

While introducing a bicycle network to downtown Lowell is important, reconfiguring certain streets to create a more welcoming pedestrian and driver experience is essential. The changes proposed below result from the selective application of the safety criteria discussed in section 3.1 to the most important and/or problematic streets in the downtown. These changes include the following:

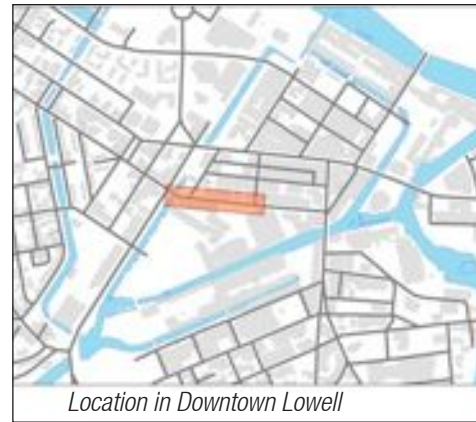
- Conversion from one-way to two-way travel;
- Insertion of bicycle facilities;
- Resizing of travel lanes to support appropriate urban driving speeds;
- Resizing of parking lanes to more economical dimensions;
- Insertion of missing parallel parking;
- Sidewalk widening and tree planting along unsafe-feeling curbs; and
- Modification of roadway geometries from suburban to urban configurations.

As with the reformation of the circulation system and the creation of a bicycle network, the proposed reconfigurations to downtown Lowell's streets are limited to those changes that are expected to produce significant results at limited cost. Most of them are accomplished with paint alone, as rebuilding curbs is needed in only a few circumstances.

The pages that follow detail the street-by-street modifications proposed for downtown. These are summarized below:

1. Market Street: converted to two-way.
2. Shattuck Street: converted to two-way, and flow on Middle Street reversed.
3. Central Street: converted to two-way and one parking lane added.
4. Ladd and Whitney Monument Square: Worthen and Merrimack segments made two-way.
5. Merrimack Street: lanes resized to include a bike lane.
6. East Merrimack Street: one parking lane traded for two bike lanes.
7. West Merrimack Street: lanes resized to include bike lanes.
8. French Street: lanes resized to include a parking lane and two bike lanes.
9. Arcand Drive: lanes resized to include bike lanes.
10. Prescott Street: one travel lane partially converted to parking and widened sidewalk.
11. Warren and Hurd Streets: converted to two-way; parking and urban geometrics added.
12. Dutton Street: Widened sidewalk and parallel parking added where possible.
13. Father Morrisette Boulevard: redesigned as complete street including a streetcar (long-term). Short Term: Two travel lanes traded for two parking lanes and two bike lanes.

3.1a Market Street Dutton to Palmer



In what is perhaps the most important traffic recommendation of this Plan, Market Street through the core of downtown is proposed to be returned to two-way traffic. As discussed, this recommendation is made with confidence that it will both improve flow and reduce speeding in the downtown—currently a very real problem on Market Street.

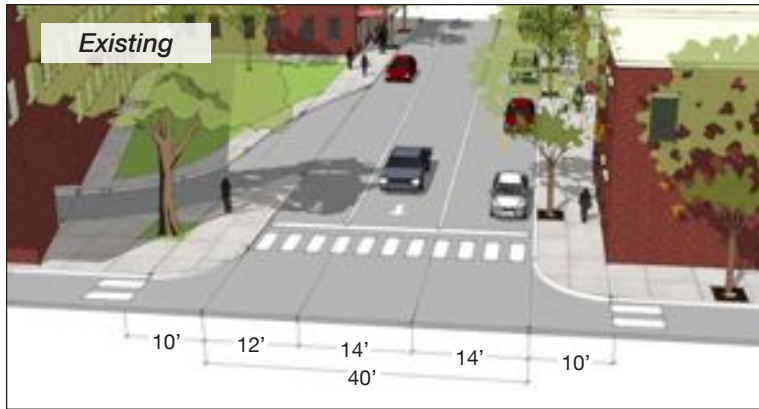
This reconfiguration is made easier by the fact that Market Street is quite wide for much of its length, providing ample room for both left-hand turn lanes and parallel parking, with a few limited exceptions. As redesigned, parking is maintained on both sides of the street until the approach to the Roy Garage. This parking lane would also be used for bus and handicap drop-off in front of the National Park Service Visitors' Center at Market Mills, and marked as such.

As Market Street approaches the Roy Garage, parking must be removed on the south side to accommodate a storage lane for left turns north onto Palmer and south into the garage. The western stretch between Dutton and Shattuck Streets would feature a single reversible left-hand turn lane to allow peak queues to occur as needed. On a lighter note, this western stretch provides some useful experience regarding the performance of a two-way Market Street: local residents inform us that it is already used that way by several lost visitors daily.



Key Recommendations

- 1** Parking retained on north side along bridge
- 2** Reversible left turn lane, can carry peak traffic as needed
- 3** Parking on both sides for most of the street
- 4** Garage entryway consolidated to eliminate high-speed entry



The slip-lane entry into the Roy garage requires reconfiguration as Market becomes two-way. Pains should be taken to preserve the existing tree.

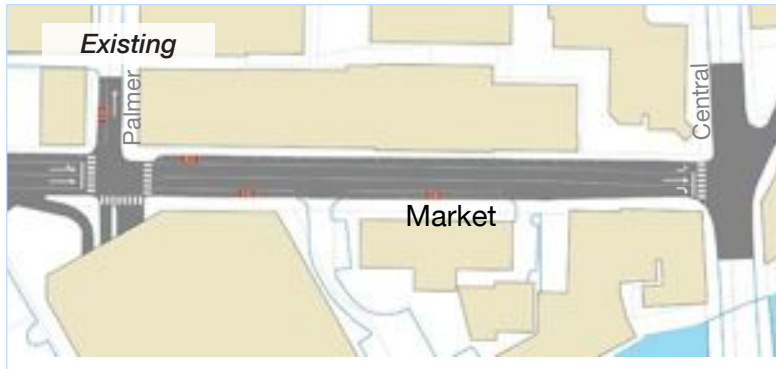


One complicated aspect of this recommendation is a reconfiguration of the eastbound entrance to the parking structure: the long slip lane is removed in favor of a single entry point. This slip-lane entry was designed to serve a high-speed one-way system; it is not appropriate to urban driving. The revised design intentionally allows westbound traffic to enter the garage, even though there is not a place for it to store immediately in advance of the driveway. Space is given for westbound left-turn storage on the east side of the intersection. This is not an optimal configuration, but has been proposed in an effort to preserve the mature tree currently located between the entry and exit driveways. With this layout, westbound left turns are allowed and quite manageable, but not if an eastbound vehicle is stored in its left-hand turn lane.

This solution is far from ideal, and requires additional study. It could be that a limited reconstruction of the garage entryway is needed to optimize its interface with a newly two-way Market Street.

As with Merrimack Street, more continuous tree cover is also proposed here. The above reconfiguration is principally paint, with curbs moved only at the Roy Garage. When a more comprehensive reconstruction is planned, it should include regular tree spacing and a unified streetscape that corrects the current condition in which one sidewalk is paved in concrete and the other in brick.

3.1b Market Street Palmer to Central



Between the Roy Garage and the approach to Central Street, Market features on-street parking on both sides (Item 2 on the diagram). As it nears Central, parking is substituted with a right-turn lane to accommodate this heavy turning movement. The traffic analysis suggests that approximately 150 feet of queuing length for this right-hand-turn lane should be provided. Left turn and through movements onto Prescott are shared in a single lane.



Key Recommendations

- 1** Left turn lane pockets to accommodate queuing
- 2** Parking on both sides for most of street length
- 3** Dedicated left turn lane for westbound turns into garage
- 4** Dedicated right turn lane for traffic movement (replaces south-side parking)

Market Street Palmer to Central

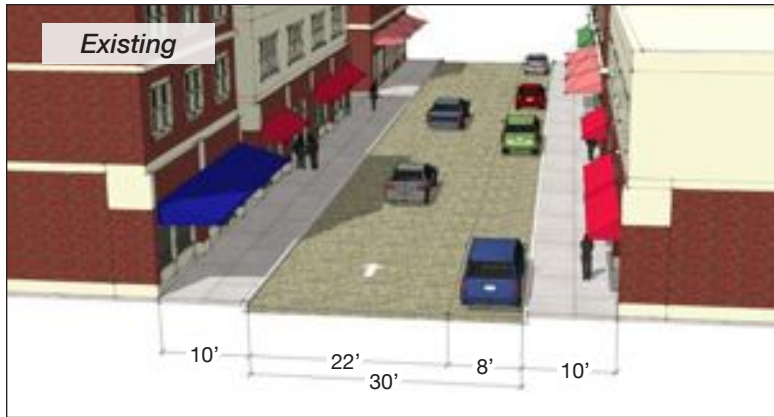


Section 3.3.6 discusses modifications to Prescott Street. It is worth noting that signal phasing, which currently allows eastbound through movements from Market to Prescott, will need to restrict northbound right turns from Central to Prescott on red lights. This restriction allows the through movements from Central to have conflict-free access to the redesigned Prescott Street.

Market Street contains a number of popular destinations that would benefit from a slower two-way traffic pattern.



