

City of Thunder Bay  
**TRANSPORTATION MASTER PLAN**

Background Report G:  
**PUBLIC REALM  
IMPROVEMENTS AND  
LANE REASSIGNMENTS**

April 2019

# Table of Contents

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<b>1</b>	<b>Background .....</b>	<b>1</b>
1.1	The Role of Urban Streets .....	1
1.2	Objectives and Approaches .....	1
<b>2</b>	<b>Public Realm Improvements in the Core Areas .....</b>	<b>2</b>
2.1	Placemaking through Public Realm Improvements .....	2
2.2	Red River Road (Court Street to Cumberland Street).....	3
2.3	Donald Street (Syndicate Avenue to May Street) .....	9
2.4	Victoria Avenue (Archibald Street to May Street).....	12
2.5	Bay Street (Algoma Street to Court Street).....	15
2.6	Recommendations.....	18
<b>3</b>	<b>Lane Reassignment or “Road Diet” Corridors .....</b>	<b>19</b>
3.1	Road Diet Primer .....	19
3.2	Proposed “Road Diets” .....	24
3.3	James Street, Victoria Street to Edward Street.....	24
3.4	Oliver Road-John Street, Balmoral Street to Court Street .....	28
3.5	Red River Road, east of Algonquin Avenue to Court Street .....	31
3.6	Other Road Diet Candidates.....	34
<b>4</b>	<b>Summary of Recommendations.....</b>	<b>35</b>

# 1 Background

## 1.1 The Role of Urban Streets

Urban streets are asked to fulfill two important roles. They need to function as corridors that efficiently move people and goods throughout the city while, at the same time, act as places that draw people and create economic activity. The key is to find the right balance between streets whose primary function is to provide a transportation link and streets whose primary function is to create a sense of place.

The function of street as transportation corridors is addressed in numerous ways in the Transportation Master Plan and the need for streets to provide efficient movement of people and goods is well understood.

However, the importance of streets as places demands more emphasis. Cities have the opportunity to strategically adapt municipal road infrastructure to support city building goals beyond only moving traffic. Improvements to the public realm, reallocation of road space to other uses, and other interventions can help support vibrant communities, foster economic development, and improve quality of life for all residents.

Success depends on achieving the right balance between the two competing interests. This report examines improvements to the public realm and the reallocation of road space to both improve the function of transportation corridors and to capitalize on the placemaking attributes of certain streets.

## 1.2 Objectives and Approaches

Three specific objectives were identified for the corridors reviewed in this report:

- Improve vibrancy of core areas,
- Accommodate cycling infrastructure, and
- Make walking more attractive.

Two different approaches are required to meet the above objectives. The first approach focuses on placemaking in the core areas, where there is higher potential to improve the vibrancy of the street due to the existing land uses and cultural significance at each location. This means the road space for traffic or parking lanes may be reallocated to expand and improve the public realm. This approach represents a significant rebalancing towards the function of streets as places. The transportation link function is retained, but reduced in priority in order to capture the value of these emerging vibrant locations.

The second approach relies on a lane reassignment or implementation of a “road diet”. This approach maintains the core function of the corridor as a transportation link, but rebalances the function to serve not only cars and trucks but also active modes, as space is reallocated towards new or improved cycling infrastructure and/or sidewalks.

## **2 Public Realm Improvements in the Core Areas**

### **2.1 Placemaking through Public Realm Improvements**

#### **2.1.1 Background**

The City of Thunder Bay has identified three locations within the downtown cores where lane and/or parking modifications are being contemplated for public realm improvements. The three locations are:

- Red River Road, between Court Street and Cumberland Street;
- Donald Street, between Syndicate Avenue and May Street; and
- Victoria Avenue, between Archibald Street and May Street.

These segments were evaluated from a transportation perspective to assess the opportunities that public realm improvements present, as well as the potential impacts of reducing capacity or removing parking.

Additionally, through the process of reviewing selected intersection operations, a preferred modification presented the opportunity to expand the pedestrian realm at one additional north core location – Bay Street, between Algoma Street and Court Street.

#### **2.1.2 Streets as Public Spaces**

While the core function of most urban streets is to allow residents and goods to travel between different areas, many cities are increasingly recognizing their value as the most abundant and ubiquitous public spaces in the city.

Adopting the view that streets are public spaces means re-organizing strategic streets and utilizing the reclaimed space to create vibrant destinations where people would like to be rather than simply pass through.

This can be achieved in a number of ways, such as relocating on-street parking to provide parklets and patios, or removing a lane of traffic in order to widen the sidewalks, provide street trees or allow shops to set up sidewalk displays.

The most appropriate spaces for these types of improvements are typically found within downtown commercial areas. In Thunder Bay, this means looking at both the north and south cores – areas which have been increasing in vibrancy in recent years – as candidates for improvements with an eye towards areas where the public realm could be modified to encourage and support the growing people-first vibrancy of the cores.

The City of Thunder Bay already recognizes the importance of creating beautiful and balanced streets and the significance of their role as public spaces. The City's 2012 Image Route Guidelines and Detailed Streetscape Designs states that vibrant streets "support sustainable development and build community pride" and that when "designed and maintained successfully they will catalyze new investments in these corridors as great places to live, work and shop."

Streets as destinations, in turn, “will enhance Thunder Bay’s ability to attract visitors and retain existing residents.” In short, investing in the public realm is good for the local economy.

Exhibit 2.1: Seasonal patio occupying road space in Montreal



Source: IBI Group

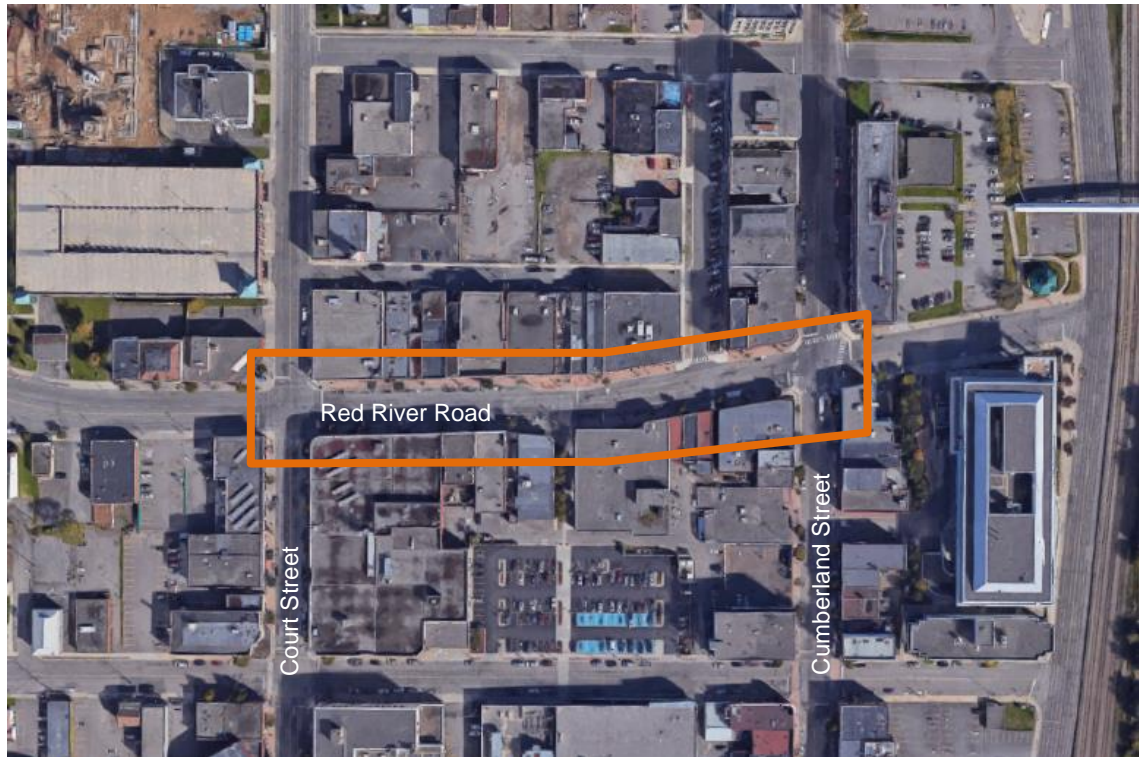
## **2.2 Red River Road (Court Street to Cumberland Street)**

### **2.2.1 Existing Conditions**

Red River Road, from Court Street to Cumberland Street, is located in the heart of the north core and its adjacent land uses are mainly commercial with a mix of shops, restaurants, bars, and offices. The sidewalks are generally wide with interlocking pavers. The street is generally welcoming to pedestrians, though outdoor public seating is not available. Nearby, St. Paul Street was recently re-designed to widen the sidewalks on the west side in order to provide space for patios and outdoor seating areas. The Red River Road subject area is shown in Exhibit 2.2.

Red River Road is classified as a major arterial road and this segment comprises a single block approximately 220 m in length. The segment is bound on each end by signalized intersections at Court Street to the west and Cumberland Street to the east. Near the eastern end, St. Paul Street forms the only intersection within the block. St. Paul Street is a one-way street northbound from Red River Road.

Exhibit 2.2: Red River Road Subject Area



Imagery: Google, Map data: Google

In addition to the signalized intersections at Court Street and at Cumberland Street, there is a midblock pedestrian signal at the pedestrian walkway connecting to Park Avenue.

The existing configuration of Red River Road consists of one eastbound travel lane with 13 metered on-street parking spaces along the curb and two westbound travel lanes with 11 metered on-street parking between curb extensions. There are no private driveways within this section of Red River Road.

