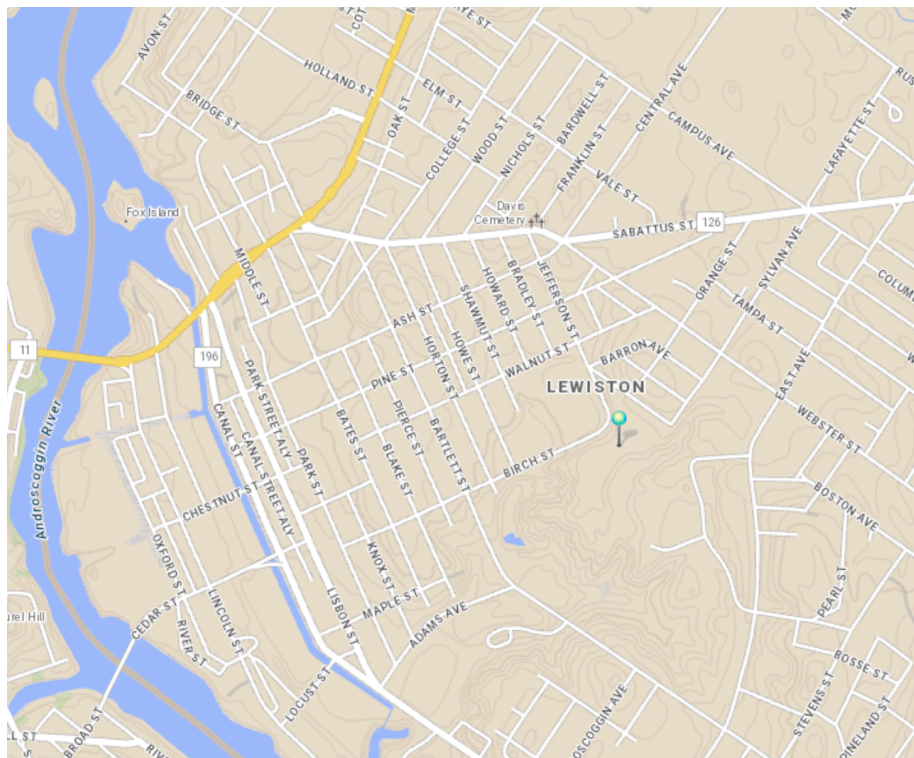


**Memorandum on
The Feasibility of Adding
Parking Buffered Bike Lanes
on Pine and Ash Streets, Lewiston, ME**

7/16/24. Bike in BL
obscured by
parked car. If curb
side, more visible.

May 6, 2024



Introduction

In late April 2024, James Tassé Consulting (JTC) was contacted by staff at Lewiston Public Works to do a preliminary feasibility analysis as to whether it might be possible to add parking buffered bicycle lanes to Ash and Pine Streets in Lewiston. This work was undertaken as part of the work JTC is doing in Lewiston as a sub-consultant to the city with Gorrill Palmer Engineering.

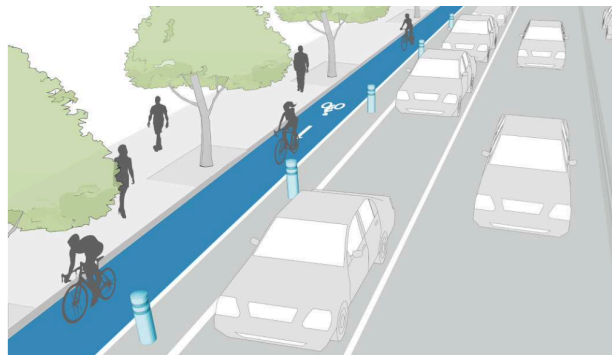
Taking into account the road geometry, classification, number of driveways, and impacts on parking, James Tassé Consulting believes that it may be feasible to add these facilities to each street. This memo is intended to provide a rationale and justification for looking more closely at adding these facilities to each street.

Unless otherwise noted, all graphics and images are from the Streetplans “Bikeway Design Guide” 2019.

The measurements used for this preliminary analysis were taken using Google aerial images and distance tools and should be ground truthed.