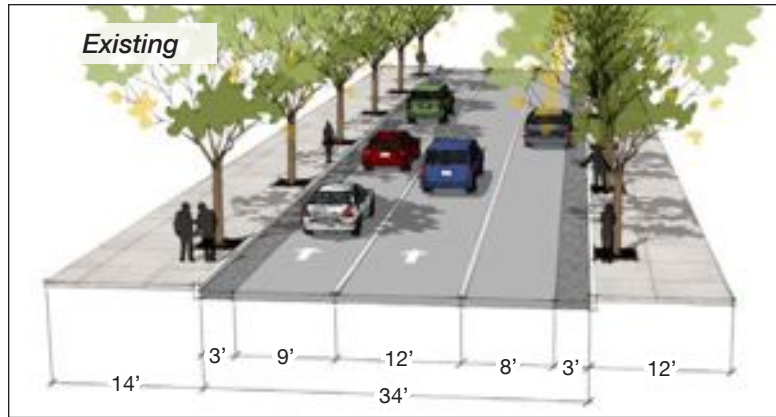
3.2 Shattuck Street



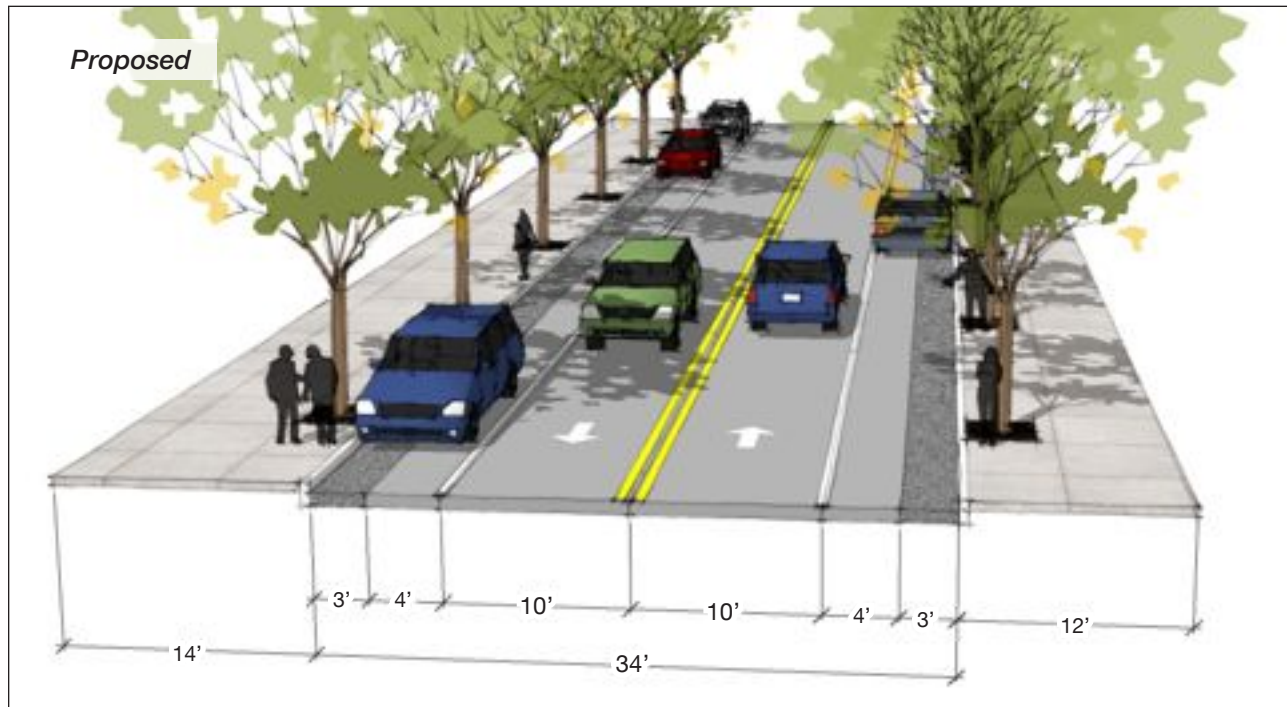
Today Shattuck Street is a one-way (southbound) street with parking along its western side. Returning two-way traffic to this street improves system convenience and through-put while providing better access to businesses along Middle Street. Stop signs at either end will adequately handle the interface with Merrimack and Market Streets. As noted, Middle Street will keep its current configuration, but in the opposite direction. Neither of these reconfigurations requires any new curbs or signals.



Central Street 3.3



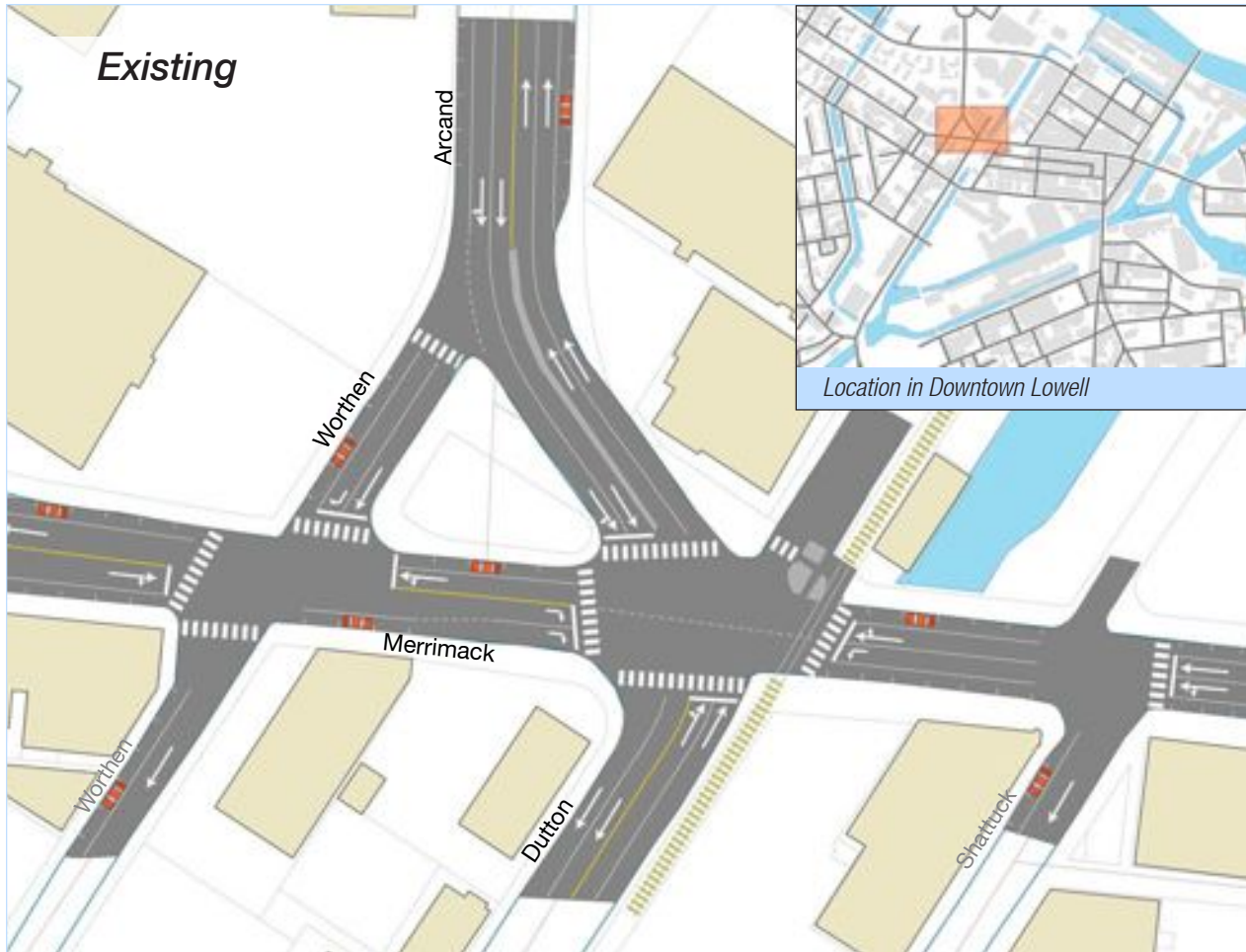
Central Street between Market and Merrimack is currently one-way northbound. This limitation to a very small segment is one of the largest causes of lengthened trips within the downtown. It should be converted to two-way traffic to allow southbound traffic from Bridge Street and East Merrimack Street to continue out of downtown without burdening the Merrimack-Market loop or the Dutton-Thorndike connection. In addition to lightening the load on Dutton, this change is highly likely to decrease demand on the right-turn movement from Market Street onto Central, allowing the traffic signal phasing to be more effectively shared between this movement and southbound trips on Central.



Additionally, Central Street is currently striped inefficiently, due to oversized lane standards and a reluctance to make use of the 3-foot-wide cobblestone surface against both curbs. These cobblestones are ideally subsumed into parking lanes, and the street's 34-foot dimension then allows for parking to be placed along the western curb as well, where it would protect a popular seating area in front of the elderly housing facility.

The reconfiguration of Central Street will require some relocated signals but no curb reconstruction.

3.4 Ladd and Whitney Monument Square



Ladd and Whitney Monument Square is an important civic space in front of the Lowell City Hall, providing a prominent view of City Hall from Merrimack Street to the east. It is one of downtown's busiest traffic intersections as well, where Dutton and Merrimack Streets intersect and where downtown traffic from Lowell's western neighborhoods must turn onto Dutton to reach Market Street. As already described, it handles considerably more traffic now than it will once Market, Shattuck, and Central Streets are returned to two-way.

Worthen Street, which is a southbound one-way street, allows traffic from Arcand Drive to turn right onto Merrimack, thus avoiding the acute eastern Arcand/Merrimack corner of the Monument Square triangle. However, the reverse is not allowed: eastbound traffic on Merrimack Street cannot currently turn left, prohibiting a more even distribution of traffic into downtown. Additionally, due to Merrimack's one-way configuration, continuing straight east is also impossible at this intersection. Unable to go left or straight, all eastbound traffic must complete the awkward Dutton-Market dogleg into downtown.

Monument Square should be reconfigured to allow a more thorough range of traffic movements and thus a more even distribution of traffic. This limited redesign takes advantage of the built-in storage space of the triangle sides but fundamentally assumes that all three corners of the triangle work as a single intersection, made possible by coordinated signals. There is some question as to whether this reconfiguration would require a new signal at the intersection of Worthen and Arcand: the traffic study says that it is not needed to control congestion, but it may be desired for safety reasons.

Ladd and Whitney Monument Square



In addition, Merrimack should carry a single lane of eastbound traffic through the Dutton intersection to Shattuck Street. This proposal, which has been suggested before, solves several problems simultaneously. It takes pressure off of the Dutton/Market dogleg, provides a quicker path to Central Street, and provides greater visibility to businesses on Merrimack Street. Mostly, it just makes it feel easier to spend time and money downtown.