The Waterfront BIA, which includes the entirety of the block, advertises a total of 1,200 parking spaces within the general area. Included in that parking count is a large, multi-story municipal parking garage located on Court Street just north of Red River Road, several other surface parking lots (city or privately-owned), and on-street parking.

Peak hour volume on Red River Road is approximately 465 vehicles (2013 PM peak hour, both directions) with an estimated annual average daily traffic (AADT) of 7,130 vehicles (2013). Traffic volumes are projected to remain fairly stable in this area over the 20-year TMP horizon.



One bus stop exists on each side of the Red River Road which service a number of bus routes, including the 3C, 3J, 3M, 9, 11, and 13. The Waterfront Terminal is located two blocks northeast of the site.

### **2.2.2 Opportunities**

This section of Red River Road is already among the most diverse and vibrant in the City. Tremendous potential exists to upgrade facilities and create an attractive space that draws visitors using all modes to the area. Opportunities exist to increase pedestrian space, provide cycling facilities, and for businesses to utilize outdoor space.

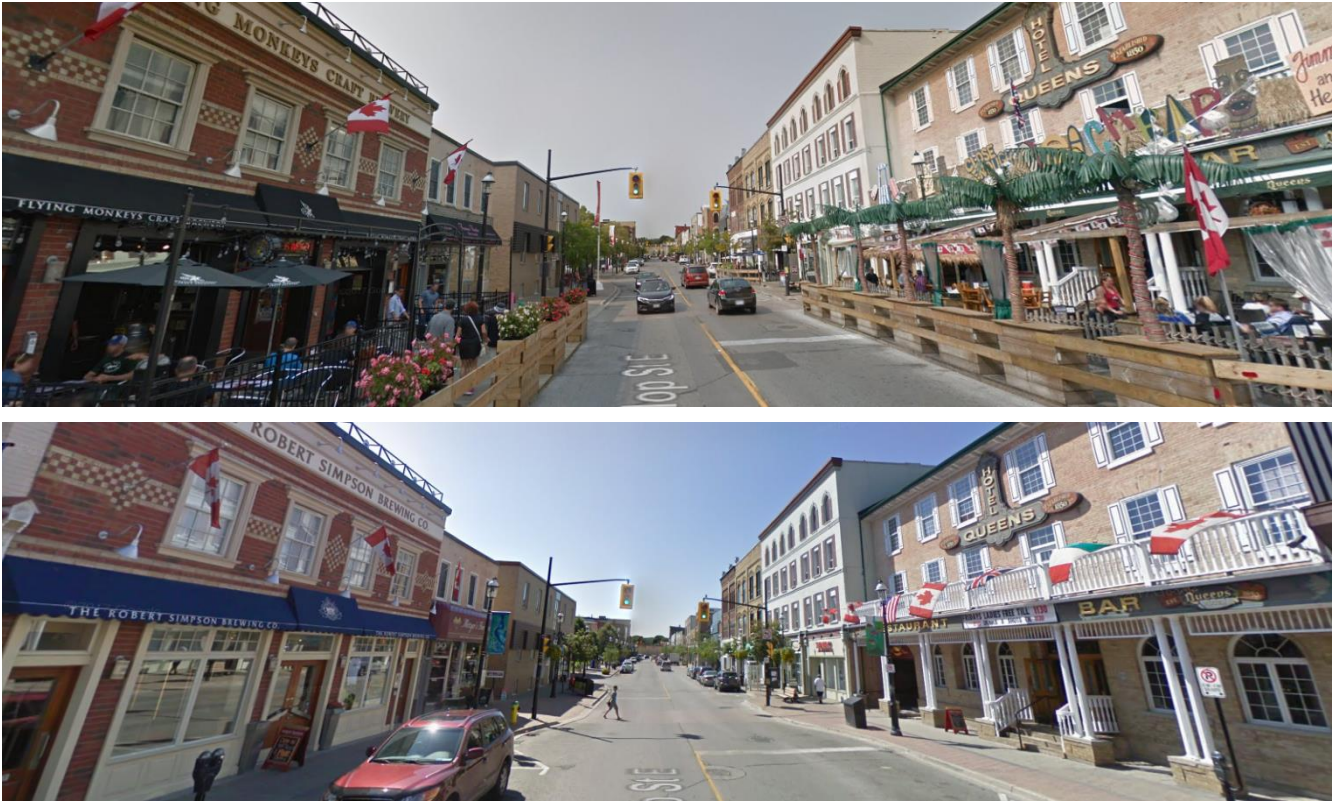
There are many ways to implement improvements in this location, ranging from eliminating only one lane of on-street parking or vehicular travel to fully closing the road to vehicular traffic and creating a pedestrian mall.

An opportunity worth exploring is the potential for a roadway re-design that incorporates flexibility to use the roadway in different ways at various times of the week or year. This may allow the street to be fully closed for special events or for summer weekends, as an example. Flexible space may also allow for seasonal patios or parklets within the parking area, or any number of other configurations. A flexible design would also allow the street to evolve naturally over time based on the input from the local businesses and residents. For example, a full closure of the street may not be practical at this time, but through the coming years, local perception and desires may shift in that direction, and a flexible arrangement can help make that happen.

Dunlop Street in the City of Barrie, Ontario, provides a good example of a cost-effective seasonal retrofit. During warm weather months, the City permits temporary sidewalk extensions atop the parking lanes on Dunlop Street. These detour pedestrians around business' patios and sidewalk displays which are placed on the existing sidewalk. Exhibit 2.3 shows the conditions in the same location in August 2009 and September 2017. The City of Barrie has recently announced plans to construct modifications to Dunlop Street to make it easier to accommodate patios and outdoor retail space.

**IBI GROUP BACKGROUND REPORT**  
**THUNDER BAY TRANSPORTATION MASTER PLAN**  
**PUBLIC REALM IMPROVEMENTS AND LANE REASSIGNMENTS**  
Prepared for City of Thunder Bay

Exhibit 2.3: Example of seasonal parking reductions in order to improve the public realm in Barrie, ON.



Imagery: Google, Map data: Google

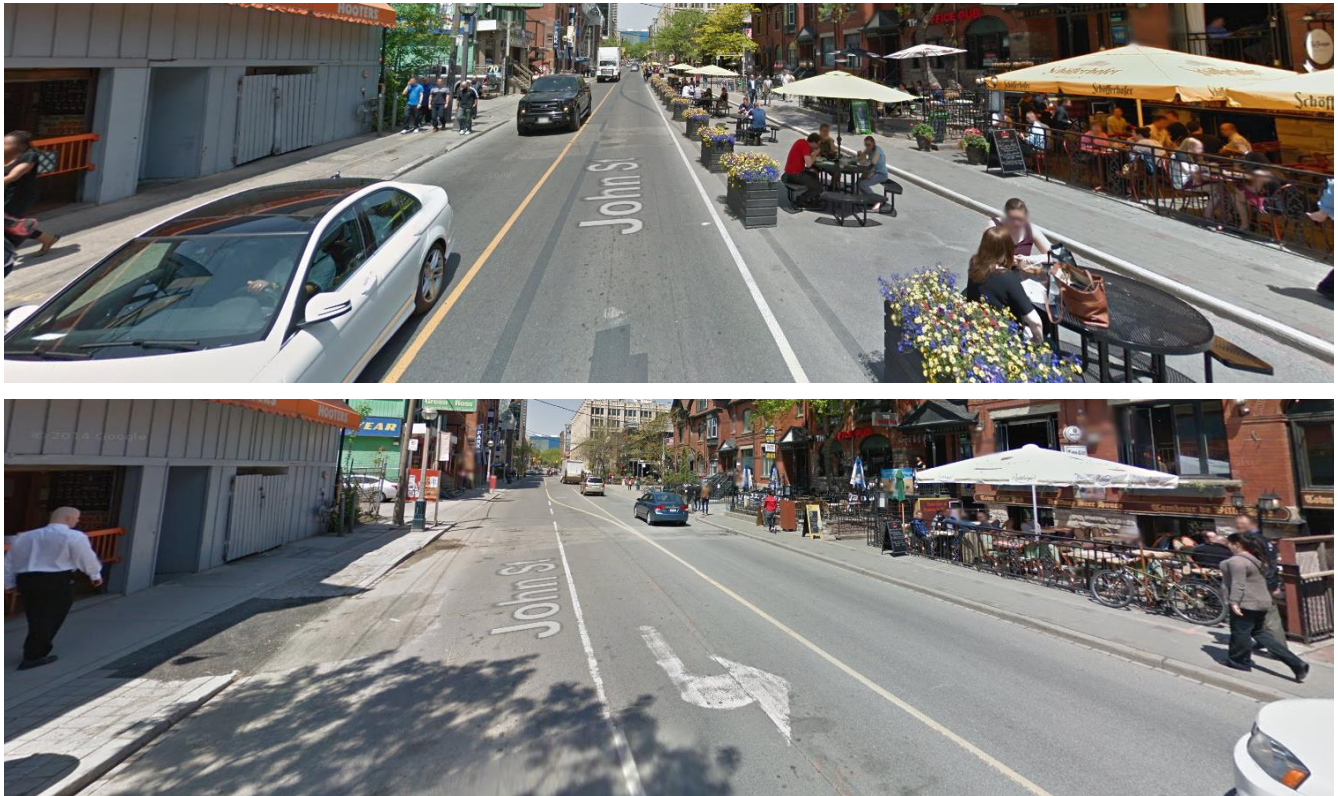
An alternative installation involves locating businesses patios or public seating areas in similar structures occupying the parking lane, while maintaining the pedestrian clearway along the existing sidewalk.

