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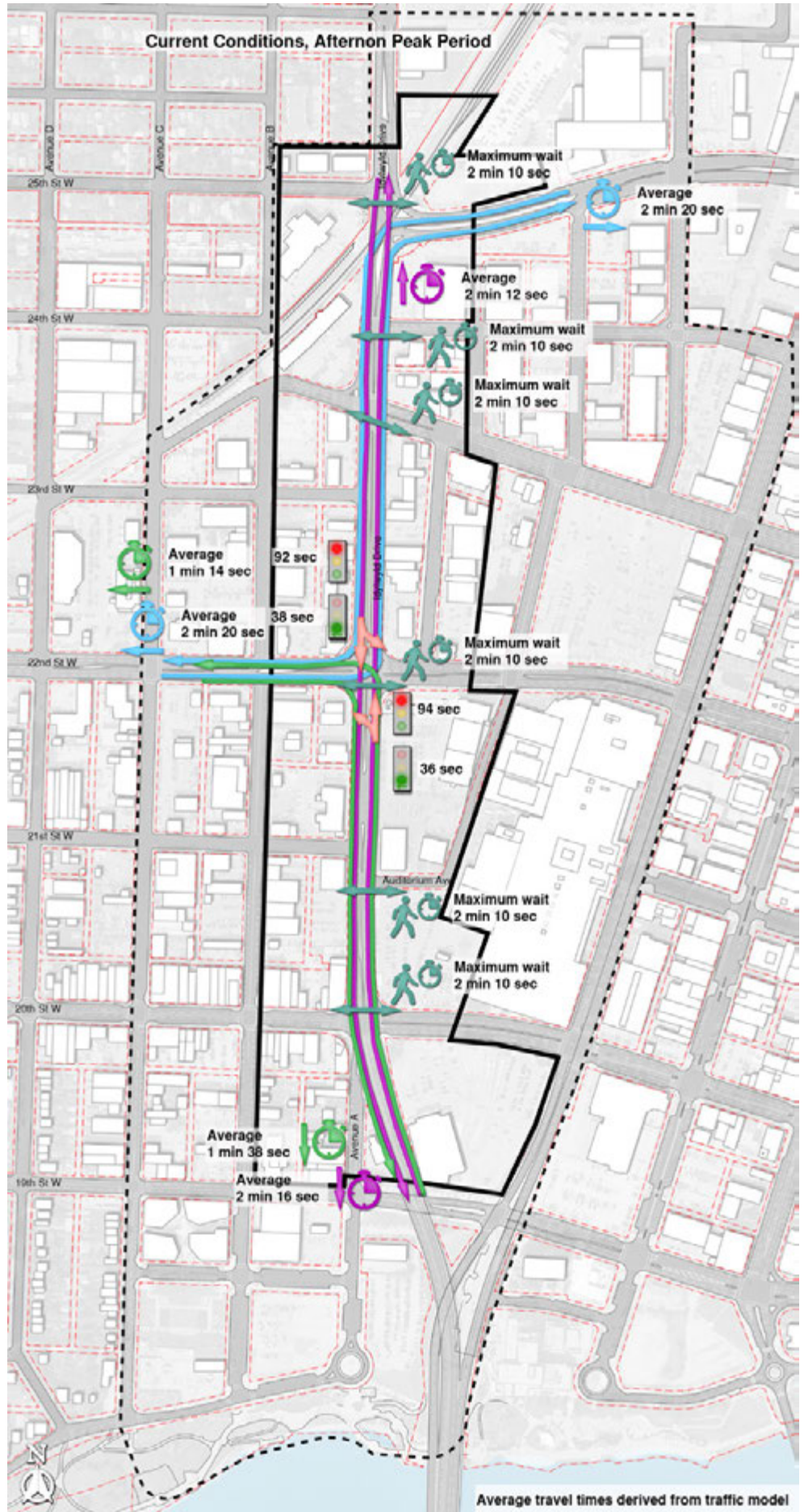
TRANSPORTATION
+ CONNECTIVITY

IMAGINE
IDYLWYLD



LEGEND

-  Red+Amber Time per Cycle
-  Green Time per Cycle
-  Average Travel Time, Selected Routes Thorough Study Area
-  Maximum Wait for Walk Light
-  Study Area
-  Area of Impact



TRANSPORTATION + CONNECTIVITY

TRAFFIC FLOW FOR DRIVERS

Idylwyld Drive is perceived as a congested corridor in Saskatoon. Movement through this corridor is largely impacted by traffic signal timing, lane usage imbalance, and driver behaviour.

To move traffic efficiently on a major corridor requires intricate traffic signal coordination. Traffic signal coordination is only possible if each intersection has the same cycle time, which is the time it takes for the signal pattern to repeat itself. The individual intersection that needs the longest cycle time determines the cycle time for every intersection in the corridor. For the *Imagine Idylwyld* study area, 22nd Street requires the longest cycle time. At 22nd Street, traffic signal timing is constrained by the lane configuration: because left turns and through traffic share the same lane, the arrow needs to stay on throughout the phase. Northbound and southbound cannot have green at the same time, known as "split phasing". To accommodate the split phasing, a 130-second cycle time is used in the afternoon peak period at 22nd Street, and therefore at every intersection in the study area. Split phasing poses a challenge for coordinating the traffic signals and causes longer cycle times and longer waits, but it is necessary because of the shared left-and-through lanes.