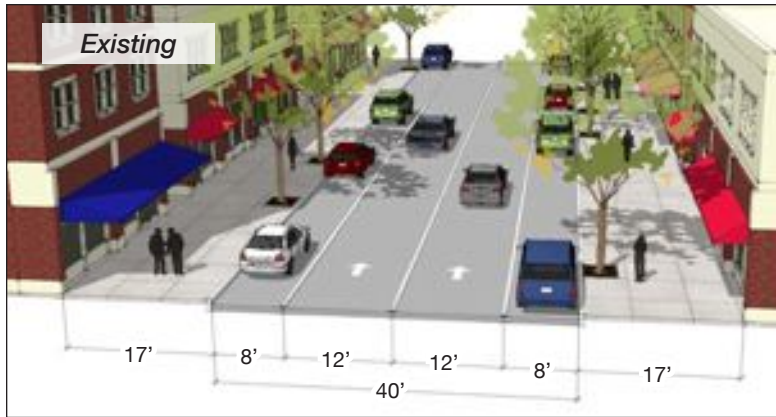
This important eastward path can be provided without losing any westward capacity on Merrimack. The two westward lanes would continue, but shifted slightly north against the canal, at the cost of a few parking spaces. Since these spaces do not abut any stores, this seems a small price to pay for easing entry into downtown.

All of the above changes in and around Ladd and Whitney Monument Square can be accomplished for the cost of paint, plus one potential new coordinated signal at the intersection of Arcand and Worthen.

Key Recommendations

- 1** Left turn lane allows eastbound travel to access Arcand
- 2** Two-way Worthen carries these turns from Merrimack
- 3** One lane of traffic continues east on Merrimack
- 4** Eastbound traffic turns right at Shattuck without impeding flow

3.5 Merrimack Street

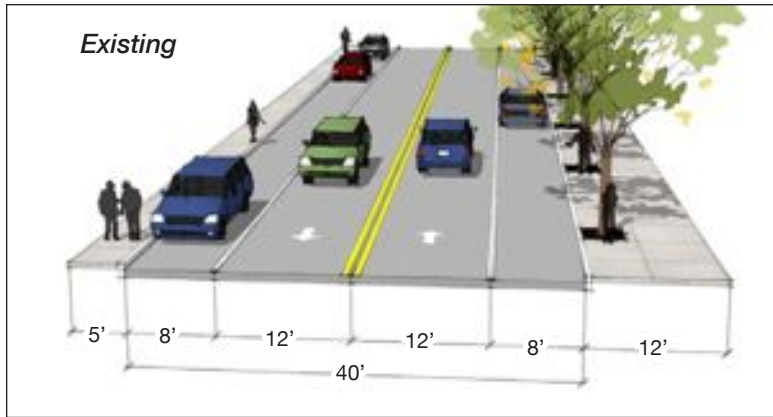


Merrimack Street's 40 foot curb-to-curb dimension currently holds parking and driving lanes whose above-standard widths encourage speeding. Reducing these widths to more standard urban dimensions creates room for a bike lane on this important thoroughfare. While these lane widths create tighter conditions for trucks and buses, the bike lane provides contingency space for their intermittent use. In practice, this street will function much as before, except that cyclists will feel welcome and drivers will be less induced to speed.

This reconfiguration requires paint alone. When budget allows, new trees should be planted in structural soil to achieve an ideal spacing of 25 to 30 feet between trees.

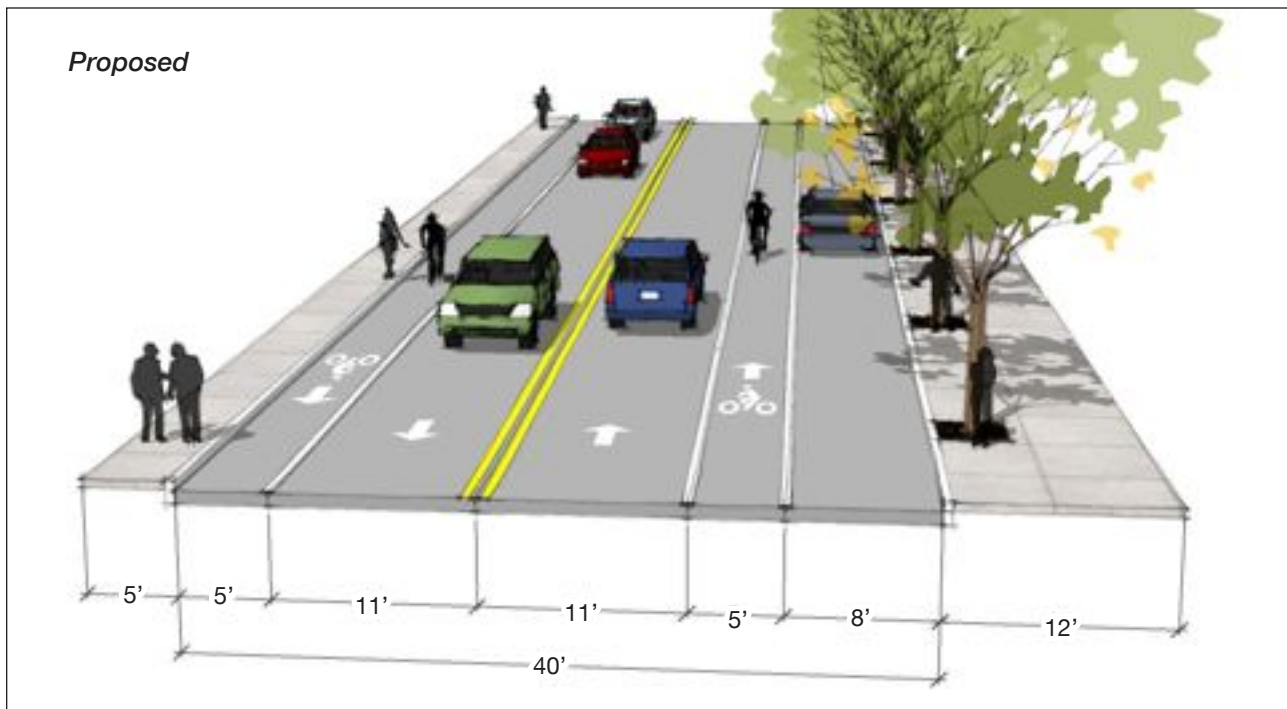


East Merrimack Street 3.6



East Merrimack Street is the primary connection from the heart of downtown across the Concord River to Middlesex Community College, the Lowell Auditorium, and the almost-completed 200-mile Bay Circuit Trail. As such, it is an essential component of the downtown bicycle network, and demands dedicated bike lanes. Unfortunately, these can only be placed in the roadway at the expense of one on-street parking lane, but the (north) lane proposed for elimination does not abut any retail uses and is therefore deemed less important than the added bicycle facility.

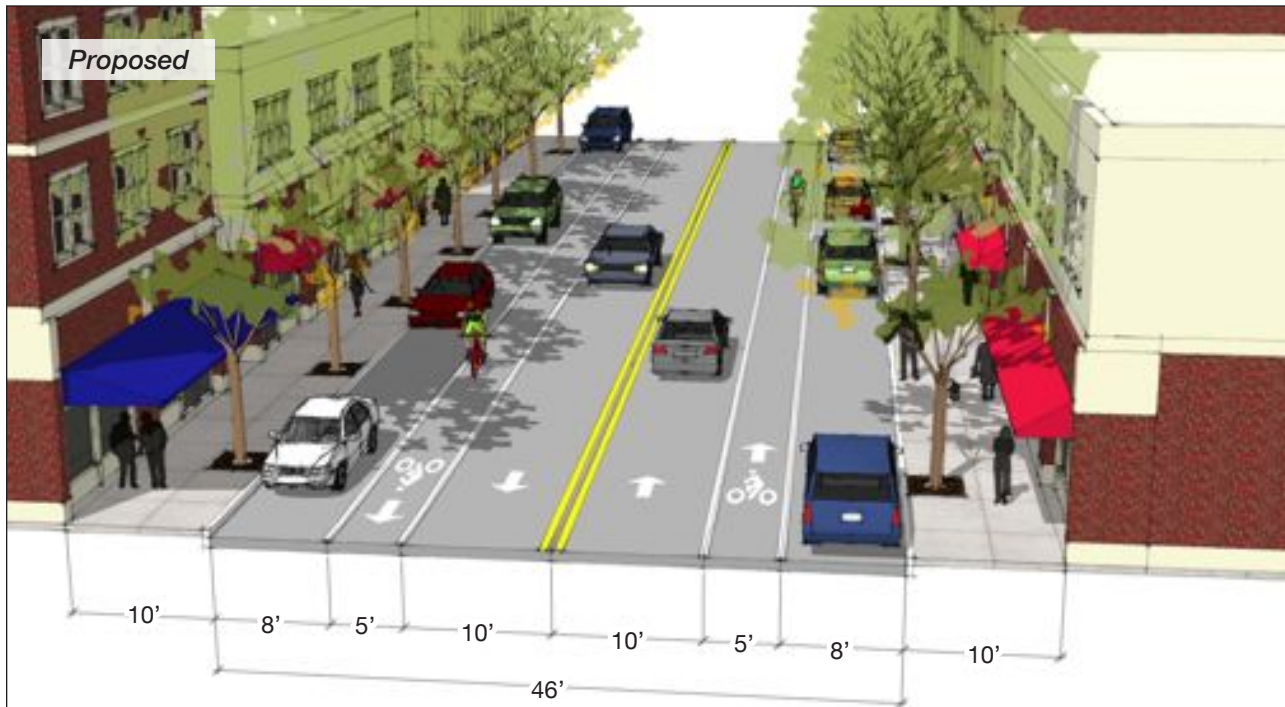
This street is also proposed for a brick speed-table paving pattern to be introduced between the two MCC buildings, as further described in Chapter 9.



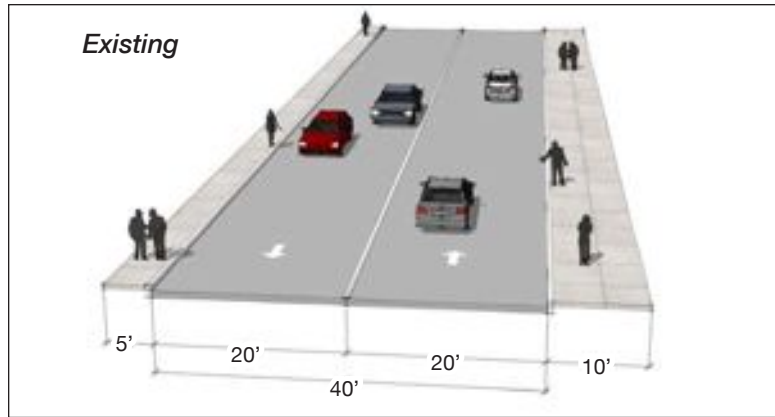
3.7 West Merrimack Street



West of downtown, Merrimack Street is a two-lane, two-way street with a 46-foot curb-to-curb width. This is a wider cartway than many of downtown's other two-lane streets, and it has been subdivided into oversized parking lanes and highway-width driving lanes that invite speeding. This additional roadway dimension can easily be reconfigured to serve a broader range of users. Merrimack is an important connection from downtown to western Lowell neighborhoods and the UMass Lowell western campus, and as such should provide a dedicated route for bicycles. The street's broad dimension happily accommodates standard width driving, biking, parking, and bicycle lanes in each direction.