In the City of Toronto, a pilot project was conducted on John Street, where large temporary planters were used to expand the pedestrian realm and add picnic tables and chairs. During the winter, these were removed and the road was restored to its original state, as shown in Exhibit 2.4.

Finally, in conjunction with a potential new crossing of Water Street, there is an opportunity to bond the vibrant waterfront area with the commercial area on Red River Road, which could be made stronger through public realm enhancements.



Exhibit 2.4: Planters were used to expand the pedestrian realm in this Toronto pilot project. The street is shown with and without the temporary intervention.



Imagery: Google, Map data: Google

### **2.2.3 Potential Impacts**

#### **Vehicle Movements**

Traffic volumes on this section of Red River Road are moderate (with average daily traffic (ADT) levels well below 10,000 vehicles) and intersection operations at the signalized intersection on both ends of the subject corridor operate with sufficient capacity. From a traffic operations perspective, reallocating a part of the roadway width currently used for parking or vehicular travel to another use is not expected to create undue delay as it is expected that the existing configurations at the signalized intersections can be maintained.

The grid street pattern in the north core also provides for many alternative routes for travelling in and around the core area for those not destined to the businesses directly situated on Red River Road. The next parallel east-west road to the north is Van Norman Street, a 2-lane road located 150 m to the north. The next parallel east-west road to the south is Park Avenue, a 2-lane road located 110 m to the south. Any displaced traffic can be distributed to multiple parallel roads, taking advantage of existing available capacity on those roadways.

### **Parking**

The existing 24 metered, on-street spaces on this section of Red River Road represent a small portion of the overall parking supply in the immediate area. Any changes to on-street parking on this section would have a minimal impact on the overall availability of parking in the immediate area.

Modifications to improve the public realm in the corridor could be undertaken in a manner that minimizes the removal of on-street parking. Along the north side, the on-street parking is already protected by curb extensions. A similar treatment on the south side of the corridor would provide the benefit of narrowing the travel portion of the roadway while maintaining on-street parking.

### **Transit Vehicles**

The impacts to transit vehicles correlate strongly with the type of public realm improvements made. A full closure of Red River Road would require diversion of the existing bus routes that use Red River Road. This would incur an additional negative impact in that the businesses located along this block would not be served as directly by transit.

However, a lane reduction within the right-of-way, could be designed to accommodate transit stops with no negative impact to transit operations but provide for opportunity to improve transit passenger amenities at the bus stop.

### **Pedestrians**

An improved public realm could draw pedestrians to the area at higher numbers than currently exist and provide an improved pedestrian experience.

### **Businesses**

The potential addition of outdoor patio space and/or improved public amenities could be an attraction that draws more people to the area which would have a direct impact on the restaurants and bars as well as a spillover impact on other businesses in the area. However, if parking spaces are reduced, it may decrease the desirability of driving to the area for a segment of the population.

## **2.2.4 Summary**

Anticipated transportation impacts of public realm improvements Red River Road could be mitigated through the design and any remaining impacts would be minimal. The reduction of parking space, if any, would be a small fraction of the area's supply. Traffic volumes on this roadway section are low to moderate and can be accommodated within a narrower roadway and the existing compact street grid's ability to absorb any displaced traffic. The largest impact would be to transit operations if the case where the road is modified to the point where transit cannot use it (an unlikely scenario), as several routes currently operate through this section. This segment shows potential to be greatly improved by an upgraded public realm.

## **2.3 Donald Street (Syndicate Avenue to May Street)**

### **2.3.1 Existing Conditions**

Donald Street, from Syndicate Avenue to May Street, is located in the south core adjacent to City Hall. The street also functions as an important part of Thunder Bay Transit's City Hall Terminal. Thunder Bay City Hall and its public square occupy the entire south side of the block from Brodie Street to May Street. Also on the south side is St. Andrew's Presbyterian Church and a 5-storey office building. The north side of the street is comprised of buildings that primarily front onto the perpendicular streets, though access to a few businesses is available from Donald Street. There is also a small private parking lot west of Brodie Street. The Donald Street subject area is shown in Exhibit 2.5.

Exhibit 2.5: Donald Street Subject Area



Imagery: Google, Map data: Google

Donald Street has one travel lane in each direction and is classified as a collector road. The subject section comprises two blocks with a total length of approximately 150 m. The site is bisected by Brodie Street, which meets Donald Street at a 4-way stop. The site is bound on each end by signalized intersections at Syndicate Avenue to the west and May Street to the east. Two north-south laneways are also accessible from within the site, one heading north opposite

City Hall and the second in both directions between Brodie Street and Syndicate Avenue.

Donald Street has a total of approximately 17 metered on-street parking spaces located on both sides of the street. The Fort William Business District publicizes that there are 321 metered on-street parking spaces in the area with the multi-storey Victoriaville Parkade located in the northwest quadrant of the intersection of Donald Street at Syndicate Avenue providing an additional 620 parking spaces.

Peak hour volume on Donald Street is 280 vehicles (PM peak hour, both directions) with an estimated ADT of 3,550 vehicles (2014). Traffic volumes are projected to remain stable on this road section within the TMP horizon.

Donald Street serves Thunder Bay Transit's City Hall Terminal. Eight bus routes converge at City Hall with passenger loading areas on three sides of the public square bound by Brodie Street, Donald Street, and May Street.

Though the street is likely to see a large number of pedestrians due to the transit terminal and its proximity to the Victoriaville Centre and the rest of the south core, it is not a particularly vibrant street, and not focused on pedestrians. The plaza in front of City Hall, however, provides seating, shelter, and public art.

### **2.3.2 Opportunities**

As this segment of Donald Street serves the City Hall transit terminal, improvements to pedestrian and transit passenger amenities would be a practical upgrade.

Potential improvements such as widening sidewalks, planting street trees, and adding benches or other street furniture present an attractive opportunity. The existing travel lanes are wide, so the public realm could be allocated more space within the road right-of-way without having to remove a traffic lane, though it will be important to ensure the resulting geometry accommodates frequent transit vehicle movements. Parking could be consolidated to one side of the street, or removed altogether, to facilitate improvements for pedestrians and/or transit amenities.

It would also be possible to transform this segment of Donald Street into a transit-only facility for use by the transit vehicles and transit passengers that converge at the City Hall terminal, particularly the section between Brodie Street and May Street in front of the City Hall plaza.

### **2.3.3 Potential Impacts**

#### **Vehicle Movements**

A closure to private vehicles would create a barrier for east-west traffic, compounding the existing closure of Victoria Avenue, one block to the north. Traffic would have to be re-directed to Arthur Street (180 m to the south) or Miles Street (340 m to the north). A closure for the easternmost block only would



allow through traffic to proceed north via Brodie Street and Victoria Avenue to reach May Street.

However, given the existing width of the travel lanes, improvements to the pedestrian realm could be achieved without the need to remove vehicular traffic from the street. Keeping parking on at least one side while maintaining a travel lane in each direction would be feasible, ensuring there would be minimal impact to vehicle movements.

### **Parking**

On-street parking is currently available on three of the four block faces on this road segment, with the other being reserved for transit vehicles. With the large parking garage located at the western end of the segment as well as several surface lots to the south, there is sufficient parking capacity in the area. The loss of a portion or all of the 17 parking spaces could be absorbed by available parking supply in the area with minimal impact. However, losing the convenience of on-street parking on Donald Street could present negative impacts to visitors to City Hall who arrive by car.

### **Transit Vehicles**

Thunder Bay Transit has undertaken recent improvements to the City Hall transit hub area to provide larger, heated shelters and passenger information displays. These improvements within the public realm provide transit users and other pedestrians a place to rest, wait or seek shelter in inclement weather. Given the importance of this road segment in serving the transit terminal, it is important to ensure that a priority is given to accommodating transit operations.

### **Pedestrians**

An enhanced pedestrian realm would improve the experience for pedestrians travelling between the transit terminal, Victoriaville Centre and other south core businesses and services. Given the lack of retail businesses along this segment it is unlikely that the benefits will be significant in the short to medium term. The main beneficiaries of public realm improvements will be to transit riders using the City Hall terminal and workers at the area businesses and City Hall.

### **Businesses**

There are few private businesses located on the subject corridor and direct impacts would be limited. A reduction of on-street parking spaces may present a negative impact to the immediately adjacent businesses. However, the improved pedestrian realm may attract more pedestrians and customers to frequent the area.

#### **2.3.4 Summary**

Any modifications to Donald Street must prioritize transit operations and pedestrian access to the transit terminal. Impacts to other modes of transportation are expected to be minimal. While improving the pedestrian realm would be welcome, it may not have as high of a return on investment as other



potential locations in terms of adjacent commercial businesses utilizing the public realm (e.g. for patios).

## **2.4 Victoria Avenue (Archibald Street to May Street)**

### **2.4.1 Existing Conditions**

This segment of Victoria Avenue in the south core is comprised of two distinctly different contexts. From Archibald Street to Brodie Street, Victoria Avenue is closed to vehicles having been converted into the indoor, City-owned Victoriaville Centre in 1980. The section from Brodie Street east to May Street is a 2-lane downtown commercial street with metered parking on both sides. The Victoria Avenue subject area is shown in Exhibit 2.6.

