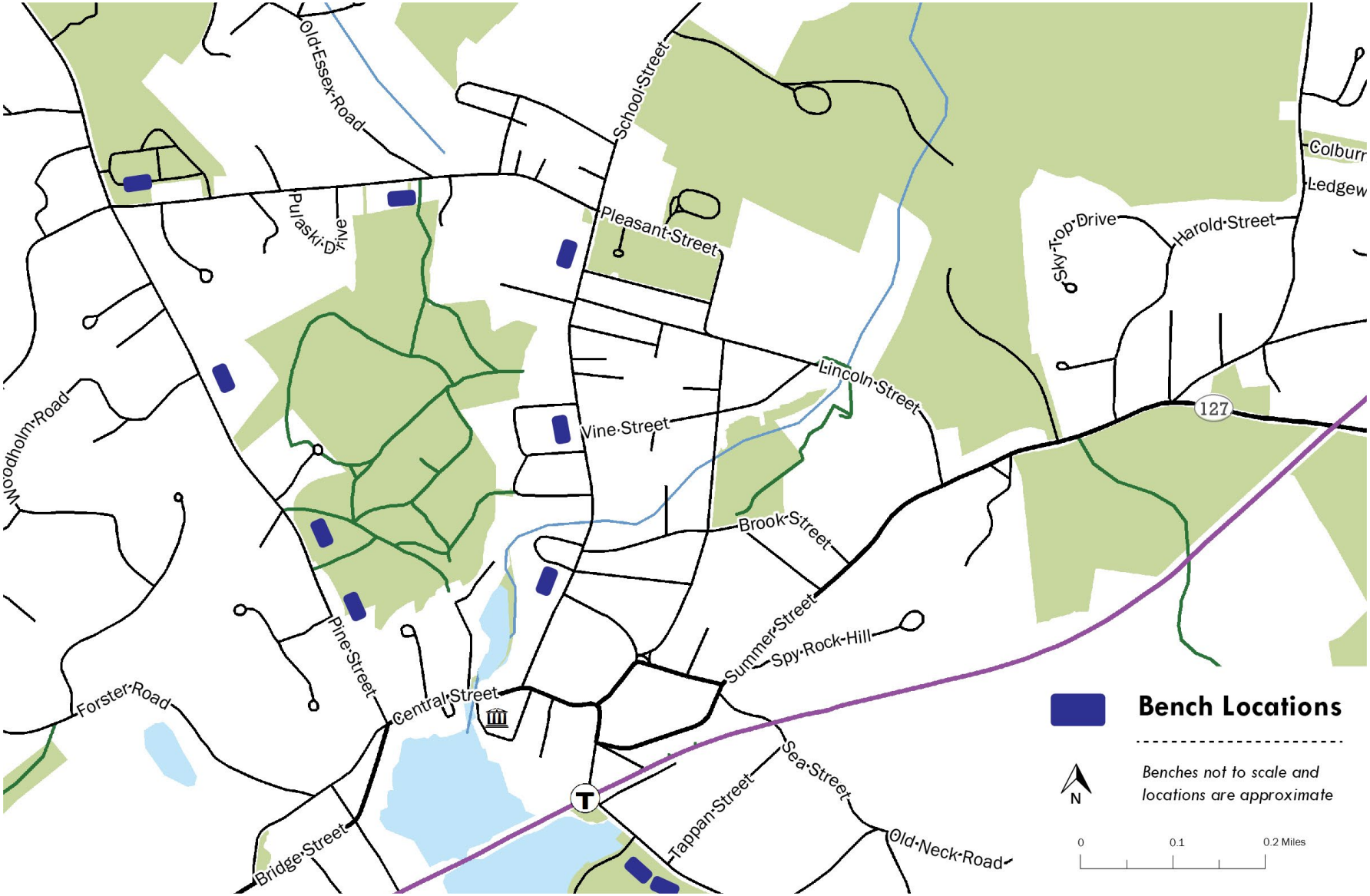
Item	Unit Price	Unit	Quantity	Est. Capital Costs
Bike Rack	$ 700.00	/EA	3	$ 2,100
Bollard Bike Rack	$ 200.00	/EA	13	$ 2,600

Note: *Prices are estimated for construction only, and do not include design or additional studies. Estimates are for Prioritization Plan comparisons only.*

Sub-total	$	4,700
Contingency	$	940
Total	$	**5,640**

PROJECT CONCEPT # 15

Benches - Various Locations



PROJECT CONCEPT # 15

Benches - Various Locations

Project Costs & Timelines

Draft Project Construction Details			
Construction Timeline:	30 days	Additional Design:	NO
Design/Study Timeline:	0 days	Additional Studies:	NO