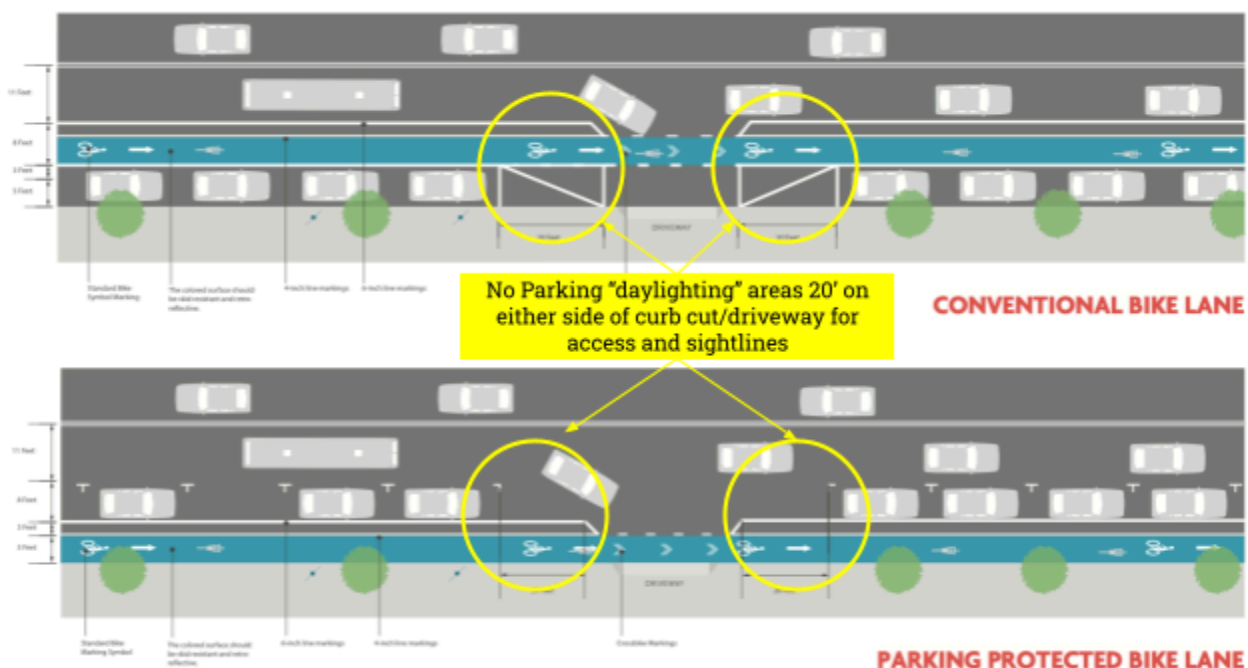
Parking Buffered Bicycle Lanes

Parking Buffered Bicycle Lanes (PBBL) are a type of separated bicycle facility that uses parked motor vehicles to physically separate bicycle and motor vehicle traffic by shifting the parking lane towards the center of the street and putting the bike lane closest to the curb line.



Typical installations include a 5-6' bike lane with a 3' buffer between it and the parking lane. In some cases, vertical elements such as armadillos/Tuff curb segments, flex posts or planters etc. positioned in the buffer strip help to clarify that the parking lane is not against the curb.

Besides cross section width, a key consideration for installation of a parking buffered bike lane is the number of driveway curb cuts, as each of these locations requires No Parking within 20 feet of the curb cut to “daylight” the intersection and provide access and sightlines to motorists and bicycle riders alike