Victoria Avenue continues easterly for two more blocks before terminating at the rail corridor bordering the urban area of the city. West of the study area, Victoria Avenue continues as a 3-lane road with cycling lanes and on-street parking until it terminates at Riverside Drive, just east of the Thunder Bay Expressway.

Exhibit 2.6: Victoria Avenue Subject Area



Imagery: Google, Map data: Google

There is a large multi-story parking structure (Victoriaville Parkade) connected to the mall, several surface parking lots nearby, and on-street parking on nearby streets. The segment of east of Brodie Street includes 14 metered on-street parking spaces. There is also a connection to a laneway on the south side.

As the block containing the mall is open only to pedestrian traffic. Drivers and cyclists must divert to Donald Street, Justice Avenue or Miles Street.

Victoriaville Centre is currently occupied by retail and office uses, including offices for several City departments. Land uses in adjacent areas include offices, commercial, retail, restaurants and bars, and residential. Additionally, the

Thunder Bay Courthouse is located one block north of the mall and Thunder Bay City Hall is located one block south, at Donald Street and May Street.

The mall has been in decline in recent years, and operates at a net loss to the City<sup>1</sup>. This has prompted an investigation into re-opening the street to traffic or as an outdoor pedestrian mall.

#### **2.4.2 Opportunities**

The opportunity to re-connect the street grid could improve with flow of vehicles, pedestrians, cyclists, and transit vehicles. For drivers and goods movement, this would mean a continuous east-west minor arterial road. For cyclists, it presents the opportunity to extend the Victoria Avenue bike lanes further into the south core. With new construction, the opportunity exists to create a vibrant public realm that could draw customers and businesses to the area.

Re-opening the road could also be a catalyst for re-development and investment in the new block, which could have a spillover effect on the rest of the south core. Public realm improvements to the currently open segment between Brodie Street and May Street could also be made in conjunction with the segment within Victoriaville Mall should redevelopment occur.

A potential reconfiguration of Victoria Avenue has been presented as part of the Victoriaville Moving Forward initiative as shown in Exhibit 2.7.

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<sup>1</sup> City presents Victoriaville Mall demolition option, TBNewsWatch (June 29, 2016)

Exhibit 2.7: Potential configuration after a full demolition of the mall



Source: Victoriaville Moving Forward (2016)

### 2.4.3 Potential Impacts

#### Vehicle Movements

Reconnecting the grid could aid in vehicle flow, although it should be noted that the dense street grid in the south core has the available capacity to handle the existing diversion of traffic. Adverse impacts would generally be minimal.

#### Parking

Depending on the specifics of a re-design, additional on-street parking may be made available on the re-opened street.

#### Transit Vehicles

No impacts are expected. The existing Victoria Avenue bus (10 Northwood) travels towards City Hall terminal via Vickers Street and Donald Street. The potential to re-route the line via the re-opened Victoria Avenue and either Brodie Street or May Street could be examined if the street were to reopen.

#### Pedestrians

A re-opened right-of-way could result in a more attractive pedestrian experience if wide sidewalks, landscaping, benches, and other pedestrian amenities are

included in the redesign, though one where pedestrians would be exposed to the elements. Additionally, pedestrians would not be restricted to mall operating hours.

It has also been presented that a mall demolition could result in reallocating the Syndicate Avenue right-of-way as a park, which could be an attractive addition to the area.

### **Businesses**

Re-opening the right-of-way would be a part of a larger re-development or revitalization project for the south core. It may have positive impacts on businesses in the area, acting as a catalyst for revitalization.

#### **2.4.4 Summary**

By itself, re-opening Victoria Avenue will have limited impact on traffic flow and traffic operations in the south core. The existing street grid can accommodate existing and anticipated future demands.

When combined with a larger revitalization project, re-opening the street could provide additional opportunities for renewal and revitalization. However, many other social and economic factors will influence revitalization efforts and re-opening Victoria Avenue will not guarantee success. The decision to re-open Victoria Avenue must be made with the support of City Planning, the local business improvement association and the broader community.

## **2.5 Bay Street (Algoma Street to Court Street)**

Through the course of undertaking traffic operations analyses on key intersections identified by the City, a proposed reconfiguration at the intersection of Bay Street and Algoma Street was identified to mitigate operational issues. This proposed reconfiguration includes the conversion of two blocks of Bay Street to one-way westbound operation from Court Street to Algoma Street. The one-way street conversion provides an opportunity for the City to consider utilizing part of the road right-of-way for public realm improvements

### **2.5.1 Existing Conditions**

This segment of Bay Street is home to restaurants and shops and is adjacent to the vibrant Algoma Street corridor where public realm improvements have been implemented.

Bay Street is a two-way arterial corridor with one travel lane in each direction and a total of 19 metered on-street parking spaces on both sides of the road. Buildings are built close to the property line and there are sidewalks on both sides. There is no transit service currently on Bay Street. The Bay Street subject area is shown in Exhibit 2.8.



Exhibit 2.8: Bay Street Subject Area



Imagery: Google, Map data: Google

### 2.5.2 Opportunities

Reconfiguring Bay Street for one-way operation from Court Street to Algoma Street provides an opportunity to consider other uses for the travel lane that is no longer required. To the west of Algoma Street, the block of Bay Street is already a one-way street westbound with angled parking and curb extensions as shown in Exhibit 2.9.

A similar design approach could be applied to the subject segment of Bay Street, where more of the right-of-way is dedicated to on-street parking, or an approach that allocates more of the right-of-way for pedestrians and businesses in the form of wider sidewalks and boulevards that could accommodate seasonal commercial uses.

Exhibit 2.9: Improved public realm on Bay Street west of Algoma Street.



Imagery: Google, Map data: Google



### **2.5.3 Potential Impacts**

#### **Vehicle Movements**

The reconfiguration is expected to improve intersection operations for motorists. The proposed one-way operations on Bay Street was a result of the desire to reduce lane changes for through traffic on southbound Algoma Street (currently, through traffic may need to change lanes before the intersection to go around a vehicle waiting to turn left in the left lane, and then merge back to the left after the intersection at the curb extension. With the proposed one-way operations, a dedicated southbound through lane and right-turn lane can be provided which would reduce lane changes before and after the intersection.

#### **Parking**

It is not expected that parking will be significantly impacted. The existing on-street parking could be maintained, or angled parking could be used to add parking spaces. Conversely, should there be a desire to utilize the right-of-way for patios, parklets or other features, the reduction of parking spaces on this segment of Bay Street is not expected to have a major impact on the total supply for the area.

#### **Transit Vehicles**

There is no transit services currently on Bay Street. Buses on Algoma Street will be positively impacted by the improved operations at the intersection of Algoma Street and Bay Street.

#### **Pedestrians**

Pedestrians would benefit if the pedestrian realm is expanded into the existing road surface, or curb extensions are installed to shorten crossing distances. Pedestrians would also benefit from signal timing changes to accommodate the one-way operations.

#### **Businesses**

Businesses would benefit from an increase in pedestrian activity that could be realized with improvements to the public realm that attract new visitors and customers to the area and encourage them to linger in the area.

### **2.5.4 Summary**

Reconfiguration of Bay Street to one-way operations between Algoma Street and Court Street is proposed to address traffic operations at the intersection of Algoma Street / Bay Street. This provides an opportunity for the City to develop public realm improvements within the right-of-way that is made available by removing eastbound traffic.

## **2.6 Recommendations**

Overall, reallocating vehicular lanes or on-street parking spaces for improved public realm at the four locations in the cores is anticipated to have limited negative impacts on the transportation system. The dense road network in the core areas provide a number alternative routes over which traffic can disperse. Appropriately designed improvements on the subject road segments can support changes in travel patterns and changes in traffic volumes that balance the performance of vehicular traffic flow and improvements for pedestrians, transit and/or businesses.

The corridor with the highest potential for placemaking is the segment of Red River Road from Court Street to Cumberland Street, where there is already a lively nightlife and shopping scene. Public realm improvements can be implemented using temporary (seasonal) or flexible measures in a relatively short timeframe. A more permanent solution can be derived from flexible design measures over time, and as the capital budget allows.

Donald Street would benefit from an improved pedestrian realm that supports transit access. The right-of-way is sufficiently wide to accommodate the reallocation of space to other uses while still maintaining lanes for through traffic and parking. The lack of shops and restaurants along this section of Donald Street would mean that this corridor is more of a pedestrian thoroughfare rather than a destination where pedestrians linger. However, with City Hall and the public square, Donald Street has potential to be a showpiece for the City.

The future of Victoria Avenue depends on the decision to maintain or demolish Victoriaville Centre. Should it be determined that the City will demolish the shopping centre, there is potential to develop a great public realm in the Victoria Avenue right-of-way and extend it through to May Street to the east.

Finally, proposed modifications to the intersection of Bay Street and Algoma Street present an opportunity to dedicate more right-of-way space on Bay Street to other uses, and it is recommended that the City consider plans to extend the public realm improvements already in place to this section of Bay Street.

## 3 Lane Reassignment or “Road Diet” Corridors

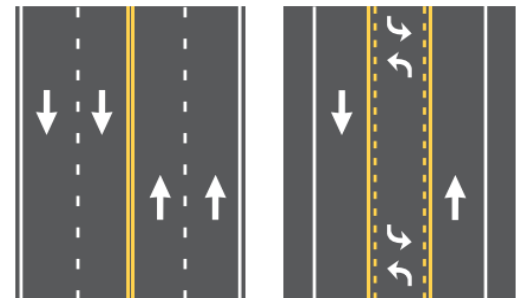
### 3.1 Road Diet Primer

#### 3.1.1 Background

A “road diet” is broadly defined as the removal of one or more vehicular travel lanes on a roadway and re-purposing that space for other uses. The reclaimed space can be reallocated for uses such as new or upgraded cycling infrastructure, new or widened sidewalks, on-street parking, transit infrastructure, or accessory features such as sidewalk patios. The most common road diet is the transformation of a 4-lane undivided road to a 3-lane undivided road with a centre two-way-left-turn lane.