Modern best practice for urban areas is to have cycle times of 60 to 90 seconds. Further information on best practices and standards is found in the Technical Appendix. Additional analysis in subsequent phases of the project will determine if signal timing within the best practice range is achievable and what other implications might be.

The average travel time through the roughly one kilometre study corridor in the afternoon peak period was found to be just over two minutes in a traffic simulation. Test drives confirmed that the simulation results were reasonable, but also that actual travel time can vary significantly from the average. With many lanes but only one lane that carries through the study area unimpeded, some drivers make many lane changes to avoid queues, while others select the one **Imagine Idylwyld: Issues and Opportunities Report**




continuous lane, even if it will take longer. In a test drive during the afternoon peak period, the trip from 25th Street to the bridge took over twice as long when the driver stayed in the same lane compared to changing lanes to choose the shortest queues at each red light. That is, one lane is overused, and the others are underused. Assertive driving is rewarded, and more cautious driving is penalized.

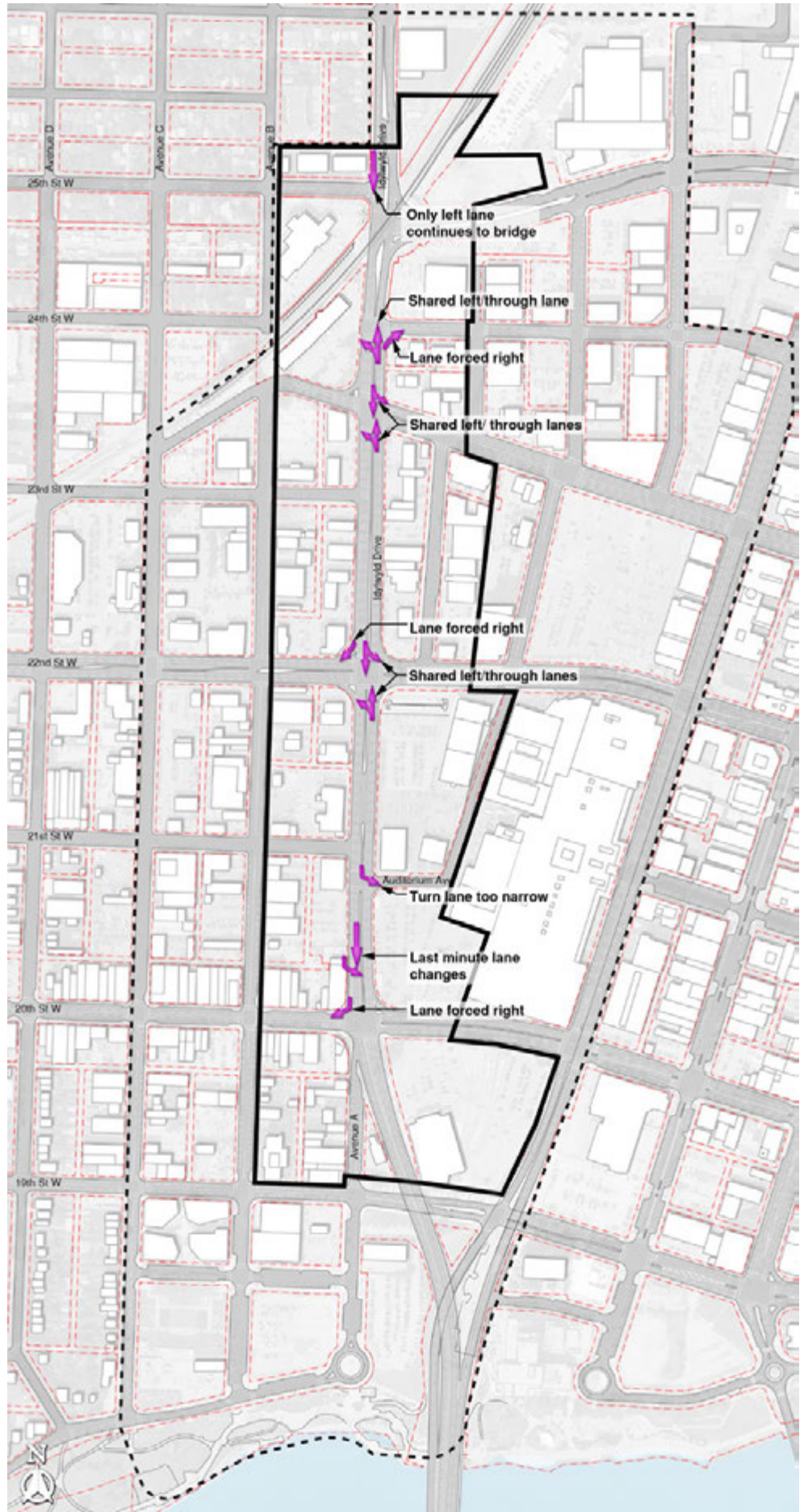
OPPORTUNITIES

Reconfigure the 22nd Street intersection to allow more efficient traffic signal timing throughout the corridor