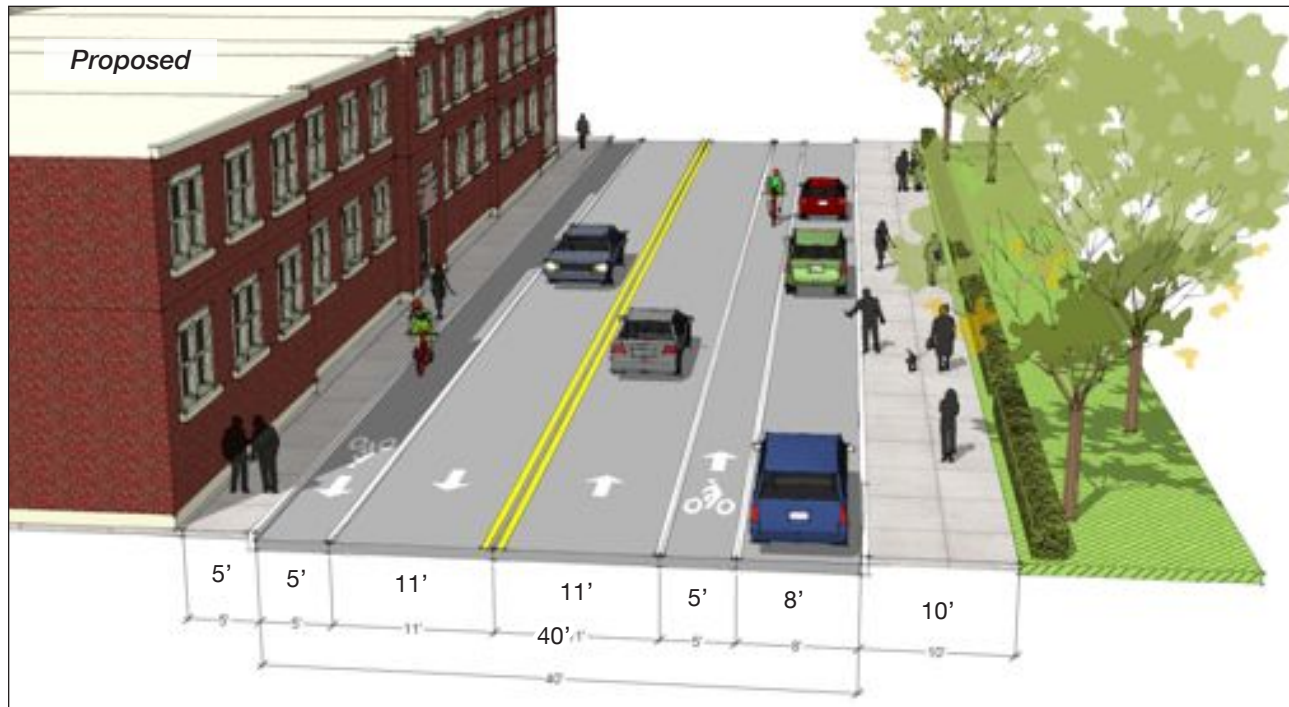


French Street 3.8



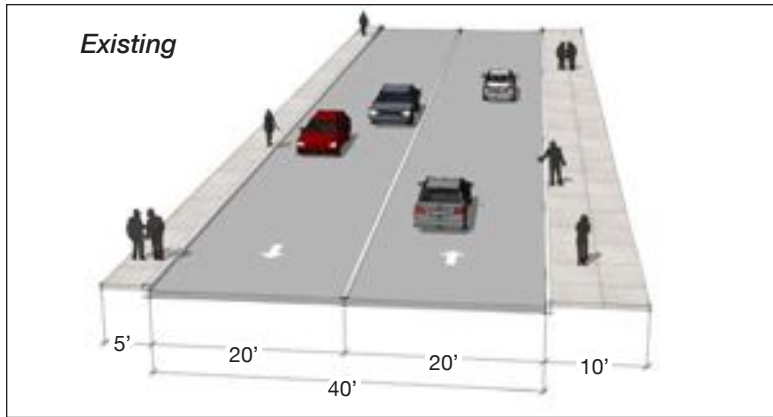
French Street currently features two double-wide travel lanes with on-street parking disallowed in most areas around the Lowell High School campus. This condition is due principally to the loading and unloading of school buses, but it does not need to be maintained along French's entire length. Moreover, the loading of school buses should ideally take place in designated parking lanes, in which parking is prohibited during pick-up and drop-off hours.*

In addition to serving school buses, the double-wide lane heading east also serves as automobile storage for cars waiting to enter the Bridge Street intersection at rush hour. As is the case with Prescott Street, this traffic is due not to any lack of capacity in the roadway itself, but only to the limitations of intersections down the line. Therefore, the configuration of that storage can be altered without any significant impact on travel times. The double-width lane heading west never experiences two-lanes worth of traffic volume, and can easily become a properly-sized lane.

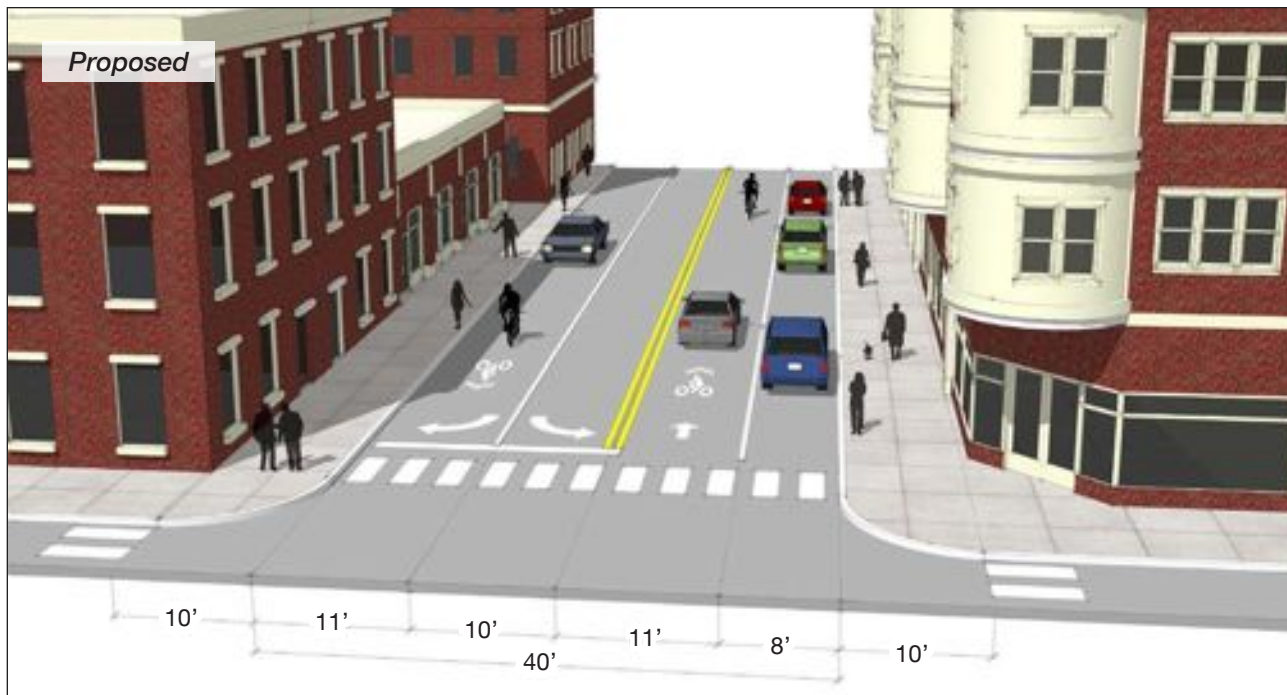


Based on this understanding, there is no reason not to modify French Street to allow on-street parking and to expand the downtown bicycle network. This goal is accomplished through a restriping that includes parking on the north side of the street to serve Boarding House Park and the Tsongas Industrial History Center. These parking spaces can be signed to prohibit their use at times when school buses park in this location. If additional parking (and bus storage) is desired along the front of the High School, the parking lane can shift over to the south side of the street near Kirk Street.

French Street



Cars double-up on French Street approaching the John Street and Bridge Street intersections.