Per Unit Cost

Item	Unit Price	Unit	Quantity	Est. Capital Costs
Bench	$ 1,500.00	/EA	10	$ 15,000

Note: *Prices are estimated for construction only, and do not include design or additional studies. Estimates are for Prioritization Plan comparisons only.*

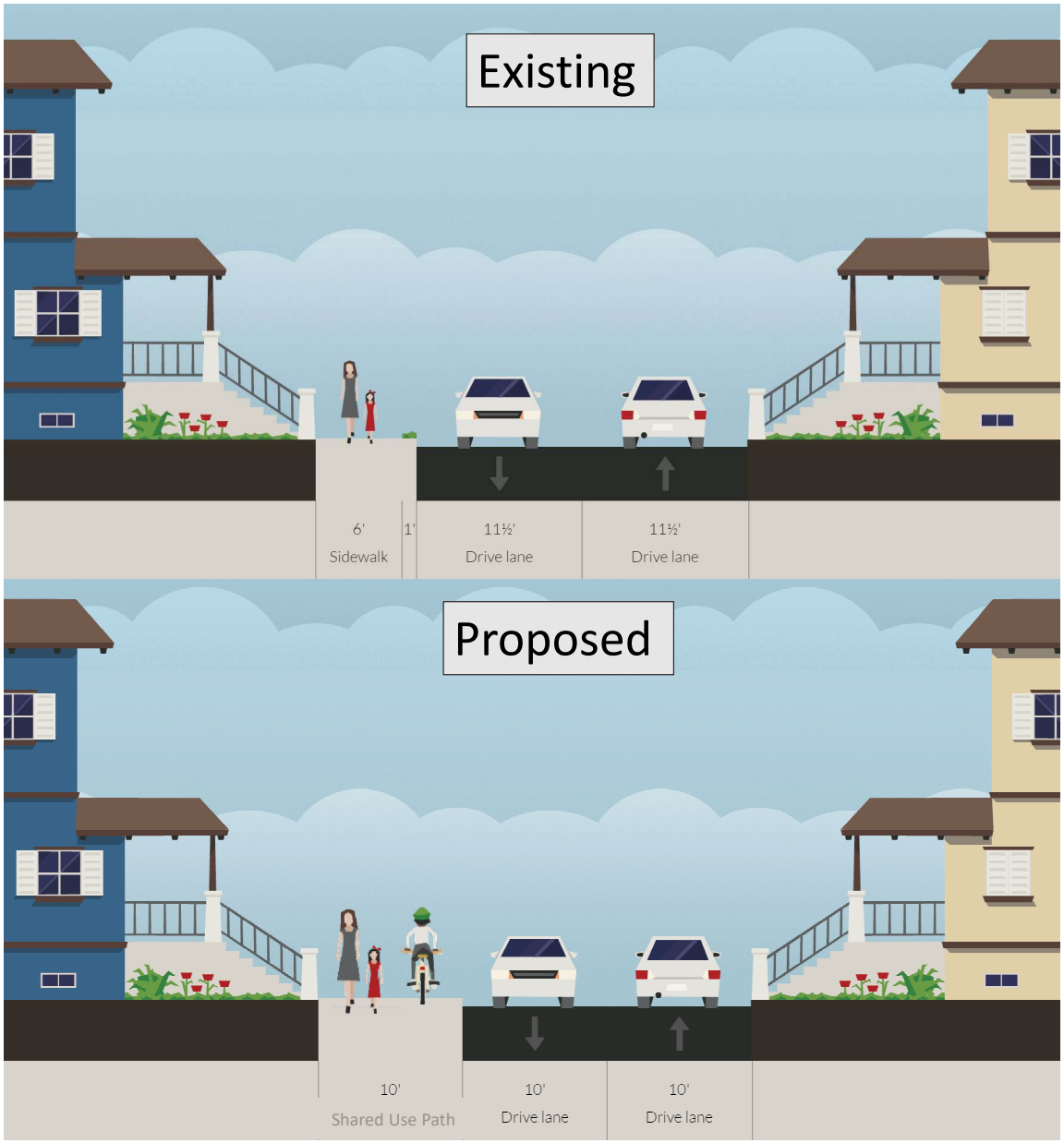
Sub-total	$	15,000
Contingency	$	3,000
Total	$	**18,000**

PROJECT CONCEPT # 16

Beach St. Part 1

Project Challenges:

- Improve bikeability to beaches



PROJECT CONCEPT # 16

Beach St. Part 1

Project Costs & Timelines

Draft Project Construction Details

See Page 61

Per Unit Cost

See Page 61

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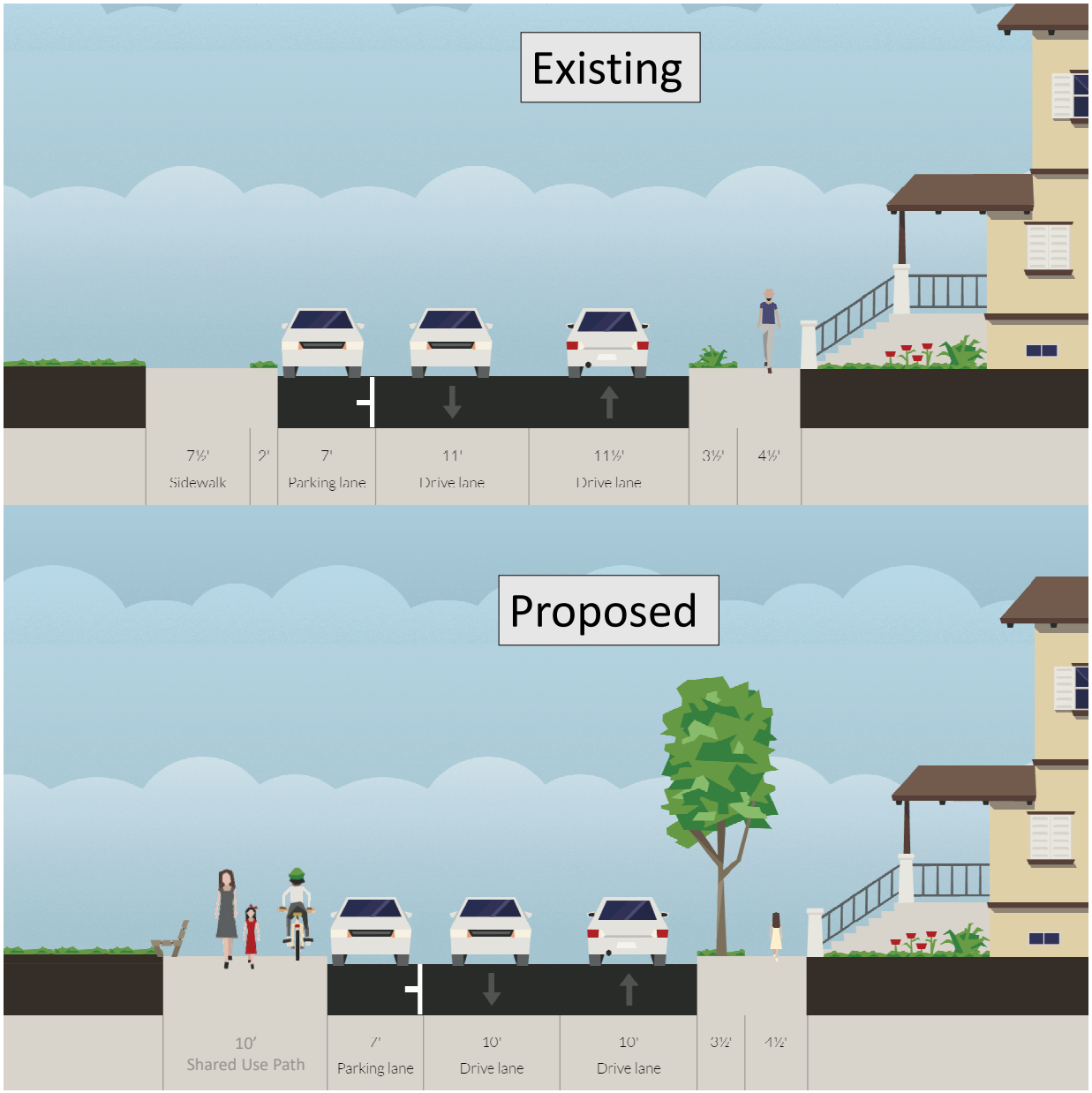
See Page 61

PROJECT CONCEPT # 16

Beach St. Part 2

Project Challenges:

- Improve bikeability to beaches



PROJECT CONCEPT # 16

Beach St. Part 1 & Part 2

Project Costs & Timelines

Draft Project Construction Details			
Construction Timeline:	90 days	Additional Design:	YES
Design/Study Timeline:	90 days	Additional Studies:	NO

Per Unit Cost

Item	Unit Price	Unit	Quantity	Est. Capital Costs
Sidewalk Reconstruction	$ 125.00	/SY	950	$ 118,750
6" Reflectorized White Line (THERMOPLASTIC)	$ 1.00	/FT	1250	$ 1,250
Park Bench	$ 2,500.00	/EA	6	$ 15,000

Note: *Prices are estimated for construction only, and do not include design or additional studies. Estimates are for Prioritization Plan comparisons only.*

Sub-total	$	120,000
Contingency	$	24,000
Total	$	**144,000**

PROJECT CONCEPT # 17

Pine St. & Pleasant St.