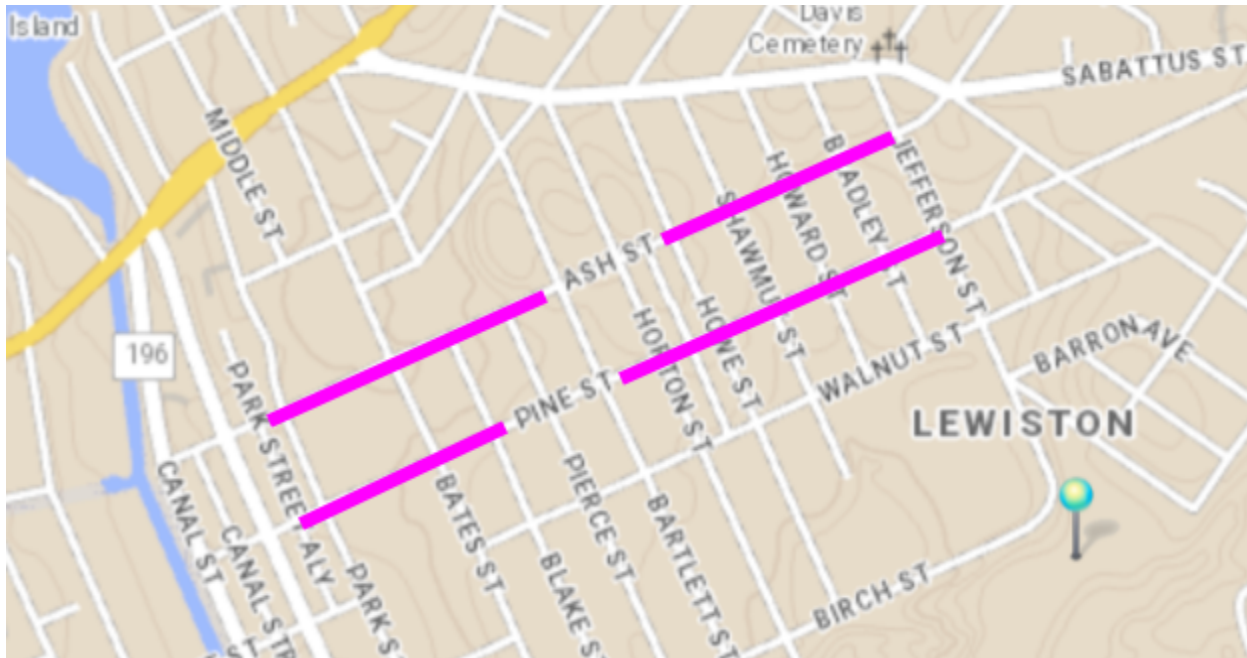
Facilities of this type are considered a “Proven Countermeasure” by FHWA. The NTSB also endorses their usage, and they are included in the NACTO Urban Street Design Guide. The facility is also used extensively in Montreal QC, as well as throughout the Netherlands and Denmark.

In Maine, a parking buffered bicycle lane has been in place in Portland on Park Avenue since 2020. A parking buffered bike lane was temporarily installed on Canal Street in Lewiston in 2017 as part of BuildMaine; it was used for about four days.

The Streets

Pine and Ash are part of the “tree neighborhood” of streets that includes Walnut and Birch Streets in Lewiston’s western downtown, a dense area of housing adjacent to the commercial corridors of Lisbon and Main Streets.

Segments of Ash and Pine Considered in this Memo



Source: MaineDOT Public Map Viewer, May 2024 (<https://www.maine.gov/mdot/mapviewer/>)

The streets extend northeast from Canal Street to Webster Street. Ash Street is one way southbound, and Pine is one way northbound. Both streets have an existing bicycle lane approximately 5-6 feet wide, parking on each side, and a single travel lane.

The segments of Pine and Ash considered for this document are between Park Alley and Jefferson Street, and both segments are over half a mile at 2840’.