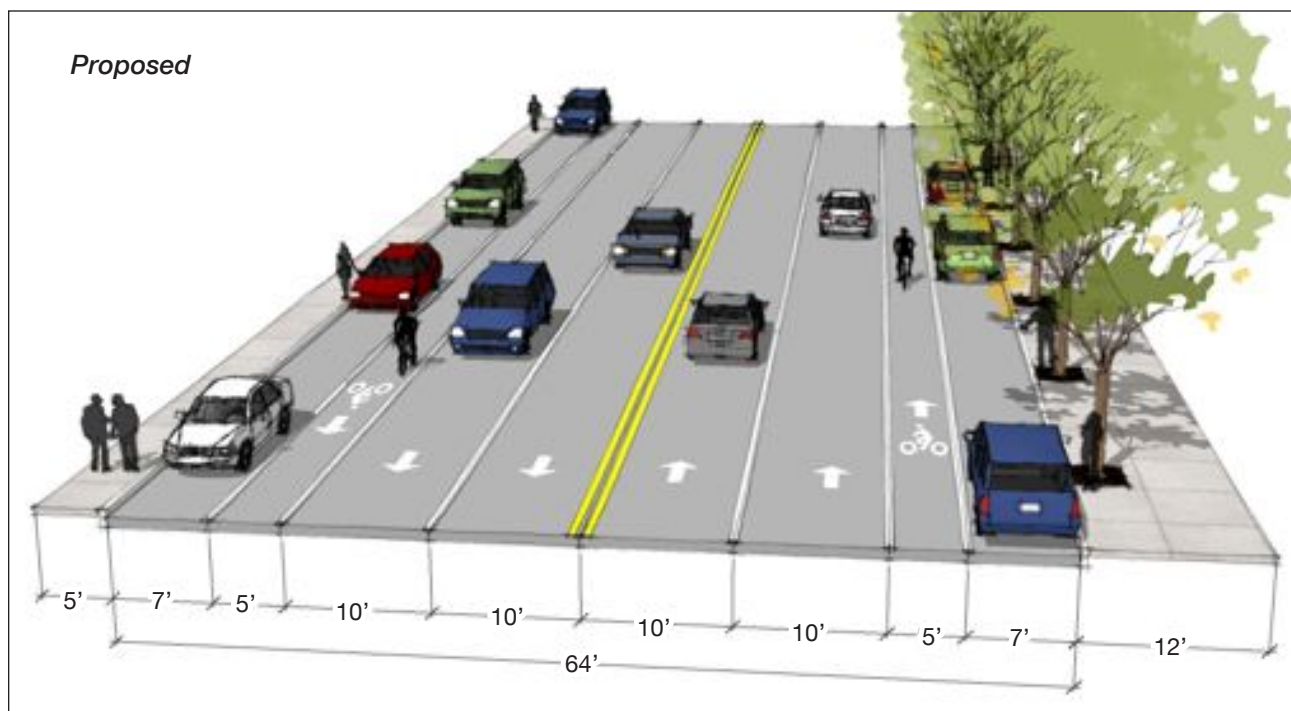
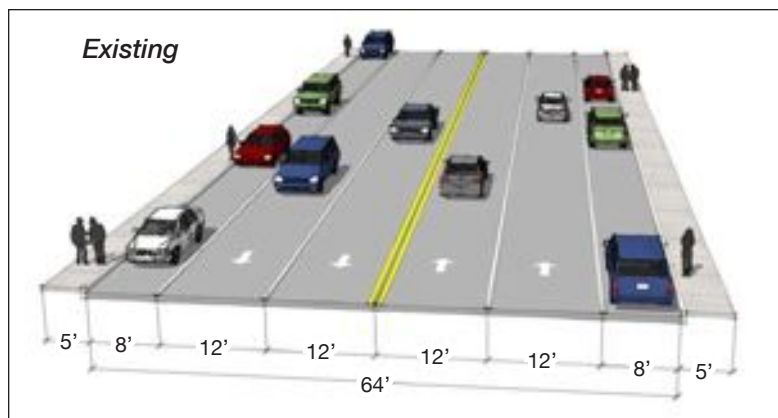


On the approach to Bridge Street, however, two eastbound lanes are still needed to accommodate turning volumes—these currently share the existing double-wide lane. Because it is important to maintain parking on the north curb in this retail location, the bike lanes must transform into shared travel lanes with sharrow markings. On the eastbound approach, the sharrow should be placed in the right turn lane, but markings should indicate a bicycle connection straight through the intersection to Kerouac Park.

With properly sized travel lanes, additional on-street parking, and continuous bicycle lanes, French Street is poised to become a much more welcoming street for bringing pedestrians from the Boott Mills Museum and Boarding House Park to Kerouac Park, and vice versa. This transformation can be accomplished with paint alone.

*Incidentally, a similarly inefficient use of curb space occurs on Paige Street, where parking is disallowed throughout the school day, rather than only during the times when buses are present. This, too, demands correction.

Arcand Drive



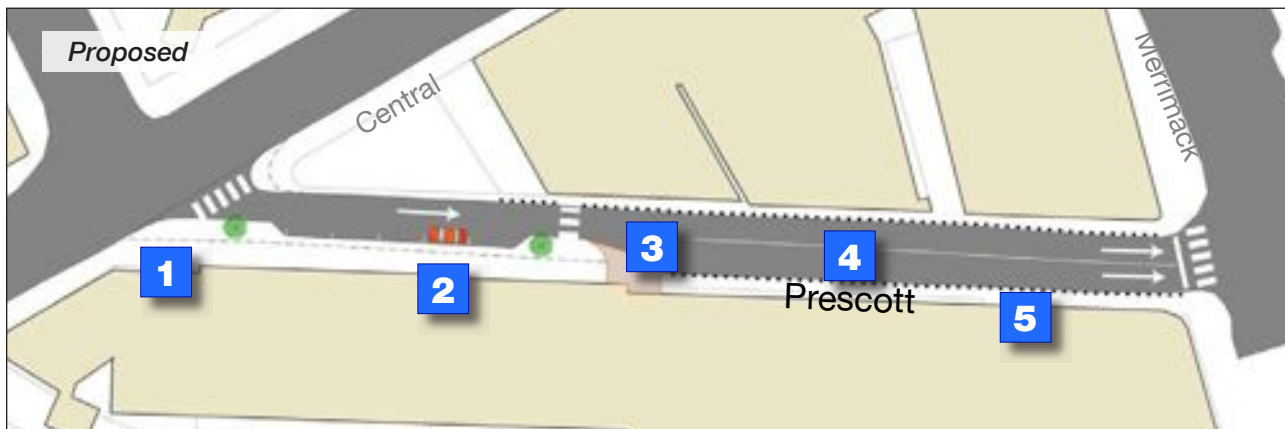
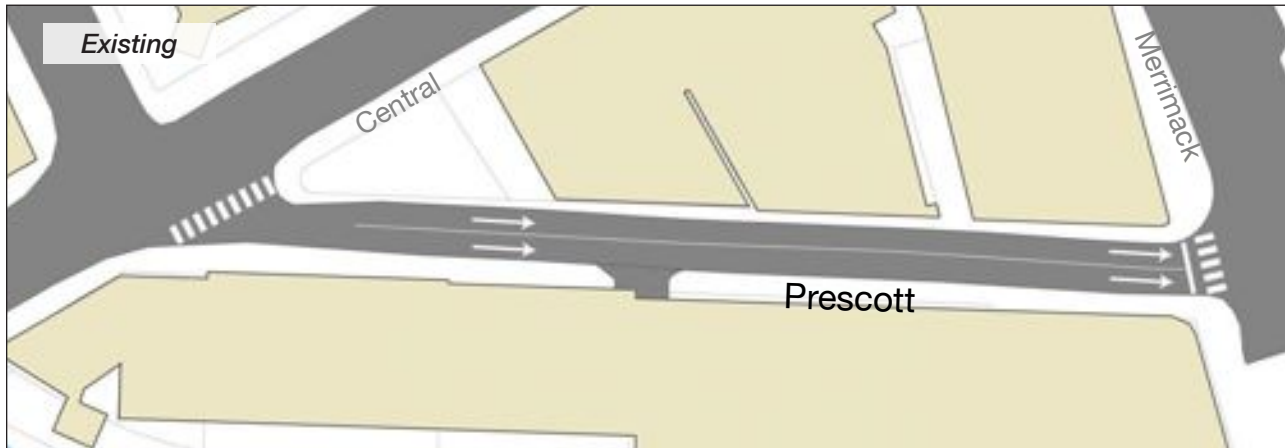
While it speeds traffic to and from the capacious Tsongas Center, Arcand Drive presents one of the least comfortable streetscapes in downtown. It is easy to understand why: the street fails four of the eight safe-street criteria presented at the beginning of this chapter. It frames an oversized block with oversized lanes and a swooping geometry, while lacking street trees completely. Fortunately, its narrow sidewalks are protected by parallel parking, and there is opportunity to restripe its roadway for safer travel without sacrificing any of its prized capacity.

Arcand's 64-foot-wide roadway currently includes 12-foot travel lanes and 8-foot parking lanes. As discussed, 12 feet is 2 feet wider than a standard urban-speed driving lane, and 8-foot parking lanes also have room to spare. Restriping the lanes at 10 and 7 feet, respectively, introduces appropriate-speed geometrics while providing an additional 10 feet of roadway for two bike lanes.

Admittedly, 7 feet is a bit narrower a parking lane than some engineers would like to see on such a high-volume street, but the 5 feet of each bike lane provides ample contingency space. As with the redesign of Merrimack, this restriping will simply welcome bikers while bringing travel speeds closer to the posted limit.

Without spending any money on curb reconstruction or right-of-way acquisition, there is no easy fix for the narrow treeless sidewalks. However, plans for the properties east of Arcand—see Chapter 12—allow the sidewalk to be widened 5' to the east of Arcand and plant regularly-spaced trees in structural soil along the current sidewalk trajectory.

3.10 Prescott Street



Key Recommendations

- 1 Reduced corner turning radius still accommodates emergency vehicles making right turns
- 2 Five on-street parking spaces fit into curb extension
- 3 Driveway reconstructed with rolled curbs to emphasize pedestrian access; mid-block crosswalk introduced
- 4 Bollards added to protect 5' sidewalks.
- 5 Two travel lanes provide ample traffic storage space

Prescott Street currently carries northbound traffic from Central and Market across Merrimack and through downtown. In its current condition it features narrow sidewalks and wide travel lanes, and is generally considered one of the least pleasant streets in downtown, as well as a bad location for retail due to its lack of parallel parking.

Key to reforming Prescott is an understanding of how the street truly functions. It is often choked with traffic, which would suggest that it lacks adequate through-put. In fact, the traffic jams result from backups at the Merrimack Street intersection and further north along Bridge Street, most prominently across the river at its notorious intersection with the VFW Highway. The impeded flow that can frequently be witnessed on Prescott—and on Central further south—is not caused by limited capacity on Prescott or Central, but by the limited capacity of these intersections. What one sees on



Prescott Street



these streets is not inadequate through-put, but rather ample capacity that is serving as car storage for the intersections beyond.

Based on the above understanding, any reduction in vehicle capacity on Prescott can be understood as no limitation to through-put, but rather only a reduction in storage area, which is provided continuously from the VFW Highway down Bridge, Prescott, and Central streets, to a varying length throughout the day. Reducing the storage area on Prescott will only stretch that storage area slightly further south, with no marked effect on travel times.



For that reason, this Plan recommends reducing Prescott to one northbound lane from Central to the driveway tunnel at midblock. This change allows a curb relocation (about 250 feet in length) to fit on-street parking and protective bulb-outs in place of one of the travel lanes. It also calls for a reconstruction of this driveway, to use materials similar to the sidewalk, emphasizing that this tunnel is primarily for pedestrian use. To the north of this driveway, Prescott resumes its existing two-lane section, providing an ample turn lane for drivers headed east on Merrimack.