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PREPARED: TD
CHECKED: AB
DATE
06/08/2017
REV 1 -
REV. 2 -
REV. 3 -
SHEET NAME
PINE ST & PLEASANT ST

PROJECT CONCEPT # 17

Pine St. & Pleasant St.

Project Costs & Timelines

Draft Project Construction Details			
Construction Timeline:	120 days	Additional Design:	YES
Design/Study Timeline:	90 days	Additional Studies:	NO

Per Unit Cost

Item	Unit Price	Unit	Quantity	Est. Capital Costs
Curb Extension	$ 100.00	/SY	291	$ 29,111
ADA Ramp	$ 3,000.00	/EA	3	$ 9,000
Flashing LED STOP Sign	$ 1,600.00	/EA	4	$ 6,400
Cross Walks & Stop Lines Refl. White (THERMOPLASTIC)	$ 2.25	/SF	162	$ 365
6" Reflectorized Yellow Line (THERMOPLASTIC)	$ 1.00	/FT	104	$ 104

Note: *Prices are estimated for construction only, and do not include design or additional studies. Estimates are for Prioritization Plan comparisons only.*

Sub-total	$	44,980
Contingency	$	8,996
Total	$	**53,976**

PROJECT CONCEPT # 18

School St. & Lincoln St.

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MANCHESTER-BY-THE-SEA
COMPLETE STREETS
CONCEPT DESIGNS

NOT TO SCALE

PREPARED: TD
CHECKED: AB
DATE
06/08/2017
REV 1 -
REV. 2 -
REV. 3 -
SHEET NAME
SCHOOL ST & LINCOLN ST

PROJECT CONCEPT # 18

School St. & Lincoln St.

Project Costs & Timelines

Draft Project Construction Details			
Construction Timeline:	60 days	Additional Design:	YES
Design/Study Timeline:	90 days	Additional Studies:	NO

Per Unit Cost

Item	Unit Price	Unit	Quantity	Est. Capital Costs
ADA Ramp	$ 3,000.00	/EA	2	$ 6,000
RRFB	$ 7,500.00	/EA	2	$ 15,000
Cross Walks & Stop Lines Refl. White (THERMOPLASTIC)	$ 2.25	/SF	100	$ 225

Note: *Prices are estimated for construction only, and do not include design or additional studies. Estimates are for Prioritization Plan comparisons only.*

Sub-total	$	21,225
Contingency	$	4,245
Total	$	**25,470**

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APPENDIX C:
LOCAL ACCESS SCORE MAPS

LOCAL ACCESS SCORE MAPS

What is the Local Access Tool?

The Local Access Tool is designed to map the utility of pedestrian and cyclist infrastructure at the community level. The tool was used to identify the high, moderate, and low utility roads (as determined by population density, traffic, and proximity to services such as schools, businesses, and transit) as well as the availability of sidewalks for pedestrians. Of major concern are high-utility roads that have either no sidewalks or sidewalks only on one side of the street. The result was a map of the gaps in sidewalk infrastructure throughout Manchester-by-the-Sea.

The tool was also used to determine roadway utility for cyclists. Using the same criteria (population density, proximity to services, and traffic), Manchester-by-the-Sea's streets were classified based on lowest, low, moderate, high and highest utility for cyclists and mapped in a comprehensive bike utility map. The Local Access Tool results are used to identify the areas in the Town demonstrating high demand for bicycle and pedestrian infrastructure. The "Sidewalk Gaps" map and "Bike Utility" map can be found on the following pages.