Ensure both lanes entering the study area continue through to the end of the study area

LEGEND

-  Lane Alignment / Continuity Issue
-  Study Area
-  Area of Impact



TRANSPORTATION + CONNECTIVITY

LANE ALIGNMENT AND CONTINUITY

The Idylwyld Drive study area is known for inconsistent lane alignment and continuity. Lanes are added and dropped at intersections. Left and through traffic share lanes and turn arrows are inconsistent. It is difficult for drivers to travel through the corridor without making lane changes. Lane widths also vary from block to block.

The total number of lanes in the study area varies from four to seven, although only three lanes travel through from one end to the other: one southbound lane and two northbound lanes. One of the northbound lanes is shared with left turns at three intersections, leaving only one lane in each direction that continue through the study area unimpeded. In three (3) separate instances, the right hand lane ends, forcing drivers to turn right. For drivers driving from north to south, including highway through traffic, staying in the right hand lane from 25th Street to the bridge isn't possible: that lane ends at 20th Street. A lot of drivers make a lane change right before that. For those going south to north, the right hand lane ends at 24th Street. Most drivers avoid the right hand lane, although some drivers use it as a passing lane. The current lane continuity situation violates driver expectation and engineering best practices by blurring the distinction between basic lanes and auxiliary lanes. The Technical Appendix expands on best practices for basic lane continuity.

Of the ten left turns from Idylwyld Drive in the study area, only four have dedicated left turn lanes. Seven left turns have protected left turn arrow, three do not. At 22nd Street, the lane configuration forces split phasing, where northbound and southbound drivers cannot have green at the same time, reducing capacity and preventing efficient coordination of the corridor's traffic signals.

Lane widths also change from block to block, ranging from 3.05 m to 3.9 m. The left turn lane to Auditorium Avenue is an exception, which at only 2.0 m wide is narrower than the legal maximum vehicle width of 2.6 m. Other drivers sometimes

have difficulty passing when someone is waiting there to turn left. Studies have shown that urban streets with wide lanes have higher travel speeds, and modern standards suggest lane widths in the range of 3 m to 3.3 m here the target speed is 50 km/h, as discussed further in the Technical Appendix.

Poor lane continuity, shared left turns, and the related traffic signal timing issues are the most important causes of unnecessary delay for drivers. Consistent and appropriate lane widths would help reduce confusion and driver workload, help manage travel speeds, and reducing crossing time for people walking.

OPPORTUNITIES



Increase the number of uninterrupted continuous lanes to two in each direction

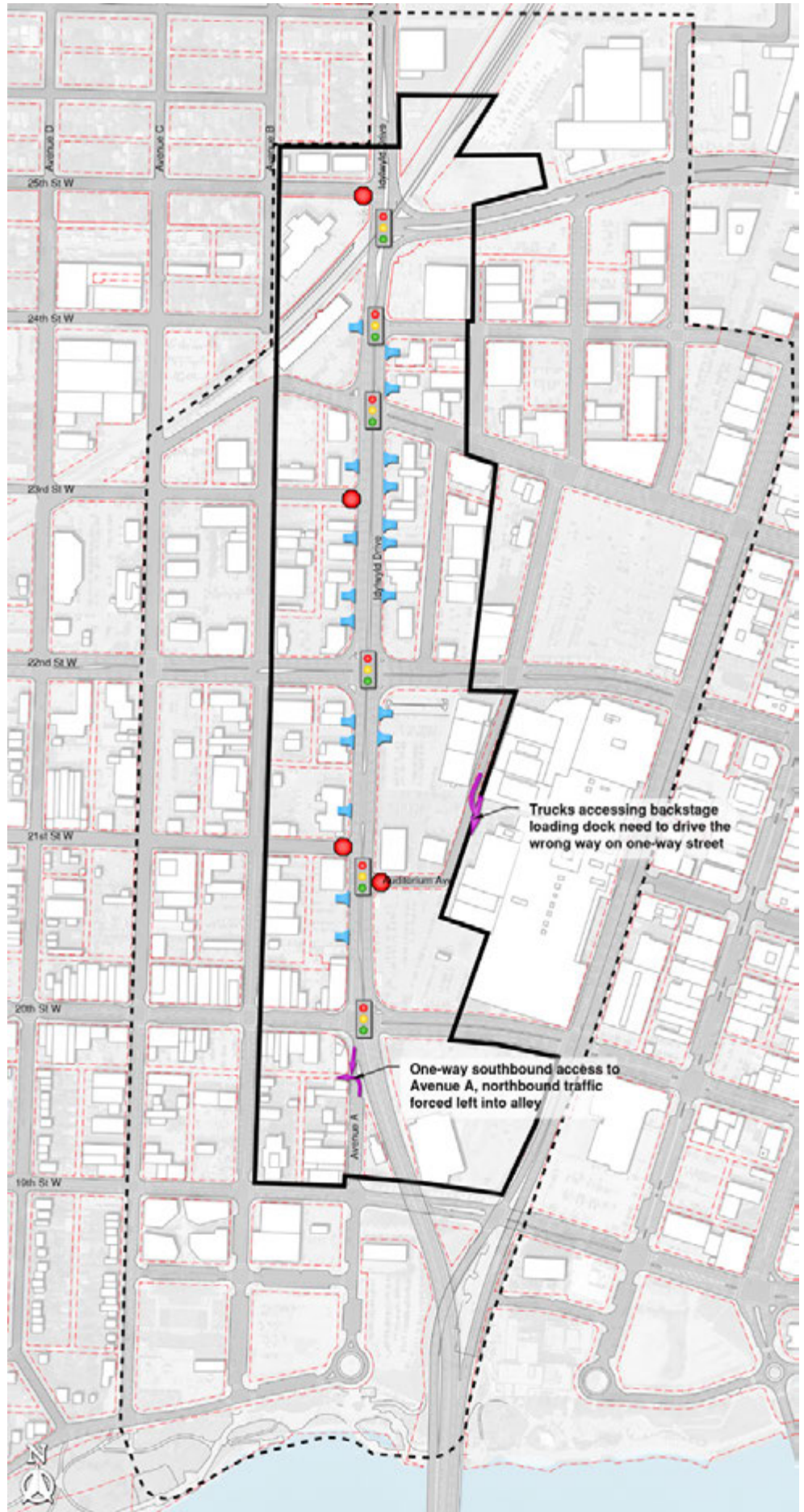
Make lane widths consistent through the corridor