The addition of parking in this block is intended to serve businesses in the adjacent buildings. Currently, the parking needs of the businesses on this street are met in a small on-site parking area behind the buildings, accessed awkwardly by the narrow tunnel already mentioned. A limited amount of short-term parallel parking on Prescott would take pressure off this rear lot, which is proposed for more productive use in Chapter 13. More importantly, it would give greater viability to retail businesses along Prescott Street, and make at least part of that street much safer for pedestrians.

As noted, half of the east sidewalk and the entire west sidewalk of Prescott Street, both only 5 feet wide, would remain unchanged. Because they are located directly against sometimes fast-moving traffic, these sidewalk edges should be protected by metal bollards.

3.11 Warren and Hurd Streets



While most of the neighborhood east of Central Street is not particularly walkable, one key opportunity for improvement exists in the one-way loop of Warren and Hurd Streets. These streets' one-way configuration and suburban geometries can fairly easily be returned back into a more urban two-way pattern befitting the important uses along them.

Hurd Street is currently configured for eastbound one-way traffic. Warren Street is marked with conventional yellow lines indicating a separation of travel directions, but it functions effectively as a westbound one-way street. The intersection of Warren and Hurd is also confusing in terms of traffic movement and operations. A raised median currently separates Warren's two travel lanes with signage indicating that motorists should use the right lane when leaving the intersection. Perhaps more significantly, the current roadway configuration, with its swooping median, introduces a suburban highway-design vocabulary that communicates a higher-speed automotive environment. As described in Chapter 10, the reintroduction of traditional urban street design in this location would extend the walkable downtown core to include the important UMass Inn and Conference Center and the UTEC facility to its south.

Warren and Hurd Streets



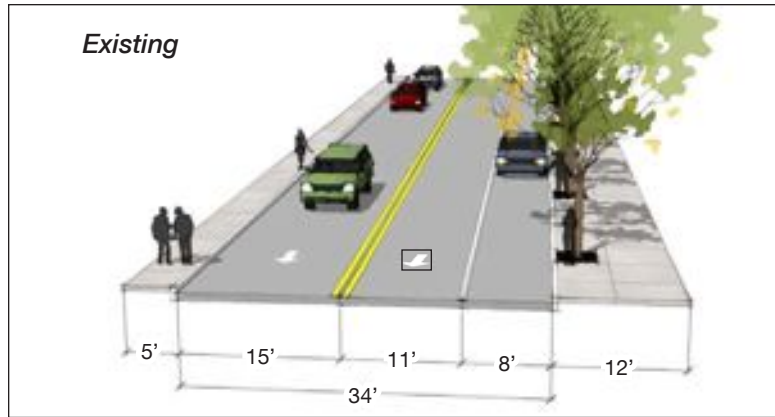
To provide improved driver access and a more accommodating pedestrian environment, both Hurd and Warren should be converted to two-way traffic operations, and should add supplemental on-street parking. The alignment of Hurd could also be changed to lessen the skew of the intersection angle, formalizing a 'T' intersection at Hurd and Warren, but this change is not necessary.

When these low-volume streets reach Central Avenue, their westbound movements can easily be accommodated with a single lane. While replacement of this one-way loop with a two-way pair does introduce more turning motions onto Central Street, these motions are not expected to cause many delays because—as mentioned—congestion in this area is the result of storage limitations, not roadway capacity. When a similar conversion occurred at Appleton and Middlesex Streets, traffic on Central was not adversely impacted.

Key Recommendations

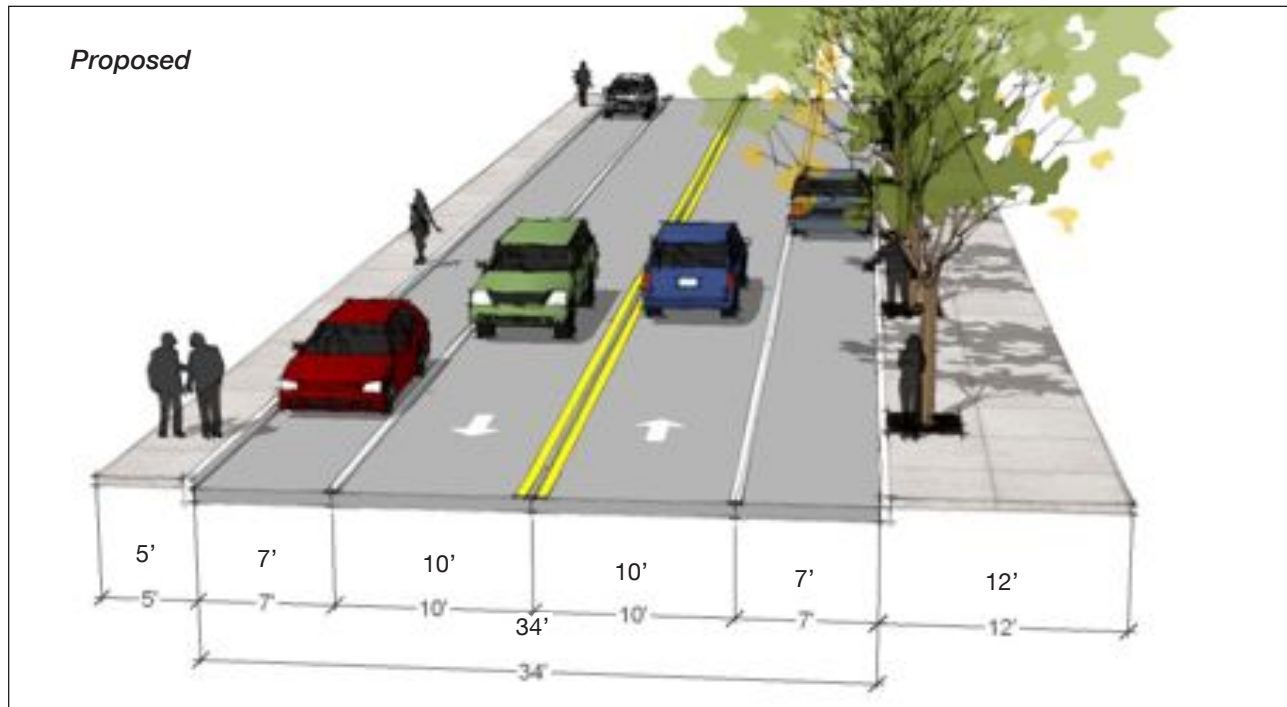
- 1 Two-way Warren with existing travel lane dimensions
- 2 Parking on both sides of Warren where space allows
- 3 Two-way Hurd Street with slow-flow dimensions
- 4 Refined intersection design: eliminate Warren median, realign Hurd into a right angle (optional)

Warren and Hurd Streets



WARREN STREET AT HURD

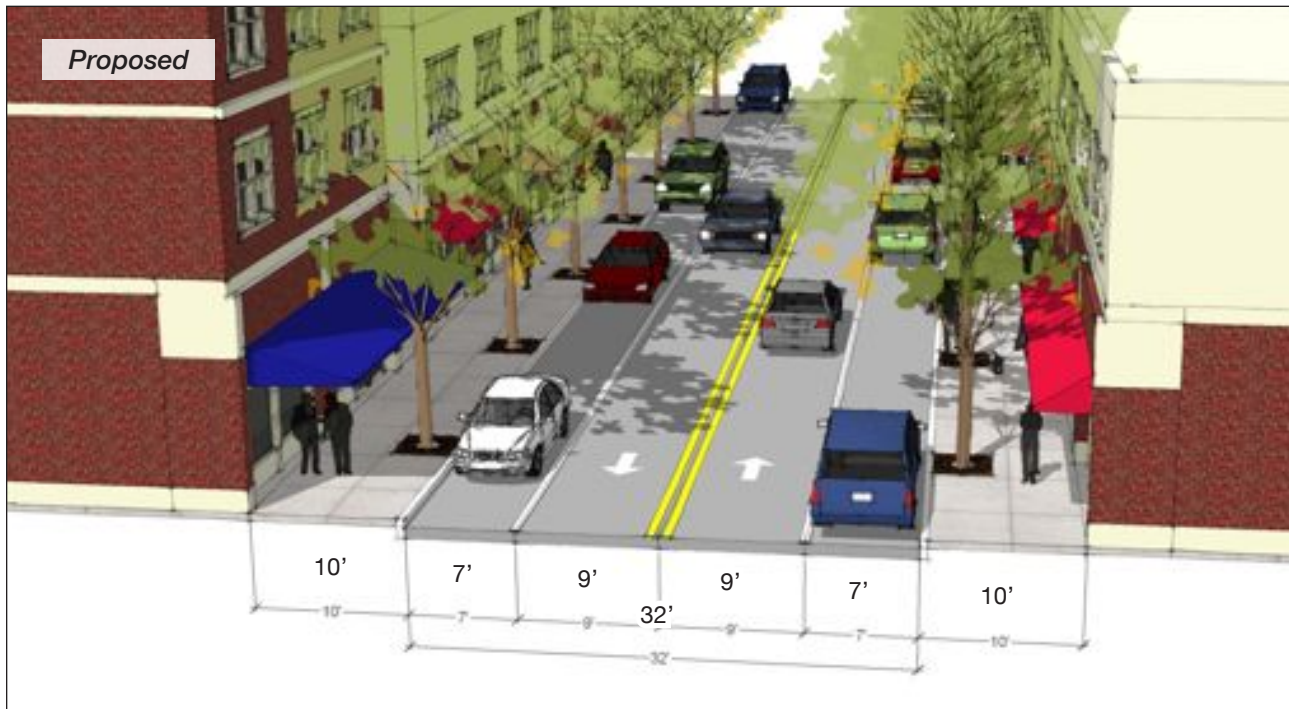
North of Hurd Street, Warren's current width will accommodate two 10-foot travel lanes and 7 feet of on-street parking on both sides of the street. As it heads toward Central Street, the curb-to-curb dimension gradually narrows. Once this dimension drops below 34 feet, parking would be limited to the north side only. Once it drops below 27 feet, parking would end.