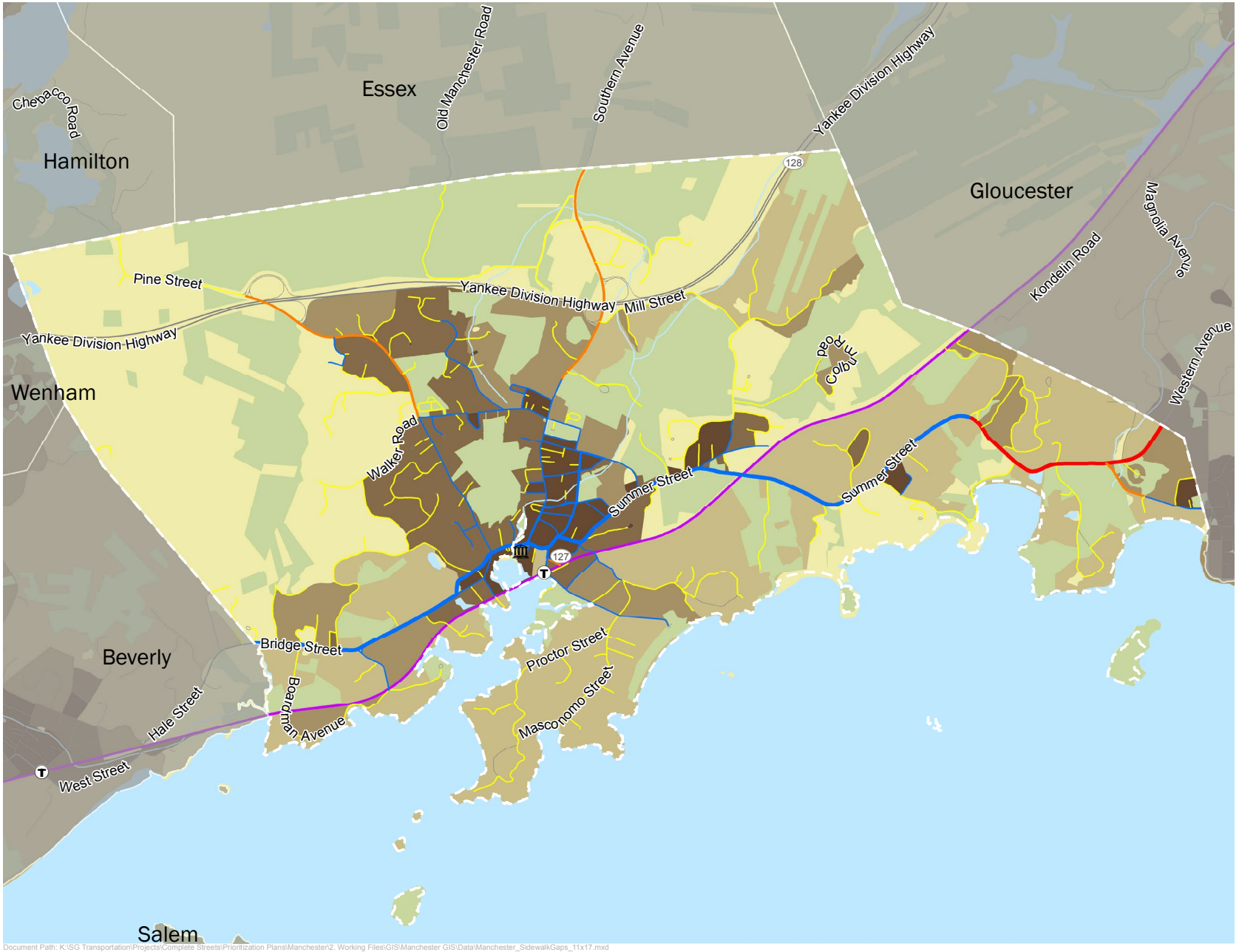


Figure 9: *Sidewalk Gaps Map.*

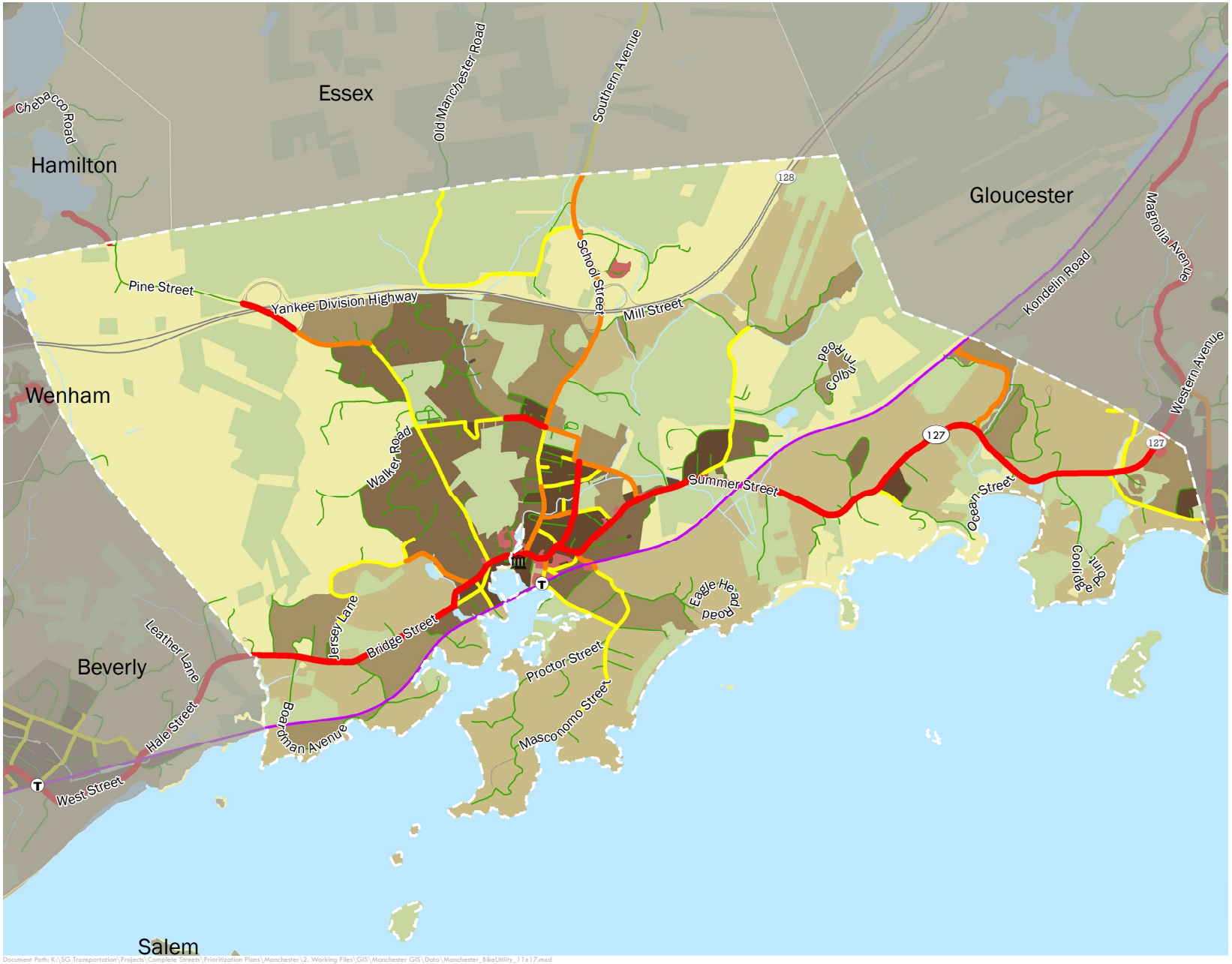


Figure 10: *Bike Utility Map.*

APPENDIX D: CROSSWALK & SIDEWALK INVENTORY

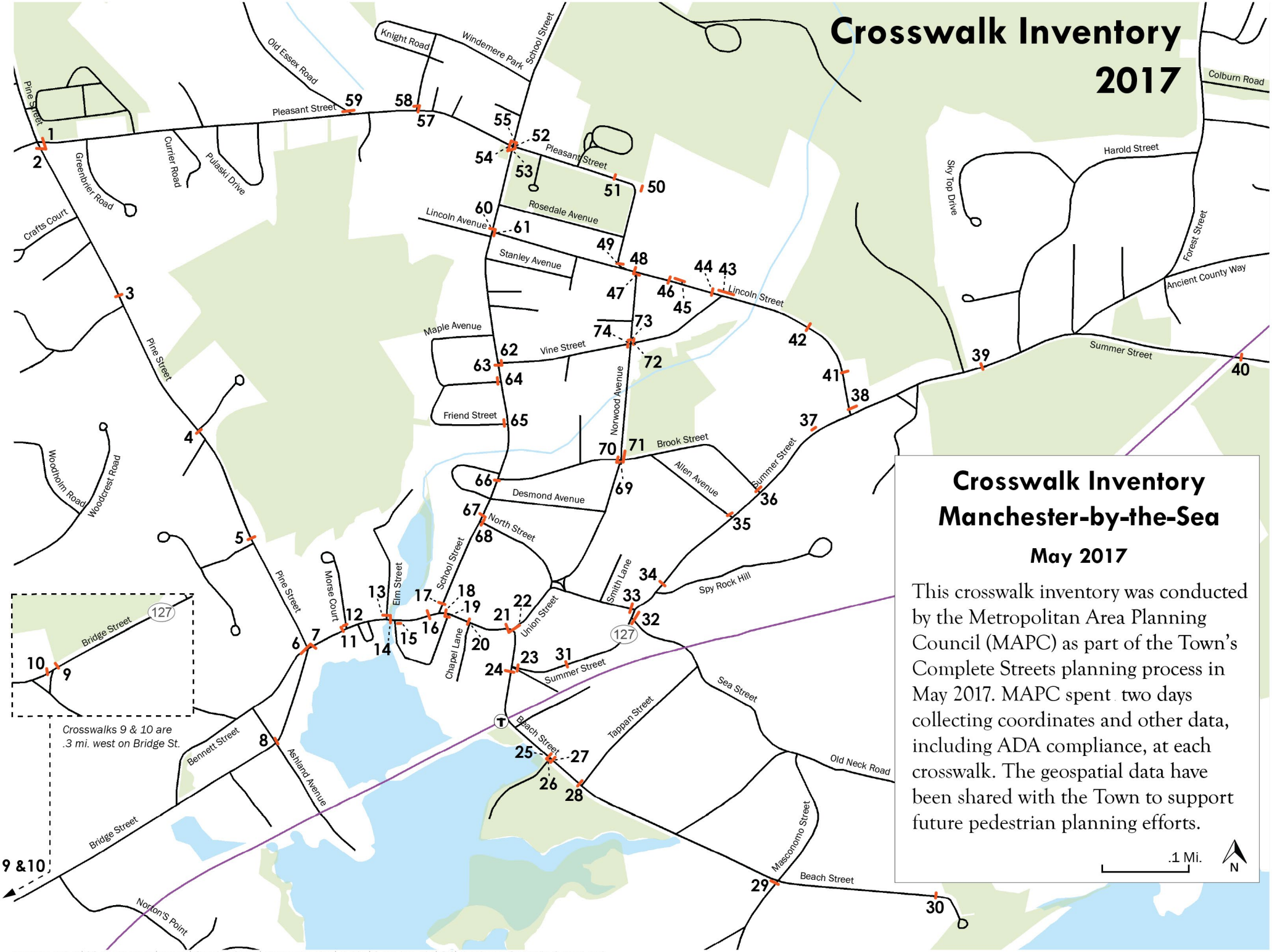
CROSSWALK & SIDEWALK INVENTORY

Summary

As described in the Methodology section of this report, MAPC developed a crosswalk and sidewalk inventory for the Town of Manchester-by-the-Sea. Shapefiles of the