

First Street/Second Street Corridor Study
Findings and Recommendations
February 22, 2022

STUDY PURPOSE

The purpose of the First Street/Second Street Corridor Study was to work with the community and a stakeholder working group to identify how to provide safe and comfortable north/south travel connections for people of all ages and abilities, regardless of their mode of transportation, between the Kendall Square area and North Point/Cambridge Crossing, and more specifically between Binney Street and Cambridge Street. The Study was guided by City policies and principles, including the Complete Streets and Vision Zero policies, Envision Cambridge, the Transit Strategic Plan, the Urban Forestry Master Plan, the Bicycle Plan, and the Pedestrian Plan.

Although the core focus of the study was on First Street, given there is not enough space to accommodate all potentially desirable features -- such as wider sidewalks, dedicated bus lanes, separated bicycle lanes, parking and loading, general travel lanes, additional trees, and landscape/streetscape improvements -- the study also looked at which of these needs might be accommodated on other streets, such as Second Street and Land Boulevard, and considered how any changes would impact other nearby streets.

The intended product for the Study was a 10% Concept Design Plan identifying a preferred street design for First Street and potentially other streets such as Second Street.

Additionally, the study was to consider new space being made available along First Street as part of the CambridgeSide 2.0 redevelopment project by New England Development, and to use the study to help guide the design and use of that space. Funding for the Study was from New England Development and managed by the City's Traffic, Parking, and Transportation Department (TP+T).

WORK COMPLETED

- Established a City Project team from key departments (TP+T, CDD, DPW) and the transportation consultants.
- Established a stakeholder working group to represent a cross-section of interests and perspectives in the study area.
- Created a project website and conducted a survey of people's experiences using First Street and Second Street.
- Held two stakeholder meetings (April 12, 2021 and June 14, 2021) and one community meeting (September 30, 2021).
- Established project goals, reviewed existing and future transportation conditions, considered street cross-section options and their tradeoffs (e.g., traffic volumes, sidewalk widths, bicycle facilities, parking/loading access, and transit service impacts).
- Created a traffic analysis model to evaluate the traffic impacts for different street cross-section options.
- Created cross-section diagrams and illustrative street design drawings for street concepts.

PREFERRED STREET DESIGN OPTIONS

Based on input from the survey of street users, two stakeholder meetings, and the community meeting, two cross-section concepts were developed which the City project team believes best meet the goals for the project, as well as the City's overall goals.

- Concept 1 includes bus lanes in both directions on First Street paired with Bicycle Priority Street treatments on Second Street.
- Concept 2 includes separated bicycle lanes on First Street and a bus lane in one direction (the direction of the bus lane may change partway along First Street).

Based on stakeholder working group and community feedback, and after thoughtful consideration of the two concepts, the City Project team determined that more information and analysis is needed before one concept can be selected over the other. More details on the two concepts, their pros and cons (tradeoffs), and the reasons why the project team believes it would be premature to select a preferred option at this time are described below.

Concept 1: Bus lanes in both directions on First Street paired with Bicycle Priority Street treatments on Second Street

There was a strong desire by the Massachusetts Bay Transportation Authority (MBTA), the Charles River Transportation Management Association (CRTMA, which operates the EZRide bus which travels on First Street today), the City's Transit Advisory Committee, and some members of the stakeholder working group and the community to have First Street be a transit priority corridor. Concept 1, with dedicated bus lanes and bus stops along First Street in both directions, would facilitate high frequency bus routes connecting Lechmere Station with points north and south, such as the MBTA Sullivan Square and Kendall Square stations. Using Edwin H. Land Boulevard instead of First Street for bus service in one or both directions was suggested, but it is noted that it is not supported by the MBTA or the CRTMA, and such operations would also require coordination with the state Department of Conservation and Recreation (DCR), as that agency controls Land Boulevard. However, there are a couple of factors that make it difficult to select Concept 1 as the preferred concept at this time.:

- The uncertainty regarding timing and plans for new MBTA bus routes which could make use of an improved north-south transit corridor in this area. Both the MBTA Bus Network Redesign project and the Massachusetts Department of Transportation (MassDOT) Silver Line Extension study could lead to high frequency service on First Street, but the recommendations and conclusions of those studies are not yet final.
- The anticipated future redesign of Land Boulevard by DCR, which could potential make it easier or more difficult to accommodate bus priority improvements.