The Federal Highway Administration (FHWA) has developed a Road Diet Informational Guide<sup>2</sup> detailing the history and benefits of road diets, how to determine if they are feasible, design elements of road diets, and suggested monitoring programs.

Exhibit 3.1: Roadway configuration before (left) and after (right) a typical 4 to 3 lane road diet.



Source: FHWA Safety Program Road Diet Implementation Guide (2014)

#### 3.1.2 Benefits of Road Diets

In addition to reclaiming public space, road diets have a number of other proven benefits. They can improve safety for all users, improve operational performance, and offer livability benefits.

In cases where road diets are feasible (refer to Section 3.1.3), the potential benefits of road diets can be grouped into three main categories:

- **Safety Benefits** – Improvements to safety are realized in the potential for reduction of rear-end collisions, left-turn collisions, and cyclist and pedestrian collisions, achieved through the addition of the centre two-way left-turn lane, the narrower cross-section reserved for motor vehicles, and through a reduction in speed differential. The FHWA has deemed “road diets and other roadway reconfigurations a *Proven Safety Countermeasure*.”
- **Operational Benefits** – Though the removal of a lane of traffic would seem intuitively likely to decrease the vehicular capacity of the roadway, real world case studies<sup>3</sup> have shown that travel time

<sup>2</sup> Road Diet Informational Guide, FHWA Safety Program, US Department of Transportation, Federal Highway Administration (November 2014)

<sup>3</sup> Road Diet Case Studies, US Department of Transportation, Federal Highway Administration

increases have been minimal, if there was any increase at all, in instances where the vehicular volumes are within the feasibility targets for road diets. The lack of significant negative impacts to traffic movement is realized predominantly through eliminating delays caused by left-turning motorists impeding the flow of through traffic. Side street delays at unsignalized intersections can also be reduced due to the shorter crossing distance and the ability to use the centre left-turn lane as a receiving lane for incoming left-turns.

- **Livability Benefits** – The use of road diets frees up additional road space to improve the accommodation of pedestrians and cyclists, improve aesthetics, and reduce vehicle speeds.

One additional benefit is that road diets are typically able to be installed on existing pavement within the existing right-of-way thus requiring a low level of investment for a significant change to the usage of the street. The cost is significantly lower compared to road projects where full reconstruction is required. In the case of adding cycling lanes, for example, this can be achieved simply through a re-painting exercise, rather than the much more expensive alternatives of widening the road (including moving curbs and adding more pavement) or constructing off-street facilities such as cycle tracks or multi-use paths. Similarly, cities that adopt a Complete Streets policy may find that road diets are an effective tool to meet Complete Streets goals at an accelerated rate and in a more fiscally responsible manner compared to simply applying the objectives to regularly scheduled capital projects.

### **3.1.3 Road Diet Feasibility**

Key factor in the feasibility of a road diet are daily and hourly traffic volumes:

- **Average Daily Traffic (ADT) <10,000** – Roads with an ADT of less than 10,000 vehicles are considered “great candidates” for road diets
- **ADT between 10,000 and 20,000** – A road with an ADT less than 20,000 vehicles is generally considered a “good candidate” for a road diet and further assessment of feasibility should be undertaken.
- **ADT > 20,000** – Roads with ADT greater than 20,000 vehicles should still be considered for road diet, but more detailed analysis will be required. The FHWA cites<sup>4</sup> examples of successful road diets with ADTs as high as 26,000 vehicles.
- **Hourly traffic volumes** – The FHWA advises<sup>5</sup> that roads at or below 750 vehicles per hour per direction during the peak hour are likely feasible, while those between 750 and 875 should be cautiously

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<sup>4</sup> Road Diet Mythbusters – Myth: Road Diets Make Traffic Worse, US Department of Transportation, Federal Highway Administration

<sup>5</sup> Road Diet Informational Guide, FHWA Safety Program, US Department of Transportation, Federal Highway Administration (November 2014)

considered. Feasibility is less likely above 875 although road diets may still work, but an increase in travel times in peak periods would be expected.

In addition to traffic volume, several other factors are to be considered:

- **Left-turn volumes** – A high volume of left-turners typically means that the existing 4-lane road is essentially operating like a 3-lane road already with the two median lanes being used for motorists waiting for a gap in the opposing traffic to make a left-turn. In this situation, through traffic tends to consolidate to the outside lanes. As a result, the 4-lane road already has the functional capacity of a 3-lane road and consolidating the left-turning vehicles into a single centre lane can free up space for other uses with very little impact on capacity and traffic flow.
- **Driveway frequency** – A related consideration is the frequency of driveways along the corridor. Naturally, a corridor with lots of driveways is more likely to have more frequent and higher volumes of left-turns and is a strong candidate for a road diet.
- **Intersection spacing** – Closely spaced intersections can negatively affect the outcomes of a road diet, though this can sometimes be mitigated with changes to signal timing and coordination. It should be noted that with the removal of two through lanes, a road diet may permit dedicated turn lanes at intersections where they did not exist before.
- **Targeted Level of Service** – The level of service (LOS) for all road users should also be considered when determining whether a road diet is feasible. For most objectives, it will be important to consider LOS from a multi-modal standpoint (see Background Report I – Multimodal Level of Service). While vehicle LOS may decline, a road diet will typically improve pedestrian LOS and cyclist LOS. Target LOS level should be set based on the objective and purpose of the street and the potential reconfiguration should be evaluated against those targets.
- **Speed and safety objectives** – The feasibility of a road diet improves where safety improvements are desired either due to turning movement conflicts or excessive speeds. Studies have shown that road diets can reduce the 85<sup>th</sup> percentile and average speeds by 3 to 5 mph (5 to 8 km/h) and roadway speed differential. Road diets also reduce the number of conflict points between turning motorists and offer safety benefits to pedestrians and cyclists, as outlined in section 3.1.2.
- **Vulnerable Users** – Pedestrians and cyclists are likely to see their experiences improved, depending on how the road diet is implemented (wider or buffered sidewalks, new bike lanes, lower



vehicular speeds to improve comfort, parallel parking, etc.). If the route forms a key component on an approved cycling plan or pedestrian network, the feasibility of the road diet should be positively impacted.

- **Transit** – Transit operations may impact the success of a road diet as roads with four lanes perform better than the 3-lane configuration when there are frequent stopping transit vehicles. This may be mitigated with the addition of bus bays, or use of transit stops that are integrated with the cycling facilities. Conflicts with other road users utilizing the two-way left-turn lane to illegally pass slower moving vehicles has not been a significant problem according to the FHWA<sup>6</sup>.
- **Goods Movements** – It is also important to consider whether trucks are expected to be frequent users along the corridor. Road diets can be designed to accommodate large vehicles. Factors such as current and planned land uses, delivery zones, and intersection design should be considered.

The importance of each of these factors will vary with the stated objective of a potential road diet project. Typically, the objectives are to improve safety, reduce speeds, or improve pedestrian, cycling and/or transit environments. Depending on the objective, an increase in vehicular travel time may be acceptable in order to improve safety and accommodate other users.

A common concern regarding the implementation of a road diet is that left-turning vehicles from driveways and unsignalized minor streets will have difficulty finding a gap in the stream of traffic. The availability and length of gaps is dependent on through traffic volumes in each direction, left-turning volumes on the main street and the distances between signalized intersections (i.e. potential for traffic platooning). With traffic in only two lanes, there may be fewer gaps in the traffic, but with fewer lanes to cross the required gap is shorter. However, during peak conditions there may be longer delays for traffic turning left from driveways and minor streets. This decrease in performance for these vehicular movements needs to be considered in combination with the increase in performance for vehicles on the main street that benefit from a two-way left-turn lane and the safety and comfort of pedestrians and cyclists on the corridor.

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<sup>6</sup> Road Diet Informational Guide, FHWA Safety Program, US Department of Transportation, Federal Highway Administration (November 2014)

**3.1.4 Minimum Lane Widths**

Lane widths can vary across road classes and across municipalities. The Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (June 2017) provides guidance on minimum lane widths. Additional consideration of lane widths for curb lanes include the presence of dedicated cycling facilities that act as snow storage in the winter.

The recommended lane widths for the City of Thunder Bay are based on these considerations as summarized in Exhibit 3.2. Widths are measured from centre of lane marking to edge of pavement.

Exhibit 3.2: Recommended Lane Widths

Guide	Lane	Recommended Widths
TAC Geometric Design Guide	Through lane on urban roadway	<ul style="list-style-type: none"> <li>• 3.0 m to 3.7 m for design speed of 60 km/h and less</li> <li>• 3.3 m to 3.7 m for design speed of 70-100 km/h</li> </ul>
	Through lane where buses and larger trucks regularly use a lane	<ul style="list-style-type: none"> <li>• Minimum 3.3 m regardless of design speed</li> </ul>
Additional Design Guidelines for Thunder Bay	Curb lane –vehicular travel lane that is closest to the curb but is not a right-turn lane	<ul style="list-style-type: none"> <li>• Minimum 3.3 m where boulevard is available to separate travel lane from sidewalk</li> <li>• Minimum 3.5 m where travel lane is immediately adjacent to sidewalk (curb face sidewalk)</li> <li>• 3.0 m to 3.5 m on roads with dedicated cycling facilities</li> </ul>
	Two-way left-turn lane	<ul style="list-style-type: none"> <li>• 3.0 m to 3.5 m</li> </ul>

The review of proposed road diets in Thunder Bay, presented in Section 3.2, assumes an approximate lane width of 3.5 m. It would be within accepted standards to use a narrower lane width if required.