crosswalks, ramps, and sidewalks have been shared with Town staff. The metadata excel spreadsheet associated with the shapefiles, along with photos of each crosswalk and ramp have also been shared with the Town.

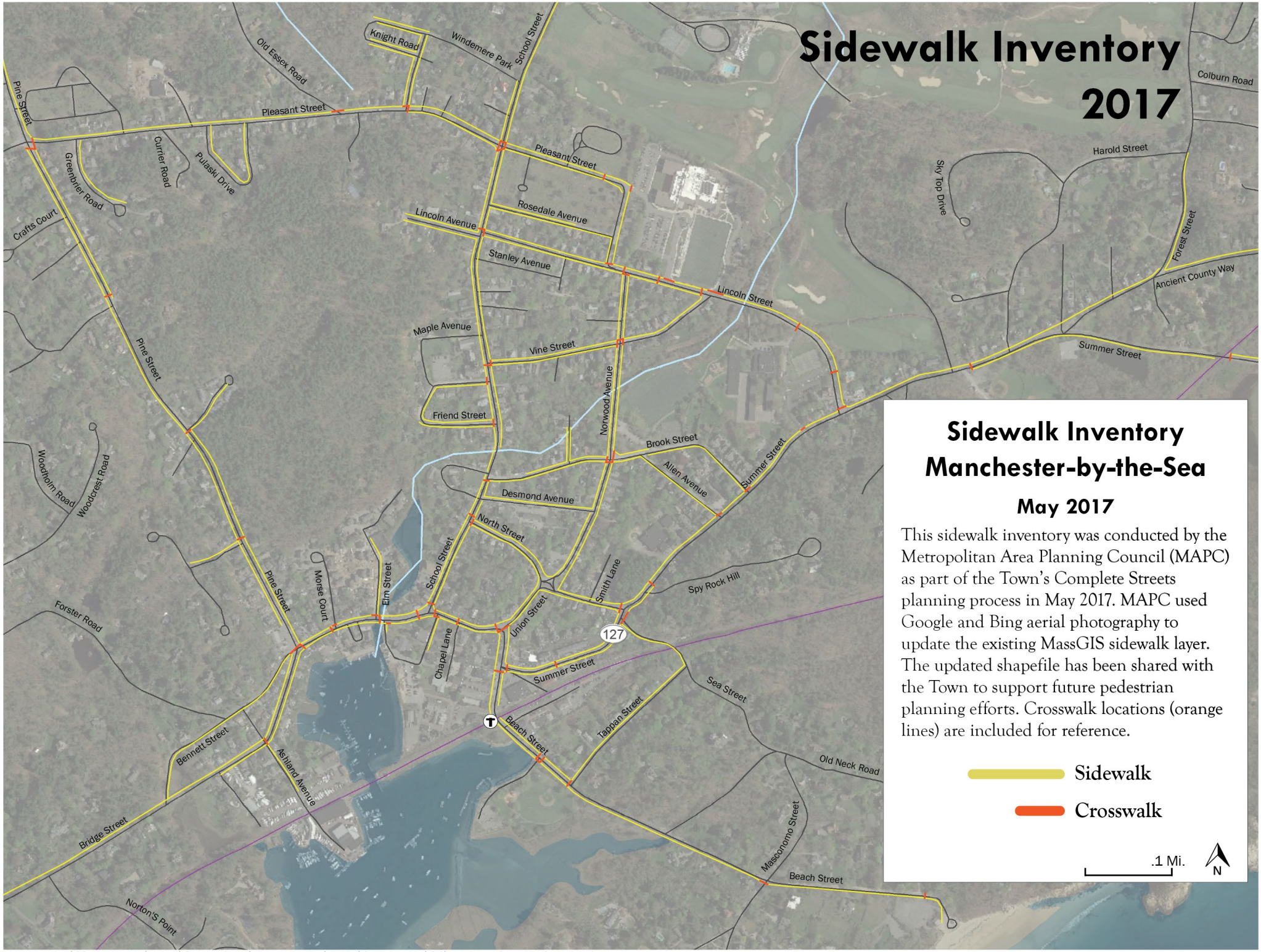
The crosswalk data was collected using the mobile phone application, Survey 123. The app allows users to create a survey of questions that can be answered at each data collection point. Data was entered at each ramp point, or at the end point of each crosswalk if no ramp was present. The survey questions can be found on pages 37-38. After collecting crosswalk data using Survey123, MAPC uploaded the data into ArcMap GIS. Data points collected at each end of every crosswalk were connected to create line segments for each crosswalk in ArcMap. The following two pages provide a sample of the data that is available in the GIS inventory.