The two dedicated bus lanes on First Street would provide the most benefits for bus travel times and bus reliability, compared to Concept 2 which has one bus lane on First Street. A preliminary high-level estimate indicates that Concept 1 could save about 1 minute of travel time for buses traveling north or south between Cambridge Street and Binney Street. In comparison, Concept 2 could save about 30 seconds of travel time for buses in this same segment. Given the importance of this metric, the City project team believes more detailed traffic modeling and analysis is needed to have a more accurate estimate of the travel time savings and bus reliability benefits for the two options.

As part of Concept 1, information about what a Bicycle Priority Street is and what it could look like for Second Street was presented and discussed at the stakeholder and community meetings. Based on comments from local residents, stakeholder working group members, and other community members,

there was interest and some support for prioritizing Second Street as an “all ages and abilities” corridor for bicycling, including reducing the traffic volumes and speeds on Second Street. For example, some people indicated they currently prefer or would prefer biking north/south on Second Street instead of First Street. Second Street and First Street are or will be connected by separated bicycle lanes on both Binney Street and Cambridge Street and additional east/west bike connections would need more study. While the intent of Concept 1 is to make Second Street the comfortable north/south bike connection and prioritize First Street for transit., it should be noted that Concept 1 does not preclude people from biking on First Street, but this will be less comfortable than in a situation with dedicated bicycle facilities.

Preliminary ideas for converting Second Street into a Bicycle Priority Street include making segments of Second Street one-way only, and/or creating diverters at intersections to prevent Second Street from being used as a cut-through. The goal of these techniques would be to reduce daily traffic volumes to less than approximately 1,000 vehicles per day, which is the ideal condition for a Bicycle Priority Street. Other street design treatments could include additional raised intersections to reduce traffic speeds, and special pavement materials, markings, signage, or other measures to convey a message that the street is prioritized for bicyclists and pedestrians over through vehicle travel.

There were additional community comments regarding the Bicycle Priority Street, with some people uncertain about whether the design would achieve the intent, and others concerned about the impact to access for people driving.

As a results of these discussions, the City project team determined that because these important types of design details have not yet been determined for Second Street, it is difficult to select Concept 1 as the preferred concept at this time.

Concept 2: Separated bicycle lanes on First Street and a bus lane in one direction

There was a strong desire by City’s Bicycle Committee, bicycle advocates, and some members of the stakeholder working group and community, for First Street to have separated bicycle lanes. Some people said that First Street is the most direct route for everyone—including people bicycling—traveling north/south between Cambridge Street and Binney Street and the preferred north/south bike connection to the future Cambridge-Somerville Community Path that travels through Cambridge Crossing. Some people felt that Concept 2 was the better concept for First Street to balance the benefits for all modes. People also liked that Concept 2 involves narrowing First Street’s curb-to-curb width, because this could reduce vehicle speeds and make the street feel safer and more comfortable for all users.

Because Concept 2 precludes the option of having two dedicated bus lanes on First Street in the future, it is difficult to select Concept 2 as the preferred concept at this time until more is known about the MBTA’s and MassDOT’s future regional transit plans.

Concept 2 would also reduce the flexibility for the number and location of bus stops that can be provided on First Street compared to Concept 1. Buses would need to stop in the general vehicular travel lane to drop-off/pick-up passengers, and thus would briefly stop general traffic flow. Concept 2 would also require slight narrowing of existing tree pits to accommodate separated bike lanes on each side of the street. Because Concept 2 includes so many elements, the buffers between modes are at the minimum, which could feel less comfortable for some users.