**3.1.5 Public Outreach**

Though road diets have been successfully implemented for more than 30 years, the public may still be skeptical that removing a lane of traffic will not have negative outcomes for the existing road users. Education and outreach will play an important role in the implementation of any road diet.

In cases where there is significant pushback, implementing a road diet as a pilot project may be an effective means of showcasing the overall improvements

while collecting data to determine whether the road diet has resulted in acceptable outcomes.

### **3.2 Proposed “Road Diets”**

Through the technical and planning work undertaken in the process of defining a complete cycling network for Thunder Bay, several corridors were identified for further investigation as candidates for a road diet as a means of implementing cycling infrastructure cost-effectively. Through further discussions with stakeholders and City staff, this list was shortened to two potential corridors – James Street and Oliver Road-John Street. A third corridor – Red River Road – was identified as a potential road diet for the purpose of improving the public realm and expanding the pedestrian area within the road right-of-way.

For the above three corridors, existing conditions, analysis, challenges, and proposed configuration are provided in Sections 3.3, 3.4, and 3.5 below.

Additional corridors that were considered for a road diet but screened out early in the process are discussed in Section 3.6.

### **3.3 James Street, Victoria Street to Edward Street**

#### **3.3.1 Existing Conditions**

James Street is a minor arterial configured as a 4-lane road. Dedicated left-turn lanes are provided at most major intersections along the corridor. South of Walsh Street, the corridor continues in the same configuration until it narrows into a 2-lane road at Gore Street. East of Edward Street, the corridor continues as William Street and narrows to a 2-lane road with bicycle lanes.

The corridor is signed as a Community Safety Zone from south of Mary Street to north of Arthur Street. The posted speed limit is 40 km/h south of the Neebing River and 50 km/h to the north. Sidewalks are provided on both sides of the entire corridor but there are no dedicated cycling facilities. On-street parking is generally prohibited, but permitted between 6 p.m. and 2 a.m. in the vicinity of Kinsmen Northwood Centre where parking demand for the sports fields spills on to both sides of James Street. Thunder Bay Transit operates one route, the 8 James, at 30-minute headways along the corridor.

Traffic levels are moderate and relatively consistent throughout the corridor as summarized in Exhibit 3.3. The intersection with Victoria Avenue is the busiest and volumes generally decrease moving away from Victoria Avenue, with the exception of Edward Street/Golf Links Road. AM peak hour volumes range between 300 and 450 vehicles in the peak direction, while PM peak hour volume ranges between 400 and 650 vehicles in the peak direction. Even as a four lane road, James Street’s existing traffic volumes are comparable to some 2- and 3-lane streets in the City. For example, Victoria Avenue, which has a 3-lane cross-section, has average daily traffic volumes up to 15,400 vehicles.

Exhibit 3.3: Observed traffic volumes at selected locations along James Street.

Location	AADT	AM Peak Hour Peak Direction Volume	PM Peak Hour Peak Direction Volume
Walsh Street	10,700	350	550
Arthur Street	12,800	400	500
Victoria Avenue	14,400	450	650
Riverview Drive	12,500	300	650
Churchill Drive	11,400	400	500
Redwood Avenue	11,400	350	550
Vale Avenue	9,900	300	550
Limbrick Street	7,900	300	400
Edward Street-Golf Links Road	12,300	400	600

Source: Turning movement counts provided by the City of Thunder Bay.

### 3.3.2 Analysis

James Street features the lowest traffic volumes of the three proposed road diets, well below the guidelines identified by the FHWA. Future traffic growth on the corridor is low (see Exhibit 3.4) as the immediate area is already built-out and future travel patterns change.

Exhibit 3.4: Anticipated traffic volume growth on James Street by 2038.

Segment	AM Peak Hour Peak Direction
Walsh Street to Arthur Street	1.7%
Arthur Street to Churchill Drive	- 0.9%
Churchill Drive to Redwood Avenue	- 1.3%
Redwood Avenue to Ryerson Crescent	- 5.0%
Conestoga Street to Edward Street-Golf Links Road	- 8.5%

Source: Thunder Bay Transportation Model

There is also available capacity on parallel corridors such as Thunder Bay Expressway, Edward Street, and Balmoral Avenue that could absorb through traffic that may divert away from James Street with a road diet in place.

The addition of a two-way centre left-turn lane would provide access to the frequent side streets and residential driveways located along the corridor and allow for dedicated turn lanes at signalized intersections where they do not currently exist.

James Street has long stretches between traffic signals. These longer distances between intersections can help the flow of traffic after implementing a road diet, as noted in Section 3.1.3.

However, the longer stretches between traffic signals makes it a barrier for pedestrians to cross James Street. The road diet will reduce the number of traffic lanes for pedestrians to cross and create potential locations for the City to install a pedestrian refuge island in the centre lane.

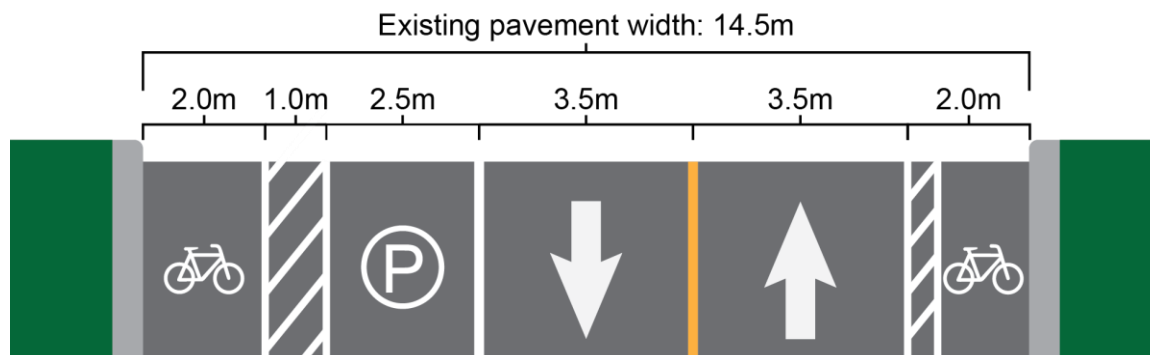
The James Street corridor is a critical active transportation link, scoring in the top category of the cycling impact analysis. By providing buffered bicycle lanes, the road provides a safer, north-south corridor in the western end of the city. It could connect to existing infrastructure on Walsh Street, Victoria Avenue, William Street, and the trail system at Confederation College and along the Neebing River. This active transportation link would provide safer routes to several community destinations including Edgewater Park Public School, Westgate High School, two community centres, and a grocery store.

Transit service operates along the corridor and service can be maintained by providing sufficiently wide travel lanes and having buses merge into the cycling lane at stops, to reduce blockage of the vehicular through lane.

### 3.3.3 Challenges

There is significant on-street parking in the vicinity of the Kinsmen Northwood Centre when the sports fields are in high demand. Design alternatives for this corridor should consider on-street parking instead of a centre two-way left-turn lane along the frontage of the Kinsmen Centre as demonstrated in Exhibit 3.5.

Exhibit 3.5: Conceptual Cross-section with On-street Parking on One Side



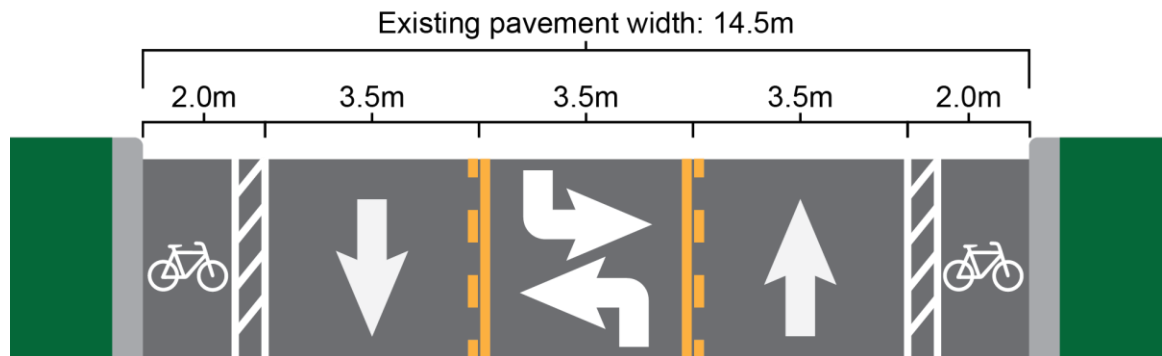
A design such as the above is recommended to discourage illegal parking within the bicycle lanes. In the development of a detailed design for this corridor, it will be important to provide a left-turn lane to at least one entrance of the community centre parking lot (potentially making the south access an entrance-only and the north access an exit-only to simplify circulation patterns). It is estimated that 20-30 parking spaces may be possible with this configuration to complement the existing parking lot and meet spillover parking demand during peak usage of the sports fields.