Separate left turns in their own lanes

Avoid lanes that end at intersections, unless they are clearly turning lanes

LEGEND

-  Signalized Intersection
-  Stop Controlled Intersection
-  Private Driveway
-  Site-Specific Access Issue
-  Study Area
-  Area of Impact



INTERSECTIONS AND ACCESS POINTS

Idylwyld Drive is classified as an arterial road by the City of Saskatoon. According to the Transportation Association of Canada, direct access to arterial roads should be controlled, and intersections should be spaced 200 m to 400 m apart.

The Idylwyld Drive study area has a high density of intersections for its length, with nine intersections in 900 m, as well as an off-ramp-style access to Avenue A. Of the nine intersections, six are signalized, including a pedestrian half-signal at Auditorium Avenue that uses a signal for the crosswalk but a stop sign for vehicles. The remaining three intersections are stop-controlled and partially closed, allowing only right turns. All turns are allowed at each signalized intersection, except at 20th Street where the westbound left turn to Idylwyld Freeway is prohibited.

While closely spaced low volume intersections are common in all grid-based cities and are not generally problematic, closely spaced traffic signals are more undesirable since the queues from one intersection can interfere with the other. There are two instances in the study area where signalized intersections are spaced less than 100 m apart: 23rd Street East/Jamieson Street to 24th Street East, and 24th Street East to 25th Street East. Closure of one or more of these streets could resolve the spacing issue, however each of these streets plays an important role in the circulation and connectivity of the study area and its surroundings:

- 23rd Street East and Jamieson Street are links on a bikeway link across the city and are also transit routes.
- 24th Street East, has seen its function as a major link for cars diminish with the opening of 25th Street extension, but it remains an important pedestrian link and acts as the “main street” of the Warehouse District.
- 25th Street East is a major link in the street network, a bridge connection, access to the Police headquarters, and a transit route.

The westbound left turn from 20th Street to Idylwyld Freeway is currently prohibited since the same movement can be accomplished using the 1st Avenue South freeway on-ramp one block to the east. There would be very minimal benefit to permitting this movement, while the consequence would be less efficient traffic signal timing and increased congestion at the intersection, additional space requirements for a left turn lane, additional crossing distance and risk exposure for pedestrians and cyclists, and a risk that drivers would attempt to turn left directly onto Avenue A.

Avenue A is an unusual access type, with only southbound access from Idylwyld Drive. Northbound traffic on Avenue A cannot access Idylwyld Drive and instead must turn left into an alley. There are sight line and lane alignment issues with

the current configuration, particularly at the intersection of Avenue A and the alley, as discussed further in the Technical Appendix.

There are also around 19 driveways with access directly onto Idylwyld Drive. Driveways create an additional source of safety risk for drivers and pedestrians and delay for drivers as a vehicle slows to make a turn. The typical current driveway configuration involves sloping the sidewalk down toward the street, which can make walking difficult in icy conditions. Over the long term, access could evolve to other means, such as rear-lane access as land use changes. In the shorter term, driveway configurations can be upgraded to keep the sidewalk level.