Figure 11: *Images of crosswalks and sidewalks in Manchester-by-the-Sea. Photos of each crosswalk and ramp have been shared with the Town.*



Document Path: K:\SG Transportation\Projects\Complete Streets\Prioritization Plans\Malden\2. Working Files\GIS\Manchester_Crosswalks_Section1.mxd

Figure 12: *Crosswalk Inventory.*



Document Path: K:\SG Transportation\Projects\Complete Streets\Prioritization Plans\Malden\2. Working Files\GIS\Manchester_Crosswalks_Section1.mxd

Figure 13: *Sidewalk Inventory.*

Crosswalk Data Collection

Questions for Application Survey 123

1. Location: Lat./Long. [Select Point - required question]
2. Date: [Automatic - required question]
3. Time: [Automatic - required question]
4. Crosswalk Points: Choose 1 for first location point. Record all data for crosswalk on point 1. Then, walk to other side of crosswalk and record point 2, but don't enter the rest of the survey data for this point. [Multiple Choice - required question]
   a. 1
   b. 2
5. ADA compliance: Presence of ramp (that is not a driveway). [Multiple Choice - required question]
   a. Yes
   b. No
   c. Other: enter text
6. Does the ramp connect to a sidewalk? [Multiple Choice - required question]
   a. Yes
   b. No
   c. Other: enter text
7. ADA compliance: Presence of tactile warning panel? [Multiple Choice - required question]
   a. Yes
   b. No
8. Level landing width (measurement from crosswalk edge to level sidewalk edge; a compliant level landing is 4' or greater)? [Enter text - required question]
9. Width (enter wide of crosswalk where crosswalk meets sidewalk)? [Enter width in Feet- required question]
10. Image of Ramp [Take Photo - required question]
11. Street Name? [Enter text]
12. Condition as defined by the following criteria: "Good" - Paint is clearly visible and bright; "Fair" – Paint is visible, but needs new coat; "Poor" – Paint is mostly invisible [Multiple choice]
    a. Good
    b Fair
    c. Poor
13. Marking Type [Multiple Choice]
    a. Solid
    b. Standard
    c. Continental
    d. Dashed
    e. Zebra
    f. Ladder

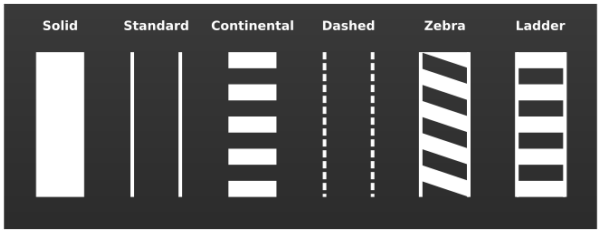


Figure 15: *See below.*

14. Crosswalk Details [Check all that apply]
    a. Paint
    b. Brick
    c. Granite
    d. Raised Median Island
    e. Other [enter text]
15. Location: Mid-Block or intersection? [Multiple Choice]
    a. Mid-Block
    b. Intersection
    c. Other [enter text]

Figure 14: *Crosswalk marking types (image source: sfbetterstreets.org).*

Crosswalk Survey Questions Continued

16. Signal/ Control Type (at intersection approach) [Check all that apply]
    a. Uncontrolled
    b. Stop Sign
    c. Overhead Traffic Signal
    d. RRFB
    e. In-Pavement Flashers
    f. Other
17. Is crosswalk located near any of the following? [Check all that apply]
    a. Business district
    b. Residential district
    c. School
    d. Other [enter text]
18. Crosswalk Length [Enter text]
19. Include image of crosswalk [Link photo here]