### **3.3.4 Proposed Configuration**

The analysis indicated that the James Street corridor from Edward Street to Walsh Street is suitable for a road diet. Through further review of the integration of the road and cycling networks, a road diet treatment is recommended on James Street between Victoria Avenue and Edward Street/Golf Links Road, reconfiguring the roadway from the existing 4 lanes to 3 lanes, including a two-way centre left-turn lane and buffered bicycle lanes as conceptually illustrated in Exhibit 3.6.

Exhibit 3.6: Proposed Cross-section for James Street Road Diet



South of Victoria Avenue to Walsh Street, the preferred cycling infrastructure has been identified as a multi-use trail instead of on-street bike lanes. The existing configuration of James Street will be maintained in this section.

### **3.3.5 Summary**

Implementation of a road diet on James Street between Victoria Avenue and Edward Street-Golf Links Road is recommended based on the following factors:

- A road diet will help reduce speeding and improve access to several community destinations, including schools.
- A road diet will improve access to the many, closely-spaced driveways on the corridor.
- A road diet will provide space for a high-quality cycling facility. The corridor shows high cycling potential and is identified as a cycling route in the proposed cycling network.
- Traffic impacts are expected to be minimal.
- Concerns related to transit operations and on-street parking can be mitigated through design.

### 3.4 Oliver Road-John Street, Balmoral Street to Court Street

#### 3.4.1 Existing Conditions

West of Balmoral Street, Oliver Road is a major arterial with a 4-lane cross-section until it crosses the Thunder Bay Expressway. It continues west as a 2-lane road to Belrose Road where its classification changes to rural arterial. East of Balmoral Street, Oliver Road is a 4-lane minor arterial road. East of Hill Street, the road becomes John Street and continues as a 4-lane minor arterial until it terminates at Water Street. Oliver Road has a posted speed limit of 60 km/h to the west of CB Way and 50 km/h to the east. The corridor is signed as a Community Safety Zone between Keith Jobbitt Drive-Sanders Drive and the eastern intersection with Langworthy Crescent.

The intersections with Golf Links Road, Keith Jobbitt Drive-Sanders Drive, and Balmoral Street feature dedicated turning lanes. Intersections further east do not have dedicated lanes for turning traffic.

Traffic volumes are moderate throughout the corridor (as shown in Exhibit 3.7) and generally steady between Golf Links Road and High Street, then decreasing towards Algoma Street and beyond. AM peak hour volumes range between 300 and 800 vehicles in the peak direction, while PM peak hour volume ranges between 600 and 1,000 vehicles in the peak direction.

Exhibit 3.7: Observed Traffic Volumes at Selected Locations along Oliver Road and John Street

Location	AADT	AM Peak Hour Peak Direction Volume	PM Peak Hour Peak Direction Volume
Golf Links Road	16,500	800	850
Sanders Drive	16,600	650	800
Balmoral Street	16,600	700	1,000
Ray Boulevard	14,200	550	750
High Street	17,800	600	600
Memorial Avenue- Algoma Street	11,800	300	600

Source: Turning movement counts provided by the City of Thunder Bay.

Sidewalks are provided on the south side for the entire length of the corridor, and for most of the corridor on the north side. Sidewalks are missing from the north side between Hill Street and High Street, constrained by grades and available right-of-way. Sidewalks are also missing on the north side west of Balmoral Street. There are no dedicated cycling facilities within the corridor and no on-street parking is permitted.

Thunder Bay Transit operates two routes along the corridor, the 11 John (30-minute headway) and the 13 John-Jumbo (45-minute headway).

**3.4.2 Analysis**

A road diet provides an opportunity for the City to implement cost-effective cycling infrastructure along the Oliver Road-John Street corridor to connect Lakehead University, Regional Health Sciences Centre, the trail network and the north core. This is a critical active transportation link which scored in the top category of the cycling impact analysis. The nearest alternate east-west cycling route is Beverly Street, located approximately 800 metres to the south, and is a less direct route to the north core.

From a pedestrian perspective, the addition of cycling lanes adjacent the sidewalk provides a buffer from traffic, improving the pedestrian level of service. A road diet may also provide the City with an opportunity to provide sidewalks on the north side of the road between Hill Street and High Street. In this 250-m segment there is currently a narrow paved area between the curb and low retaining walls. This narrow paved area connects to front walkways and stairways to the 10 single-family residences on this section.

With the planned Thunder Bay Expressway twinning, access to Oliver Road from the provincial highway will be reduced to an off-ramp only (northbound to eastbound off-ramp); all other movements will not be permitted at the partial interchange. Estimated traffic growth on the corridor is shown in Exhibit 3.8. Adjacent to the Regional Health Centre, traffic growth will be modest (about 1% per year). East of Balmoral Street traffic growth is low.

Exhibit 3.8: Anticipated Traffic Volume Growth on Oliver Road-John Street by 2038.

Segment	AM Peak Hour Peak Direction
Golf Links Road to Balmoral Street	23.1%
Balmoral Street to High Street	7.2%
High Street to Memorial Avenue-Algoma Street	4.0%

Source: Thunder Bay Transportation Model

Projected future volumes in the west end of the corridor (Golf Links Road to Balmoral Street) would reach the upper volume of peak direction peak hour flow (>875 veh/h) of roads that are considered good candidates for a road diet.

The addition of a centre turn lane has potential to improve traffic flow and eliminate conflicts created by vehicles waiting to turn left in the through travel lanes. This is most prominent east of Balmoral Street where the corridor includes 13 uncontrolled minor street intersections and private driveways on both sides of the road. A road diet would also provide for dedicated left-turn lanes at intersections, which is not possible within the current configuration in the constrained right-of-way east of Balmoral Street.

West of Balmoral Street, the segments surrounding the entrances to the university and hospital have already been widened to provide left-turning lanes, and these can be maintained to ensure traffic flows smoothly.

Transit service along the corridor can be maintained by providing sufficiently wide travel lanes and having buses merge into the cycling lane at stops, to avoid blocking the through lane.

### **3.4.3 Challenges**

The main challenges to implementing a road diet on this corridor is accommodating traffic volumes and providing an acceptable level of service.

Additional review of the corridor, specifically the intersections of Oliver Road / Balmoral Street and Oliver Road / High Street, the two highest volume intersections on the corridor, were undertaken to assess how the corridor will operate with a road diet in place.

West of Balmoral Street, the traffic volumes are higher and have more potential for future growth. Projected volumes are anticipated to be near the higher end of road diet feasibility guidelines. The projected east-west traffic volumes at Balmoral Street will require two through lanes for the eastbound approach at the intersection. Alternative design options that reintroduce a second through lane at intersection were considered to reduce impacts to east-west traffic flow. However, through further discussions with the project team and review of the integrated road and cycling network, it was determined that the preferred solution is a multi-use path on the north side of the corridor west of Balmoral Street connecting to the existing multi-use path on Golf Links Road.

The intersection of Oliver Road / High Street is the critical intersection on the corridor west of Balmoral Street. Due to the high westbound right-turn (westbound John Street to northbound High Street ) traffic volumes in the PM peak hour, the intersection would operate with overall LOS E if a road diet was applied without any special considerations. If a right-turn lane is provided, within the design of the road diet, then the intersection would operate with overall LOS C.

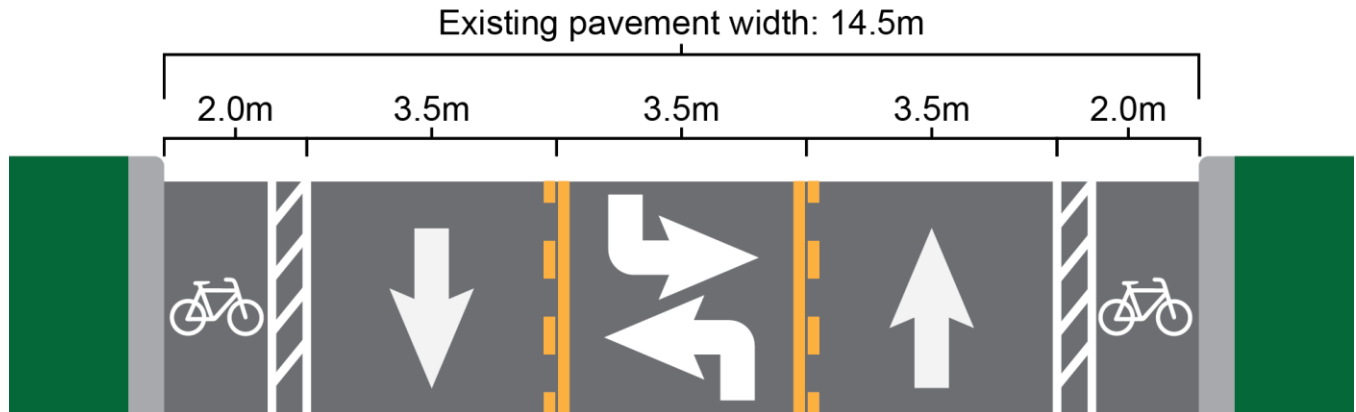
A detailed analysis and evaluation of safety, delay and queuing will identify appropriate design features to safely accommodate cyclists and vehicles at this intersection. Design features could include: a shared left-through lane (allowing the curb lane to be used as a right-turn lane without weaving through the bike lane); narrower lanes (to add a right-turn lane while maintaining a left and a through lane); urban smart-channel, elements of a protected intersection for cyclists; conventional bike lane developed between the through and right-turn lane; a cycle track connection across the parkette on the north side (to separate cyclists from vehicular traffic); and other types or combinations of design treatments.