An additional site-specific access issue occurs along Auditorium Avenue, which serves as the access to the freight loading docks for Midtown Plaza and TCU Place. For the TCU Place loading dock in particular, trucks must face south to back into the south-facing backstage loading dock. Since Auditorium Avenue is restricted to northbound traffic only, and there is not sufficient space to turn around on site, trucks are forced to drive the wrong way on Auditorium Avenue from 22nd Street to access the loading dock.

OPPORTUNITIES

Consider alternatives for 24th Street including closing the median and removing the traffic signal, or restricting certain movements to minimize the impact of closely spaced signalized intersections on traffic flow







Over the long term, remove driveways on Idylwyld Drive as land usage changes

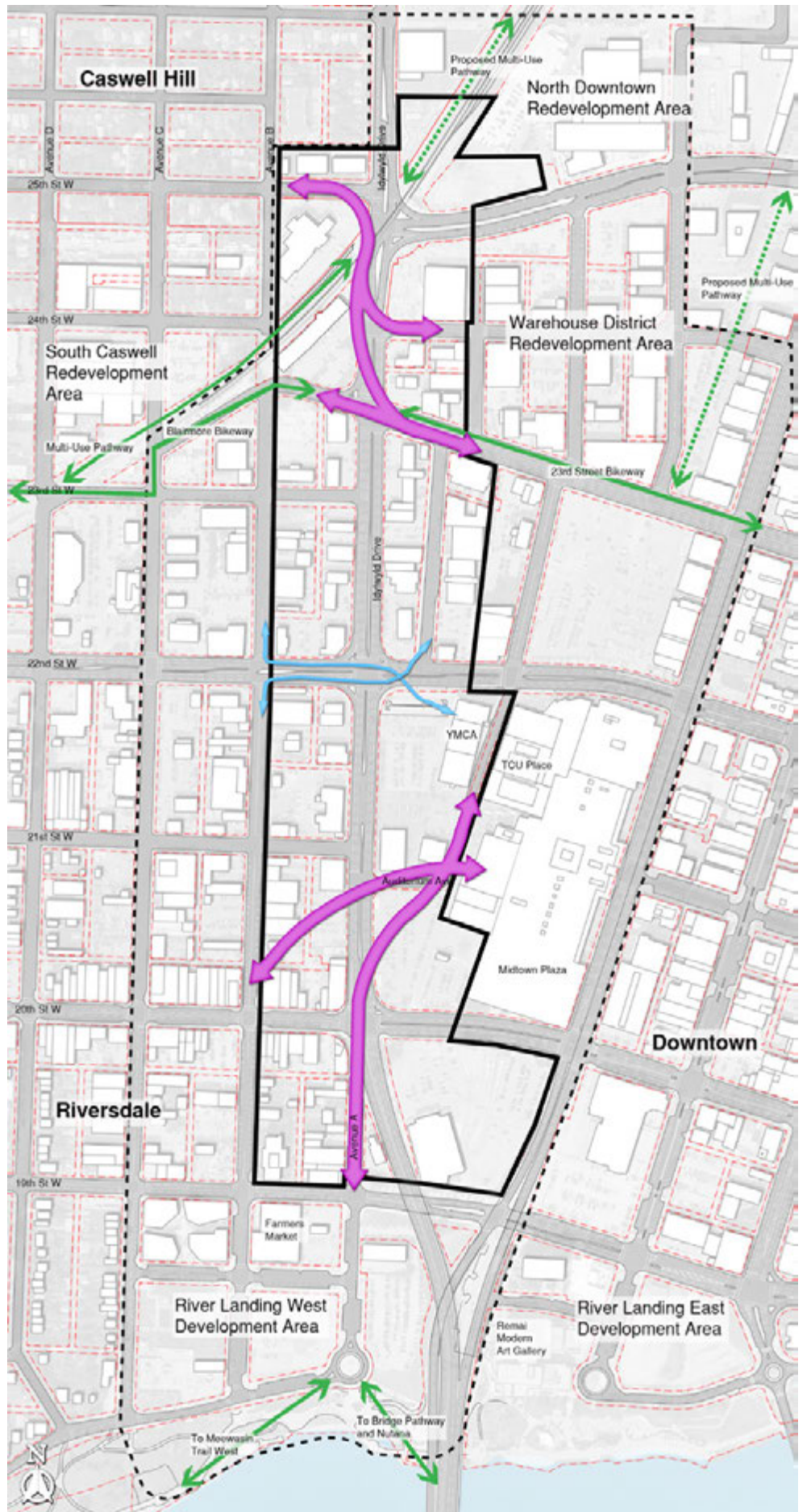
Reconfigure driveways to remove the cross-slope for people walking

Consider closing or reconfiguring the off-ramp to Avenue A - potential closure to vehicular traffic only