Ash Street looking North



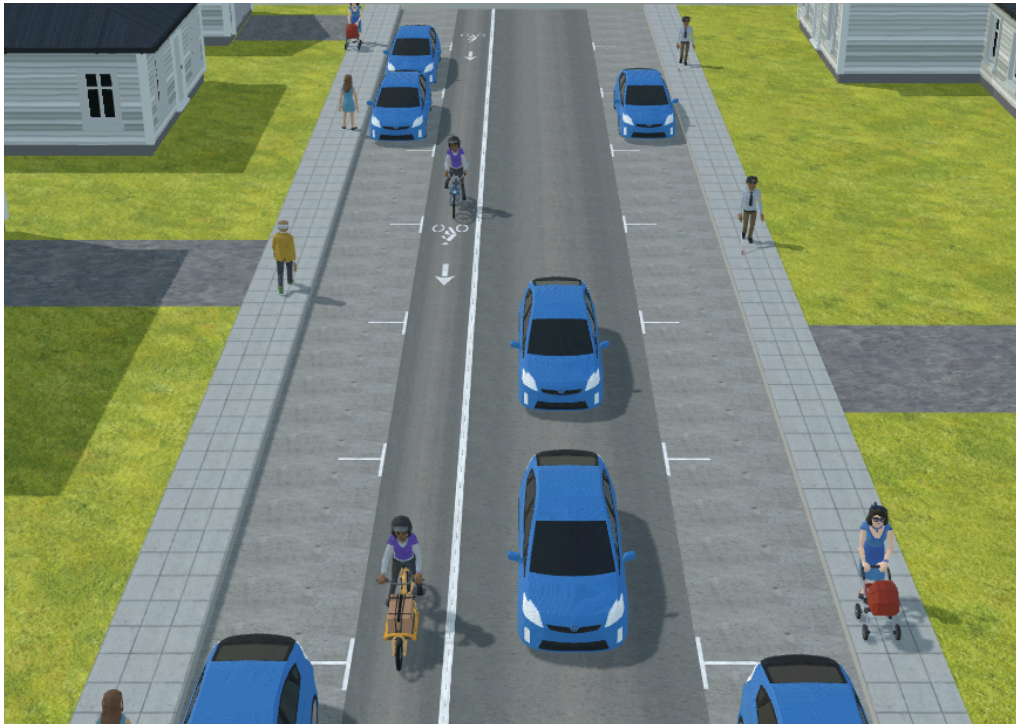
Source: GoogleMaps Streetview

Pine Street looking North



Source: GoogleMaps Streetview

Typical Current Cross Section, Ash (looking north)/Pine (looking south)



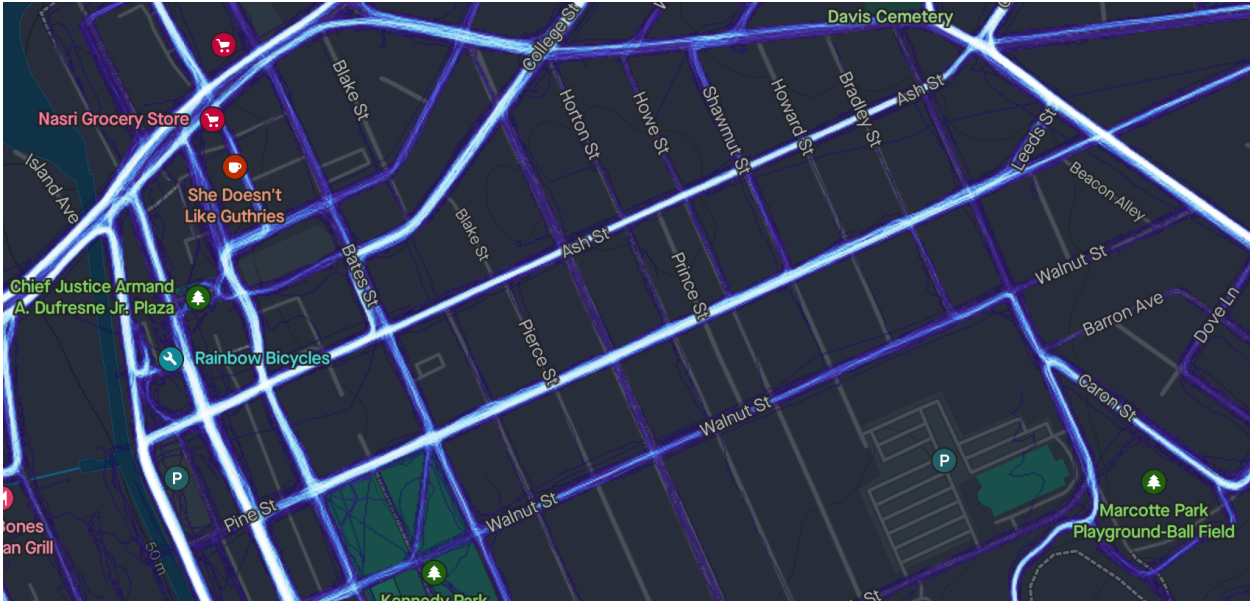
Source: Streetmix.org, "3DStreet"