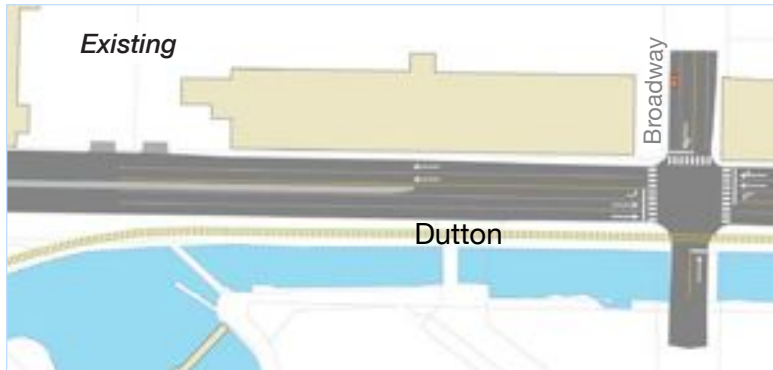
Warren and Hurd Streets

HURD STREET

Hurd Street is currently a single eastbound travel lane with parking on either side. The width of the travel lane and absence of oncoming traffic allow parking to take up more space in the cartway than needed. This street can comfortably be converted to two-way travel, taking advantage of a slower-speed 9-foot lane width dimension. Given the limited traffic flow, this dimension will not provide undue friction. A similar roadway dimension functions effectively on Central Street south of downtown.

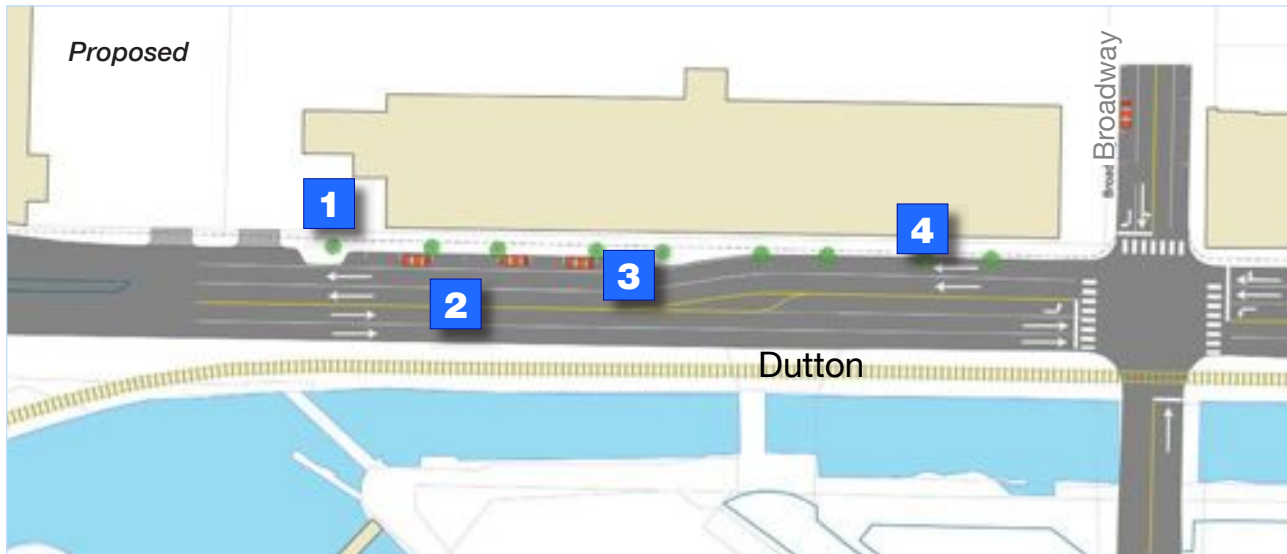


3.12 Dutton Street



Dutton Street is one of downtown Lowell's major access points to the regional transportation network. In addition to connecting to the Lowell Connector expressway, it also provides the most direct connection from downtown to the Gallagher Intermodal Transportation Center and its MBTA commuter rail service connecting to Boston. It carries more car trips in and out of Lowell than any other individual route.

Unfortunately, it is also a significant pedestrian corridor, as it connects downtown to the Lowell Sun Building, which contains a major tourist destination, the American Textile History Museum. It does this along what may be the most inhospitable sidewalk in Lowell, 5 feet of treeless concrete sandwiched between a building wall and four to five lanes of high-speed traffic. This is not a walk that many pedestrians choose to make twice.

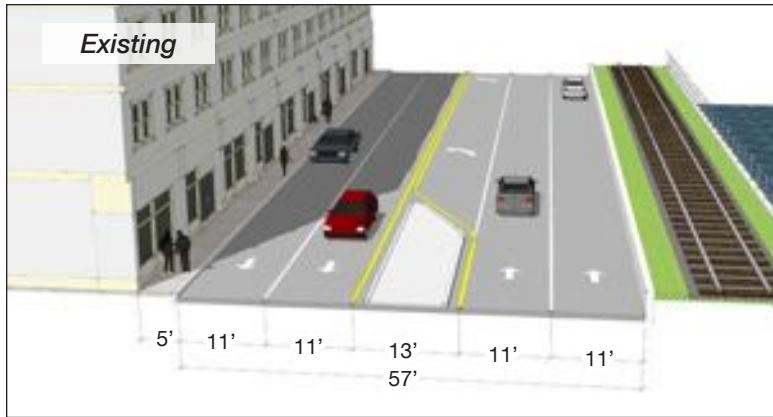


For this reason, the western sidewalk of Dutton Street from Fletcher to Broadway is recommended for one of the more expensive retrofits in this Plan. A recent reconstruction of the adjacent block, from Broadway to Market, shows what a difference a few feet of sidewalk can make when planted with continuous street trees. A similar solution is proposed for this next block, made possible by reducing the driving and turn lanes to a standard 10-foot dimension, and by eliminating the highway-style concrete median. Shortening this median, which invites highway-style driving, will also reduce speeding in this location.

Key Recommendations

- 1** Current section resumes at Textile History Museum driveway
- 2** Existing roll-curb median is removed and width transferred to sidewalk
- 3** Parallel parking placed where allowed by road width.
- 4** Properly-sized travel lanes allow a curb extension with trees to protect the sidewalk.

Dutton Street



Dutton from Market to Broadway has been vastly improved by a consistent tree planting.



As indicated in the plan drawing, 10-foot travel lanes allow for a wider sidewalk and street trees to be introduced as far north as Broadway. This sidewalk widens as the Broadway left-hand turn lane drops out, and eventually contains enough extra width to include parallel parking against the curb, protected by bulb-outs. This proposal calls for the complete reconstruction of the curb from Fletcher to the Lowell Sun building, but it transforms a memorably unpleasant walk into something much more palatable.

3.13 Father Morrisette Boulevard



Although the apocryphal vision of the 1960s plan for downtown Lowell thankfully never came to pass, it was initiated, with the construction of Father Morrisette Boulevard from University Avenue Bridge to Lowell High School. Along this trajectory, its 5-lane cross section and high-speed geometrics were appropriate to an urban expressway that was intended to circle the entire downtown. But construction then stopped, and the city was left with a roadway that lacks the continuity that would have justified its high volume, high-speed design. As a result, it has wisely been determined that this street can be rebuilt as a lower-speed 3-lane boulevard in conjunction with the construction of the proposed downtown circulator trolley.



Father Morrisette Boulevard

The proposal presented here is only meant to be completed hand-in-hand with this major transit investment. In the true spirit of urban triage—please see Chapter 8—this Plan recommends that Father Morrisette Boulevard not receive a penny of local investment otherwise, because it is so poorly equipped to attract pedestrians on its own merit, it is not essential to the creation of an effective downtown pedestrian network, and it can only be reformed with a tremendous amount of public and private dollars. This money is best spent elsewhere—unless it arrives in the form of transit funding.

In optimistic anticipation of such funding, the pages that follow show a full portfolio of solutions for remaking Father Morrisette Boulevard along a right-of-way that varies from over 100 feet to as little as 60 feet in width. The drawings address this range of cross sections by applying a kit of parts that accumulate or drop off as the right-of-way grows or becomes smaller. Cumulatively, these parts all add up to a luxurious tree-lined transit boulevard with a broad median, turn lanes, bike lanes, and parallel parking. When there is not room for every part, it is important that the excluded parts drop off in the proper order.

The kit of parts functions as follows:

• Two minimum sidewalks over bridges	@5' each	+	
• Two bicycle lanes	@5' each	+	
• Two driving lanes	@10' each	+	
• <u>Median double-tracked for streetcars</u>	@20'	+	S
• <u>Two expansions to sidewalk including street trees</u>	@5' each	+	M
• <u>Expansion to median including two turn lanes</u>	@10' each	+	L
• Two parking lanes	@ 8' each		XL

Each underline in the above kit represents a decision point, such that four different outcomes—Small, Medium, Large, and Extra Large—are possible based on the available right-of-way. Adding up the above parts shows that the required R-O-W widths are as follows:

- Small 60' min.
- Medium 70' min.
- Large 90' min.
- Extra Large 106' or more.