Improve freight access to the TCU Place and Midtown Plaza loading docks

LEGEND

-  Key Active Transportation Neighbourhood Connection Improvement Opportunity
-  Other Active Transportation Connection Improvement Opportunity
-  Existing Active Transportation Connection Adjacent to Study Area
-  Proposed Active Transportation Connection Adjacent to Study Area
-  Study Area
-  Area of Impact



TRANSPORTATION + CONNECTIVITY

CONNECTIONS AMONG NEIGHBOURHOODS

According to “Public Spaces, Activity and Urban Form” (City Centre Plan, Phase 1, 2011, p. 22) city centre residents are more than twice as likely to bike or ride transit, and more than four times as likely to walk than the city-wide average. Within the city centre, 57% of residents travel by car, while the city-wide average is 86%. Ensuring safe and accessible connections for people walking and riding bicycles is a key issue, directly affecting nearly half the residents of the surrounding neighbourhoods.

Idylwyld Drive divides the neighbourhoods of Caswell Hill and Riversdale to the west from Downtown to the east, including the Warehouse District. Although Idylwyld Drive is currently perceived as a barrier, it has the potential to become a connector between neighbourhoods and destinations on either side.

Near the middle of the study area, there is a cluster of major destinations on the east side including TCU Place, the YMCA, and Midtown Plaza. Major destinations on the west side include River Landing, the Farmers’ Market, and Riversdale’s business district toward the south end of the study area. Currently, walking between these destinations can be challenging to navigate and unpleasant, with narrow sidewalks, large areas of asphalt parking, exposure to wind, and long waits at traffic signals. For people riding bicycles, there is no direct, safe route within the study area between these east side and west side destinations.

Toward the north end of the study area, the city’s street grid is interrupted by the old CP railway station, which cuts off Avenue B and 24th Street. The connections from 25th Street West to 24th Street East and 23rd Street East are the most direct pedestrian and bicycle links between most of Caswell Hill and the Warehouse District and Downtown. These connections are currently in fair condition for people walking, with sidewalks offset from the street and recent improvements around 25th Street, but this direct connection is not available for people riding bicycles.

In the middle of the study area, both 22nd Street and Idylwyld Drive present barriers. Crossing either or both can be unpleasant on foot, and challenging by bicycle. Wall Street and Avenue B in particular are somewhat isolated by their proximity to Idylwyld Drive and 22nd Street. Wall Street is home to several medical and other service providers, as well as the Indian and Metis Friendship Centre, but it is not possible to get to Wall Street from Riversdale and the southwest of the city by bicycle legally and directly, and similar connectivity challenges exist between the 100-block of Avenue B North and destinations south of 22nd Street east of Idylwyld Drive.

Several redevelopment areas exist adjacent to the study area, with the potential for thousands of new residents and many new businesses. Connectivity improvements for people walking and riding bicycles would provide better links to jobs, shopping, and entertainment in adjacent neighbourhoods.

OPPORTUNITIES

Formalize a pedestrian pathway from Avenue B to Auditorium Avenue via the City-owned parking lot on the 200-block of Idylwyld Drive South

Improve pedestrian conditions on Auditorium Avenue

Enable Auditorium Avenue to be used by bicycles in both directions

Create a bicycle connection between Avenue A and Auditorium Avenue

Create a bicycle connection between 24th Street East and 25th Street West

Maintain a pedestrian connection between 24th Street East and 25th Street West

Consider a bicycle connection between the 100-block Avenue B South and Wall Street



Figure 4.5: Walking Conditions Along Idylwyld Drive
Imagine Idylwyld: Issues and Opportunities Report

WALKING

Wide intersections, high traffic volume, long wait times, and wide right turns in many places are all sources of discomfort and unease for people walking.

The length of time a pedestrian has to wait to cross the street is especially important in Saskatoon's winter climate. In the study area, the maximum wait time to cross Idylwyld Drive is 125 seconds in the morning and 130 seconds in the afternoon at each signalized intersection. Long wait times can encourage people to cross against the lights (jaywalk) rather than wait. This is often observed around Auditorium Avenue. The recommended best practice for urban intersections is a maximum wait of 60 to 90 seconds.

Crossing time is a concern for some people, especially the most vulnerable and least mobile. Crosswalks in the study area range from 23 to 30 metres long, with the longest at 20th Street. During a site visit, one elderly person was observed stranded on the Idylwyld Drive median at 20th Street, having been unable to complete the crossing in one light cycle. Crossing time is a function of the crossing distance and the assumed walking speed. The current crossing time (pedestrian clearance interval) at this location is 20 seconds, for an assumed walking speed of 1.5 metres per second. Best practice for walking speed is 1.2 metres per second for most urban locations, or 1.0 metres per second where there are many children or seniors.

Several intersections have right turn islands. Drivers turning right need to turn their heads farther than normal to the left, at the risk of neglecting to see a pedestrian crossing in front. Right turn islands are not recommended in modern best practices for urban areas with pedestrians, as discussed further in the Technical Appendix.