The speed limit is "unposted," but under Maine Revised Statutes, Title 29-A, Chapter 19, §2074.C, the default speed limit in Maine is "twenty-five miles per hour in a business or residential district or built-up portion unless otherwise posted." The context of both Ash and Pine Streets is a built up residential district, with occasional commercial businesses, and so the speed limit and design speed is assumed to be 25 mph on both streets.

According to MaineDOT data, there have been five reportable bicycle crashes on Pine Street, and two on Ash, in the last five years (2019-2024). Better facilities are likely to both improve safety and increase ridership, which in turn helps improve safety. In the same five year period, Ash saw 5 pedestrian crashes, and Pine 7 on the focus segments. There were 113 motor vehicle crashes on Ash, and 67 on Pine. (Source: <https://mdotapps.maine.gov/MaineCrashPublic/PublicQueryMap>)

Strava data suggests that Ash and Pine are among the most important and frequently used routes by cyclists in this part of Lewiston.

Strava Heat Map showing patterns of bicycle usage. Brighter lines indicate more use.



Source: Strava Public Heat Map

Feasibility Considerations

The table below provides key street characteristics that factored into this feasibility analysis. Information marked with * was taken from the MaineDOT Public Map Viewer, May 2024 (Source: <https://www.maine.gov/mdot/mapviewer/>).

	Ash Street	Pine Street
Total Segment Length	2840	2840
Adjusted Segment Length (Adjusted length subtracts 40' of No Parking zones from every cross street intersection and crosswalk for "daylighting")	2360	2360
Cross Section Width and Dimensions Parking (B), Bike Lane(B), Travel Lane(T)	34' P:8-B:5-T:13-P:8	34' P:8-B:5-T:13-P:8
Speed Limit*	Unposted	Unposted
Highest AADT* / Block	4857 (Horton to Prince block)	3760 (Bartlett to Horton block)

Jurisdiction*	State Highway	State Highway
Federal Functional Class*	Minor Arterial	Minor Arterial
Speed Limit*	Unposted	Unposted
Highway Corridor Priority*	3	3
Cross Section Dimensions* Parking (B), Bike Lane(B), Travel Lane(T)	34' P:8-B:5-T:13-P:8	34' P:8-B:5-T:13-P:8
Estimated total parking, sum of both sides (Assumes 20' parking bay length)	236	236
Total Estimated Utilized Parking	6% (14 cars)	8% (19 cars)
Number of Driveway Curb Cuts	14	15
Parking Lost at Curb Cuts with Properly Designed Bike Lanes (assuming 2 20' spots on both sides to provide access and sightlines)	26	26
Estimated Parking Capacity with PBBL installed	196	191
Percent of Total Estimate Parking Available Still Available with PBBL	88%	88%

Jurisdiction: As both of these roads are considered state highways by MaineDOT,, making changes may be more complicated than on a road with less state involvement i.e. state aid or local.

Federal Functional Class: Minor Arterials. Arterials need robust vulnerable user facilities. According to FHWA, "Separated bicycle lanes are recommended on roadways with higher vehicle volumes and speeds, such as arterials." (Source: <https://highways.dot.gov/safety/proven-safety-countermeasures/bicycle-lanes>)

Speed Limit: The implicit 25 mph speed limit of this road is appropriate for a road with a parking buffered line. It is likely that the wide travel lane (12-15 feet) next to the five foot bike lane encourages speeding. Lewiston DPW should have speed data.

Highway Corridor Priority: Ash and Pine are both HCP 3 roads, falling in the middle of the MaineDOT's 1-5 Highway Corridor Priority system. The HCP 3 rating aligns with their Federal Functional Class as "minor arterials" which is an appropriate road class for a separated bike lane.