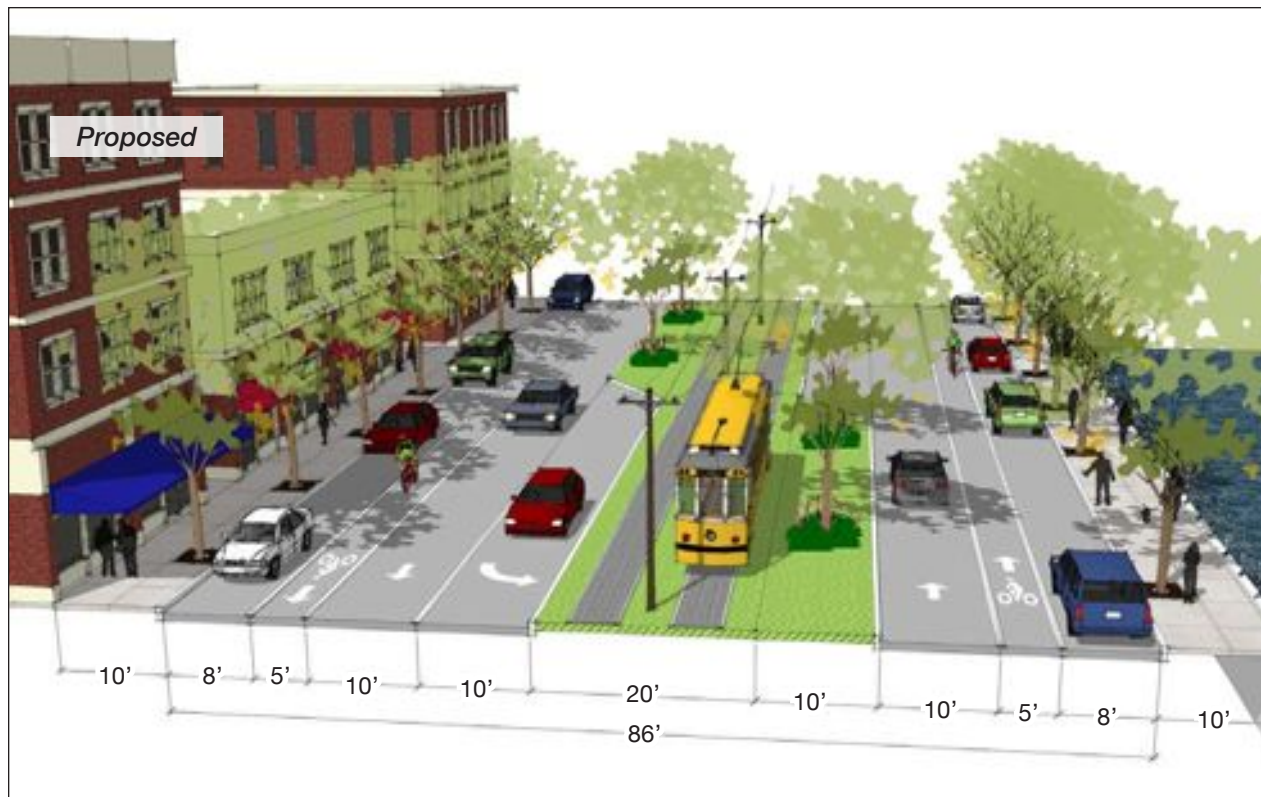
The four above options are illustrated in these pages. There are, of course, intermediate solutions. For example, any R-O-W above 60' should have broader sidewalks, and a right-of-way of 98' would include a single parking lane instead of two, recommended for the southern curb. These decisions must be made judiciously, with excess unused R-O-W being contributed to the median so that the other street dimensions remain consistent

Father Morrisette Boulevard



EXTRA LARGE

At its widest, Father Morrisette has adequate dimension to accommodate double-tracked trolley in a median alignment with additional space to hold left turn lanes as needed at intersections. As shown in the bicycle plan, it also carries on-street bicycle lanes.



Where the trolley alignment joins Father Morrisette Boulevard, the combined rights-of-way of both trajectories are available as a corridor for a complete street with a streetcar median.

Father Morrisette Boulevard



LARGE

In sections where right-of-way is constrained below 100 feet, on-street parking should be eliminated, first on one side, then on both. All other street elements remain.



Elsewhere on Morrisette, the trajectory narrows and broadens, requiring a variety of solutions achieved by a cumulative kit of parts.

Father Morrisette Boulevard



MEDIUM

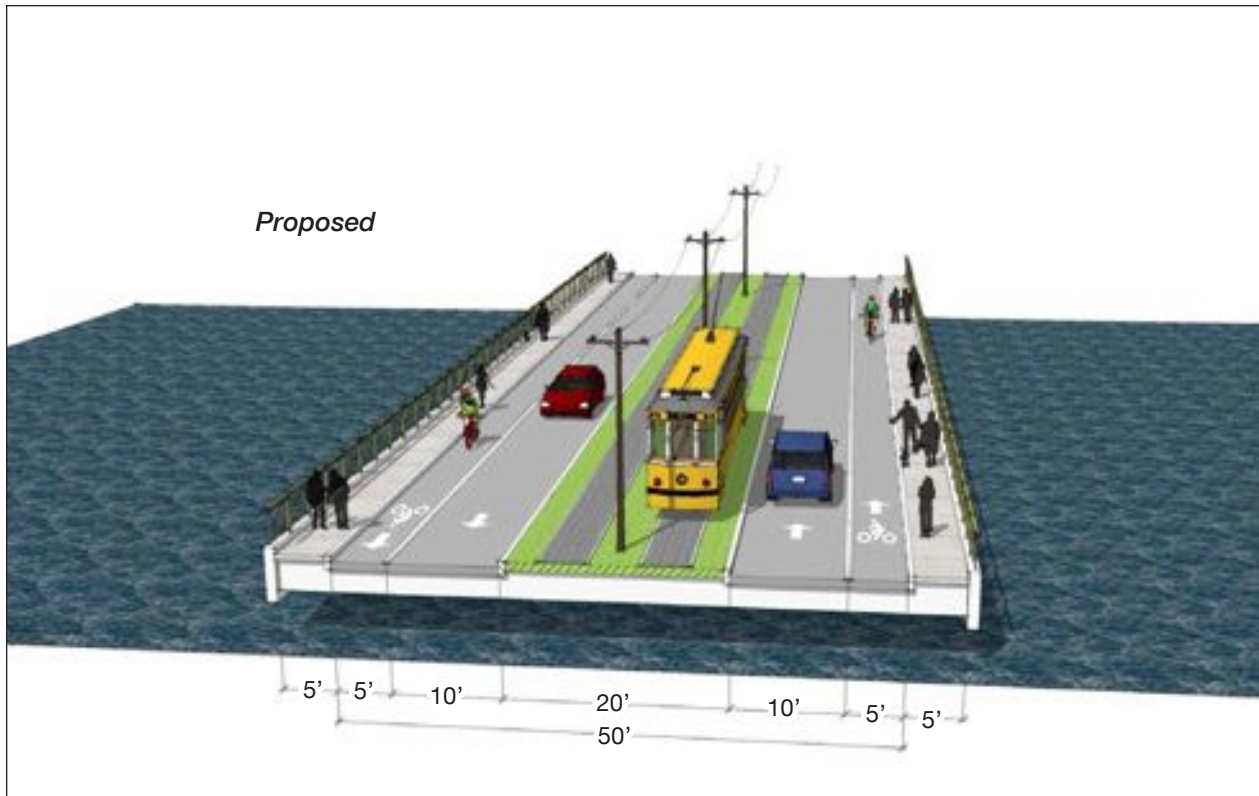
At certain locations, the right-of-way is further constrained below 90'. In these places, the median is narrowed to as little as 20' through the removal of left-hand turn lanes.



Father Morrisette Boulevard

SMALL

Finally, at the pinch point across the Western Canal bridge, sidewalks should be reduced to 5 feet in width so that the existing bridge structure need not be enlarged.



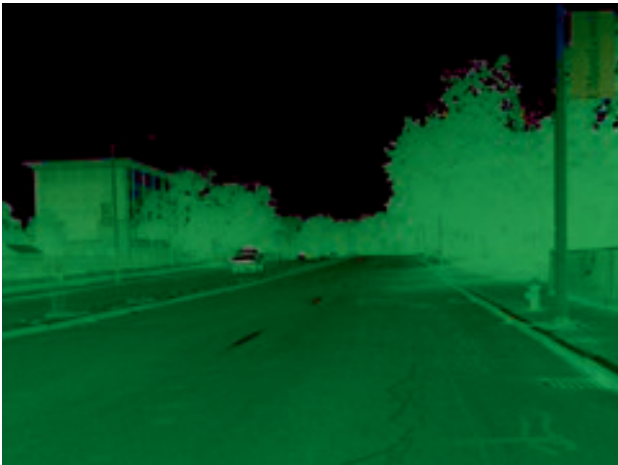
Father Morrisette Boulevard

A Shorter-Term Solution

As noted, the above plans are based on the construction of a streetcar and, without one, significant investment in Father Morrisette Boulevard is not recommended. However, given that it is currently oversized for its traffic, encourages speeding, and has roadway available for more productive uses, it is recommended that a restriping regime be implemented in conjunction with the other short-term reconfigurations presented above.

Currently, the typical Boulevard segment contains two 24-foot-wide halves, each of which holds two 12-foot travel lanes (plus turn lanes). Each of these halves should be restriped to contain an 11-foot driving lane, a 7-foot parking lane, and a 6-foot bike lane. The parking lanes would be available for use by the high school and by overflow visitors to the Tsongas Arena and Boarding House Park, taking

pressure off the Ayotte Garage. The bike lanes would immediately introduce a key component of the Bicycle Network without having to wait for the construction of a streetcar. This restriping could be accomplished for the cost of paint alone, without even requiring revised signals.



In the short term, each 24-foot-wide segment of Morrisette should be restriped into one travel lane, one bike lane, and one parking lane.

The 13 proposed reconfigurations are presented in the current order for a reason. Items 1 – 4 (below) represent a comprehensive reconfiguration of the circulation system, and must be accomplished in tandem. Items 5 – 9 are paint-only road diets that introduce bike lanes and more appropriate driving speeds to inefficiently striped streets. These should also be completed in tandem, to establish a meaningful bicycle network. Finally, items 10 – 13 are individual construction projects of higher cost that can be accomplished independently from one another.

While the first 12 projects would ideally be completed quickly, it is reasonable to consider the first 9 projects as short-term, since they are the most important and the least expensive. Projects 10 – 12 can be considered mid-term, since they are independent and more expensive. Father Morrisette Boulevard is a long-term project—but only as long as it takes to build the streetcar.

SHORT TERM

Circulation:

- 1. Market Street: converted to two-way.
- 2. Shattuck Street: converted to two-way, and flow on Middle Street reversed.
- 3. Central Street: converted to two-way and one parking lane added.
- 4. Ladd and Whitney Monument Square: Worthen and Merrimack segments made two-way.

Restriping:

- 5. Merrimack Street: lanes resized to include a bike lane.
- 6. East Merrimack Street: one parking lane traded for two bike lanes.
- 7. West Merrimack Street: lanes resized to include bike lanes.
- 8. French Street: lanes resized to include a parking lane and two bike lanes.
- 9. Arcand Drive: lanes resized to include bike lanes.
- 9b. Short-term revision to Father Morrisette Boulevard (see 13): two travel lanes traded for two parking lanes and two bike lanes.

A final note: a number of downtown wayfinding signs appear to be damaged or missing. The traffic reconfigurations recommended here should include a budget for upgraded wayfinding facilities.

MID-TERM

Independent Construction Projects:

- 10. Prescott Street: one travel lane partially converted to parking and widened sidewalk.
- 11. Warren and Hurd Streets: converted to two-way; parking and urban geometrics added.
- 12. Dutton Street: widened sidewalk and parallel parking added where possible.

LONG TERM

- 13. Father Morrisette Boulevard: redesigned as complete street including a streetcar (long-term). Short Term: Two travel lanes traded for two parking lanes and two bike lanes.