The sidewalks along Idylwyld Drive south of 24th Street are narrow, ranging from 1.8 to 2.3 metres, but lampposts, signposts and other obstructions render them effectively much narrower. Best practice for sidewalks on urban streets is a minimum clear path of 2.4 to 3.6 metres. The block of Idylwyld Drive from 24th Street to 25th Street, which was recently reconstructed, has sidewalks 3.3 metres wide.

Most intersections have curb cuts for wheelchair ramps. However, some ramps are not in line with the crosswalk, causing confusion. At 22nd Street, the sidewalk has a curb cut but the island with the pedestrian button does not have a curb cut, so people in wheelchairs would not be able to call for the walk light, and would have to wait somewhere else. This is a hazardous situation.

In some places, poor drainage, narrow sidewalks, and a lack of buffer combine to create a generally uncomfortable situation, including splashing hazards for pedestrians. At one notable spot, just north of 20th Street, mud can often be seen on the side of the building, illustrating the inescapable fate of pedestrians passing on the sidewalk between.

OPPORTUNITIES

Ensure all crosswalks have accessible curb ramps

Provide a buffer between driving lanes and sidewalk

Provide a consistent sidewalk width and clear travel path appropriate for a major urban street

Remove channelization islands

Redesign as urban intersections

Reduce crossing distances

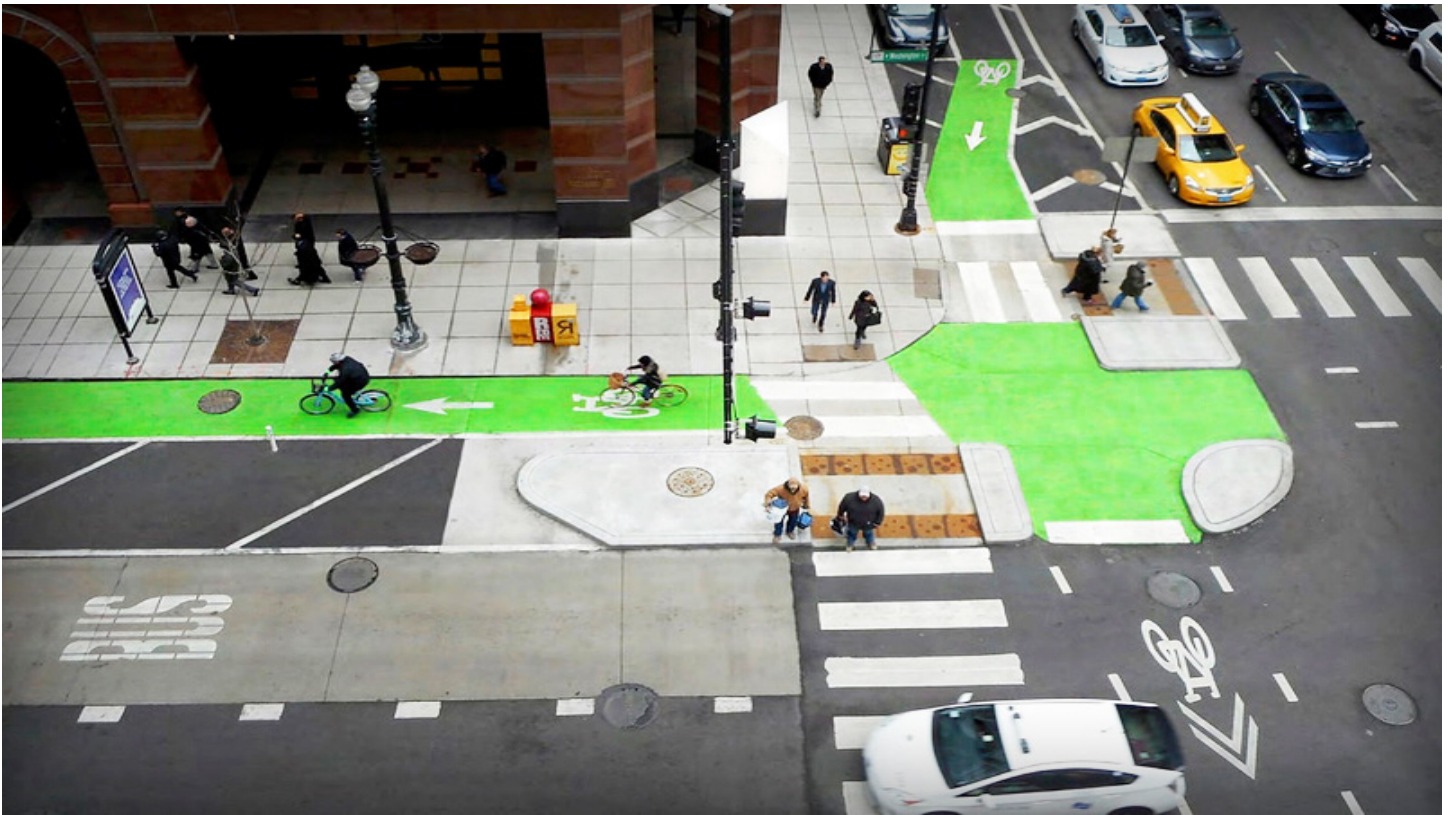
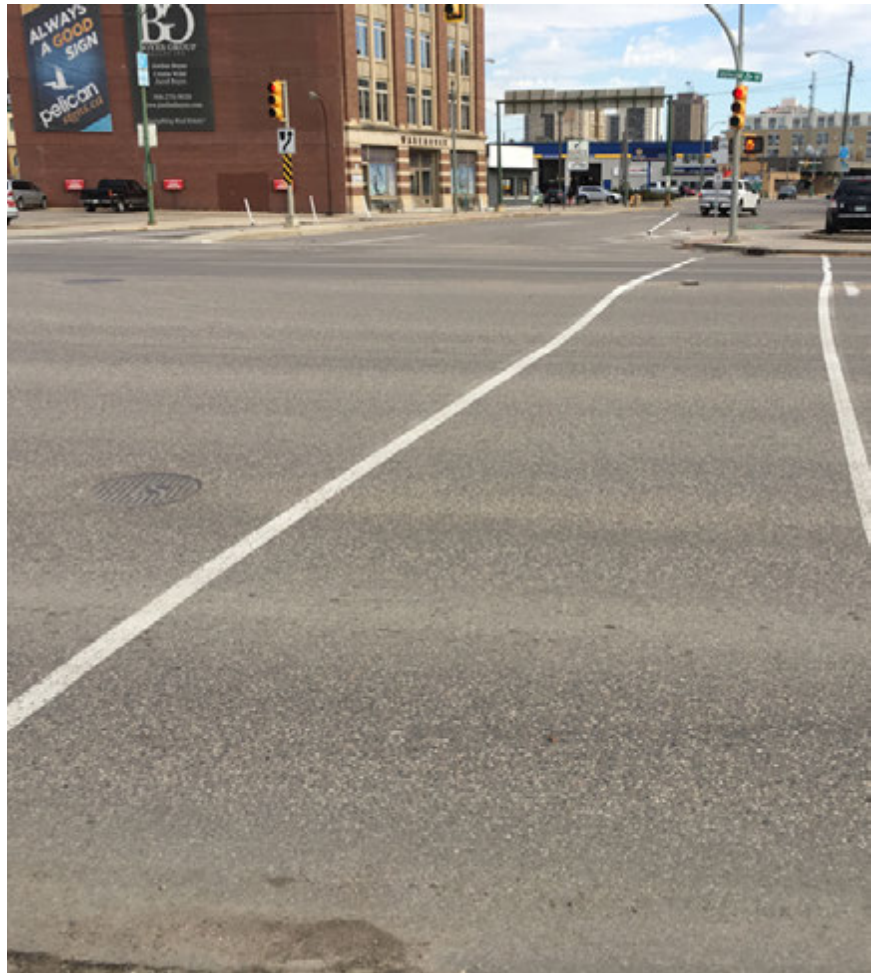