Cross Section Dimensions Available roadway cross section is the single most critical consideration for including a PBBL, and both Pine and Ash appear wide enough. Each street is approximately 34 feet wide, and the cross section is currently broken into two approximately eight foot parking lanes, a bike lane of approximately 5-6', and a travel lane of approximately 13'. The measurements used for this preliminary analysis were taken using Google aerial images and distance tools and should be ground truthed.

Estimated Total Parking

The length of the segments of Ash and Pine being considered is 2840 feet long. Parking spots are assumed to be 20' long. There are 10 cross streets, and two midblock crossings from Ash landing on the corner of intersections with Blake and Pierce, and each of those locations was assumed to have no parking within 20' of the crossing or intersection on each side, meaning forty feet of parking is lost on each side of a cross street. The "Adjusted Segment Length" is the total of those 20' spaces—480 feet—subtracted from the Total Segment Length. The remaining dimension, 2360', is divided by 20 (the length of a parking bay) to estimate the total capacity of the streets at about 236 parking spaces.

Total Estimated Utilized Parking. Based on counts using Google Aerial (2024) and Streetview (2018) imagery, utilization of parking seems on the low side. On Ash, between Park Alley and Jefferson Street, there were about 14 cars shown parked during both the early morning and mid day (estimated by shadow position), representing about 6% of total capacity for the street. On Pine, 19 cars were shown, representing about 8% of total capacity used.

It may be desirable to groundtruth these observations with a multi day parking usage study.

Parking Lost at Curb Cuts with Properly Designed Parking Buffered Bike Lanes.

There are 14 curb cuts and driveways along Ash, and 15 along Pine. These numbers were lower than expected. Assuming that each of these locations results in the loss of two parking spaces to open up or “daylight” the intersections with the bike lane, that is a loss of 28 additional parking spaces along Ash and 30 along Pine if a Parking Buffered Bike Lane is installed. .

Estimated Parking Capacity with PBBL Installed. As mentioned, a properly designed PBBL will lose two parking spots at each driveway or curb cut for daylighting. Putting PBBLs on these streets are estimated to have a fairly minor impact on parking conditions. Although there is a loss of about 26 spots on each street, or 11% of parking on Ash, and 12% on Pine, the streets will still have 196 and 191 spaces available, respectively. This means that even with a Parking Buffered Bike Lane, the streets will retain about 88% of their average available parking spots.

Conclusion

Rendering of Typical Cross Section of Ash/Pine with Parking Buffered Bicycle Lane



Source: Streetmix.org, “3DStreet”

Ash and Pine Streets appear to be good candidates for Parking Buffered Bicycle Lanes, and this memorandum recommends that the idea receive additional study.. The roadways are of the type (minor arterials) that FHWA recommends putting separated facilities on. They are already important bicycle routes within the city. While there will be some impacts on parking with the PBBL installed, they are lower than expected, and 88% of the existing capacity will be preserved. Adding PBBLs will also narrow the travel lane and help reduce speeds, which will enhance the safety for all users and may reduce the many crashes on these streets.

It may be necessary to reduce the travel lane used by cars on these roads to under 11'. MaineDOT *Engineering Instruction C1* (2022) permits such a reduction subject to Engineering Council approval:

10 foot lanes should be investigated on projects where there has been an expressed desire for a bicycle facility and changing lane widths to 10 feet will result in providing 4 to 5 feet in width for a bicycle facility. The request should come through the municipality to ensure that competing interests have been considered by the municipality. While a design exception is not required for areas meeting the above criteria, MaineDOT requests that the municipality notify the Region Traffic Engineers when those changes are being considered, in order for MaineDOT to keep track of and monitor the changes. MaineDOT Region Traffic Engineers will bring the request to the Engineering Council for final determination.

If the City of Lewiston chooses to move forward with considering adding a Parking Buffered Bicycle Lane, my recommendation is that the first step would be ascertaining the cross section width at each block between Park Alley and Jefferson Street using available GIS data or physical measurement.

James Tassé Consulting is happy to continue to assist with this concept.