### **3.4.4 Proposed Configuration**

The proposed configuration for Oliver Road-John Street from the east side of Balmoral Street to Court Street is three lanes (two travel lanes and a two-way centre left-turn lane) and buffered bike lanes as conceptually illustrated in

Exhibit 3.9, with additional design considerations at the intersection of High Street.

Exhibit 3.9: Proposed Cross-section for Oliver Road-John Street Road Diet (east of Balmoral Street to Court Street)



### 3.4.5 Summary

Implementation of a road diet along Oliver Road from east of Balmoral Street to Court Street is recommended based on the key factors noted below:

- A road diet is in keeping with the roadway context, which provides access to Lakehead University and Regional Health Sciences Centre.
- A road diet will accommodate a high quality cycling facility with minimal capital investment. The corridor shows high cycling potential and is identified on the proposed cycling network.
- Traffic impacts of the road diet are expected to be low, with the exception of the westbound approach at High Street that will require special consideration.

## 3.5 Red River Road, east of Algonquin Avenue to Court Street

### 3.5.1 Existing Conditions

The segment of Red River Road under review is a 4-lane major arterial road with a posted speed limit of 50 km/h. Red River Road extends from Water Street in the east to the Thunder Bay Expressway in the west where it turns into Dawson Road, and further west, Provincial Highway 102. The corridor is signed as a Community Safety Zone between west of Junot Avenue and east of Algoma Street.

Traffic levels are highest west of Algonquin Avenue as it provides access to the highway, and is one of only two crossings of the Thunder Bay Expressway connecting to the residential and commercial developments in the north and west. East of Algonquin Avenue, traffic levels are moderate and are generally decreasing heading east as presented in Exhibit 3.10.



Dedicated left-turn lanes are only provided at the intersection of Red River Road / Algoma Street. Turning lanes at other intersections are not provided due to the constricted right of way.

Exhibit 3.10: Observed Traffic Volumes at Select Locations along Red River Road.

Intersection	AADT	AM Peak Hour Peak Direction Volume	PM Peak Hour Peak Direction Volume
Algonquin Avenue	15,800	600	850
Rockwood Avenue	17,100	750	750
Pine Street	14,800	600	750
High Street	13,300	350	700
Algoma Street	7,700	200	550
Court Street	7,100	200	350

Source: Turning movement counts provided by the City of Thunder Bay.

On-street parking is not permitted on the subject sections of Red River Road. Thunder Bay Transit operates two routes along the corridor – the 3C County Park and 3J Jumbo Gardens routes.

There are sidewalks on both sides for the entire length of the corridor, but there is limited boulevard space and no dedicated cycling facilities.

### 3.5.2 Analysis

Initially, a road diet was considered for Red River Road to accommodate cycling facilities. Through the study, an alternate corridor was selected as the preferred cycling route. However, a road diet implementation would provide an opportunity to expand the public realm, following the direction set out in the City’s Image Route Guidelines. By reallocating road space to the public realm, street trees could be planted, sidewalks could be widened, and other pedestrian amenities could be added.

Improved public realm would provide benefits to the numerous community facilities located along the corridor, including several churches, seniors’ residences, Lakehead University law school, and Magnus Theatre. As intended by the City’s Image Route Guidelines, an improved public realm can increase the impression of Thunder Bay to visitors and increase the attractiveness of Thunder Bay as a tourist destination.

Given that the roadway and sidewalks are currently built to the property line along the majority of the corridor, with no buffer between pedestrians and traffic, the only way to expand the public realm within the existing right-of-way would be to reallocate space from the existing traffic lanes.

A road diet would also allow for more pedestrian crossing opportunities to be provided. Currently, signalized intersections are located roughly 300 to 400 metres apart. A road diet would shorten the crossing distance for pedestrians,

which would make mid-block crossings safer. The city could add pedestrian crossovers at key locations and/or pedestrian refuge islands in the centre turn lane at strategic locations to further improve crossing opportunities and pedestrian safety.

Existing and projected traffic volumes are below the threshold recommended in the FHWA Road Diet Informational Guide, indicating that a road diet is feasible without imposing major impacts on traffic. Additionally, a 3-lane configuration provides the opportunity to add left-turn lanes to intersections where there currently are none, which may improve traffic flow.

To estimate the operational impacts of a road diet, the intersection with the highest total peak hour volume along the corridor – High Street / Red River Road – was analyzed. Anticipated growth along the corridor (as shown in Exhibit 3.11) was applied to the observed traffic volumes to test future operations with and without a road diet. The overall intersection level of service can be maintained at LOS C with adjustments to signal timings. As part of the road diet implementation, the City should review and optimize signal timings for the subject corridor.

Exhibit 3.11: Anticipated Traffic Volume Growth on Red River Road by 2038.

Intersection	AM Peak Hour
Algonquin Avenue to Pine Street	2.2%
Pine Street to High Street	2.2%
High Street to Waverly Street	9.2%
Waverly Street to Court Street	6.2%

Source: Thunder Bay Transportation Model

### **3.5.3 Challenges**

Traffic volumes generally increase towards the west approaching Thunder Bay Expressway. It is not anticipated that there will be any major issues, however, care should be taken when designing intersections west of High Street to ensure potential traffic impacts are mitigated.

The typical benefit of a road diet is that right-of-way uses can be re-arranged without major construction. However, for pedestrian and public realm improvements, road reconstruction will be required to move curbs inwards toward the centre line and to widen or replace sidewalks. This implementation of a road diet will be more costly than the two road diets proposed to accommodate cycling facilities.

It may be possible, however, to implement interim measures with paint, bollards, planters and other temporary installations, to expand the public realm in the shorter term in advance of major road reconstruction.

### **3.5.4 Proposed Configuration**

It is recommended that Red River Road be reconfigured from four lanes to three lanes (two travel lanes with a centre turn lane) to improve the public realm between Court Street and as far west as Algonquin Avenue. The location of the western limit of the reconfiguration can be relocated to accommodate a longer transition section between the more commercial sections near Thunder Bay Expressway and the more urban sections near the north core. It is noted that the City's Image Routes Guidelines apply to the entire Red River Road corridor. Public realm improvements may include wider sidewalks, improved bus stops, benches, public art, and street trees.

Red River Road stood out as the most prominent of the corridors designated as Image Routes for a road reconfiguration. However, work should continue to advance planning for the other three image route corridors (Arthur Street, May Street-Memorial Avenue-Algoma Street, and the Waterfront Route).

Additionally, pedestrian-focused policies and programs are outlined in both the Transportation Master Plan and the Active Transportation Plan that support the desire for improving the pedestrian realm across the City.

### **3.5.5 Summary**

Implementation of a road reconfiguration along Red River Road between Court Street and as far west as Algonquin Avenue is recommended based on the following factors:

- A road reconfiguration will create space for improved public realm and widened pedestrian spaces, and allow the implementation of Image Route designs, including planting of street trees, installation of public benches, and other public realm pieces as desired.
- Traffic impacts of the road reconfiguration are expected to be low and any localized concerns related to transit and traffic can be mitigated through design.

## **3.6 Other Road Diet Candidates**

During the course of the study, a number of other candidates were considered for a road diet but not carried forward as part of the TMP. A brief summary of why these corridors were not recommended is provided below:

- Edward Street between Arthur Street and James Street
  - The proximity of Ford Street as a natural north-south cycling route,
  - A preference of using James Street as the westernmost north-south cycling route providing better grid spacing, and
  - ADT ranges from 11,800 at Arthur Street up to 20,500 at Churchill Drive.

- Waterloo Street between Arthur Street and Cameron Street
  - The City preferred continuing the Balmoral Street multi-use path southerly along Waterloo Street instead of on-street bike lanes, and
  - ADT ranges from 4,600 to 15,900, but with peak hour volumes exceeding 950 veh/h at Victoria Street and at Cameron Street.
- River Street between Red River Road and Cumberland Street
  - Available parallel quiet streets were designated as a cycling route.

## 4 Summary of Recommendations

This report presented the analyses for reassigning existing roadway space to improve the accommodation of non-vehicular users. In the Core Areas, the objective of reassigning roadway space is to improve the public realm for pedestrians and to support commercial activity along the roadway. For the Corridors, the objective of reassigning roadway space is to better accommodate cyclists and/or pedestrians.

### **Core Areas**

Reallocating street space to expand the public realm in the north and south cores is feasible from a transportation perspective for all four locations studied.

The Red River Road section between Court Street and Cumberland Street presents the highest potential for placemaking and creating a positive benefit to the community in the short-term. The City's May 2018 launch of a pop-up patio pilot program resulted in an immediate positive response from restaurants in the BIAs and core areas.

Bay Street, east of Algoma Street, also presents an opportunity for improved public realm as a result of operational improvements to the intersection of Bay Street / Algoma Street, and would expand upon the public realm improvements the City has already invested in the area.

### **Corridors**

Road diets are recommended for two roads as a solution to implement cost-effective cycling infrastructure. These corridors are James Street, from Victoria Avenue to Edward Street-Golf Links Road, and Oliver Road-John Street from east of Balmoral Street to Court Street.

A road diet on Red River Road from Court Street to east of Algonquin Avenue is needed to achieve the City's Image Route principles and desired public realm improvements Red River Road.

### **Next Steps**

As the City proceeds with the planning of the above road modifications, additional analysis should be undertaken to determine storage lengths, identify potential locations for pedestrian crossings and pedestrian refuge islands, and other design interventions to manage traffic volumes and speeds. Pilot project can help assess impacts, identify any needed mitigation measures and monitor usage.