Based on feedback from the street user survey and stakeholder and community comments, the City Project team believes more analysis is needed before we could select Concept 2 as the preferred concept, particularly without knowing more about future MBTA transit plans. We also want to better understand the tradeoffs and impacts of the two concepts on bus reliability.

Pedestrian Realm and Trees/Landscaping

Many participants expressed a desire to improve the pedestrian realm for both First Street and Second Street. While wider sidewalks are not possible for Concept 1 or 2, the CambridgeSide 2.0 redevelopment project includes public realm improvements along the frontage of the mall including pocket plaza parks and new landscaping. Other development projects also have or plan to provide street trees along the sidewalk, such as in front of the new residential building under construction at 107 First Street.

Concept 2 extends the curb line of the street out on both sides for separated bike lanes, which could make the pedestrian realm feel wider because the sidewalk would be further away from the vehicle travel lanes. Concept 1 would have no change to the existing sidewalk widths.

As either Concept 1 or 2 advances in design and for whichever one is selected as the preferred concept, the City will work to infill trees, landscaping, and pedestrian amenities where possible. Construction associated with either concept may also offer opportunities to retrofit and expand existing tree planting areas to improve tree health.

Parking and Loading

Both Concept 1 and Concept 2 would convert existing parking on First Street to off-peak hour loading/drop-off/pick-up in portions of the bus lanes. All accessible spaces and loading zones will be relocated to side streets. The City has conducted an initial evaluation and identified options for relocating a portion of spaces on First Street to cross-streets. Regardless of which concept is preferred, more evaluation will be needed to determine how and where to relocate parking and loading. No changes to on-street parking on Second Street are proposed at this time.

CambridgeSide Frontage

A key purpose for the study was to consider new frontage space being made available on First Street as part of the CambridgeSide 2.0 redevelopment project by New England Development. Prior to this performance of this study, there was an initial idea that the design could potentially provide an opportunity for a raised separated bicycle lane in the new space instead of against the existing curb. Through this study, the City project team determined that the new buildings' set back is not sufficient for that idea to work because it would significantly impact the sidewalk width in front for the new buildings and conflict with the desire to maintain the existing street trees and an active pedestrian environment. Overall, the study was useful to inform the design of the CambridgeSide project frontage as that project advances. It continues to be a goal to not make changes to the First Street frontage along CambridgeSide that would preclude either Concept 1 or Concept 2.

STUDY RECOMMENDATION

As stated above, based on thorough consideration of the two concepts, including feedback from the stakeholder working group members and the community, the City project team has determined that more information and analysis are needed before a decision is made to select one concept over the other.

Based on this determination, the City project team recommends that the study be continued to a Phase II to further address the questions raised by the work done to date. The goal of the Phase II study would be to definitively select a preferred alternative based on additional data, analysis, considerations, along with further stakeholder and community input. We expect the Phase II study would take approximately 6-12 months to complete, and the key parameters would include the following:

1. Understanding more about the MBTA's plans for high frequency transit service on First Street and on the travel time and reliability benefits of dedicated bus lanes on First Street in each of the two options.
2. Advancing the Second Street Bicycle Priority Street design in greater detail and evaluating the potential impacts on travel patterns in the area.

To advance our understanding of these key parameters, the general scope of work would include the following:

- Evaluate the two concepts using Vissim traffic analysis software. Vissim is well-suited to the more refined analysis required to answer the questions described above and was not included in the original study scope which was focused on high-level concepts.
- Collect and evaluate traffic pattern data from StreetLight Data (or another similar source) which would provide fine-grained origin and destination data for the study area. This would enable the project team to determine the impacts of different design scenarios for Second Street and develop a more specific plan for Second Street as a Bicycle Priority Street, as a basis for community feedback.
- Develop a better understanding of the MBTA's timeline to implement high frequency transit service on First Street and on the travel time and reliability benefits of dedicated bus lanes on First Street in each of the two options.
- Develop a more detailed plan to convert parking on First Street to off peak hour loading/drop-off/pick-up activities including more specific information about what parking and loading activities could/would happen on side-streets.