Figure 4.6: Existing Cycle Conditions Around Idylwyld Drive Vs. Typical Protected Intersection
Imagine Idylwyld: Issues and Opportunities Report

TRANSPORTATION + CONNECTIVITY

CYCLING

Idylwyld Drive does not have dedicated infrastructure for people riding bicycles. Although not prohibited, it is very rare for a person riding a bicycle to choose to ride with traffic on Idylwyld Drive. Cyclists that do use the corridor generally ride illegally on the sidewalk.

A parallel cycling-friendly street is available two blocks to the west at Avenue C, however no nearby parallel route is available to the east, and access to properties on Idylwyld Drive itself is also not available without riding in mixed traffic.

Crossing Idylwyld Drive is challenging. Most intersections are not equipped to detect bicycles, so signals would not turn green if no cars or pedestrians were present, for example at low volume intersections or late at night. No intersections have infrastructure for bicycles, including the designated cycling corridor at 23rd Street, where the protected bike lanes end just ahead of the Idylwyld Drive intersection.

At 20th Street westbound, a painted island is used by some cyclists waiting for the signal, while others wait in the lane with traffic. The inconsistent behaviour causes differing expectations and tension with drivers.

At Auditorium Avenue there is no designated bike crossing. Many people ride within or next to the crosswalk and use the sidewalk on each end, creating a de facto multimodal pathway crossing between Riversdale and Midtown Plaza, despite no pathway existing. On Auditorium Avenue itself, biking southbound from TCU Place is illegal, as it would be for a driver, since it's a one-way street. There is no direct legal connection within the study area from TCU Place and the YMCA to Riversdale. Similarly, there is no direct legal connection within the study area northbound from Avenue A to Idylwyld Drive, except to make the connection illegally on the sidewalk.

OPPORTUNITIES

Provide bicycle access to properties along Idylwyld Drive

Formalize a bicycle connection across Idylwyld Drive at Auditorium Avenue

Ensure traffic signals can be actuated by people riding bikes

Provide connections where none currently exist for people riding bikes

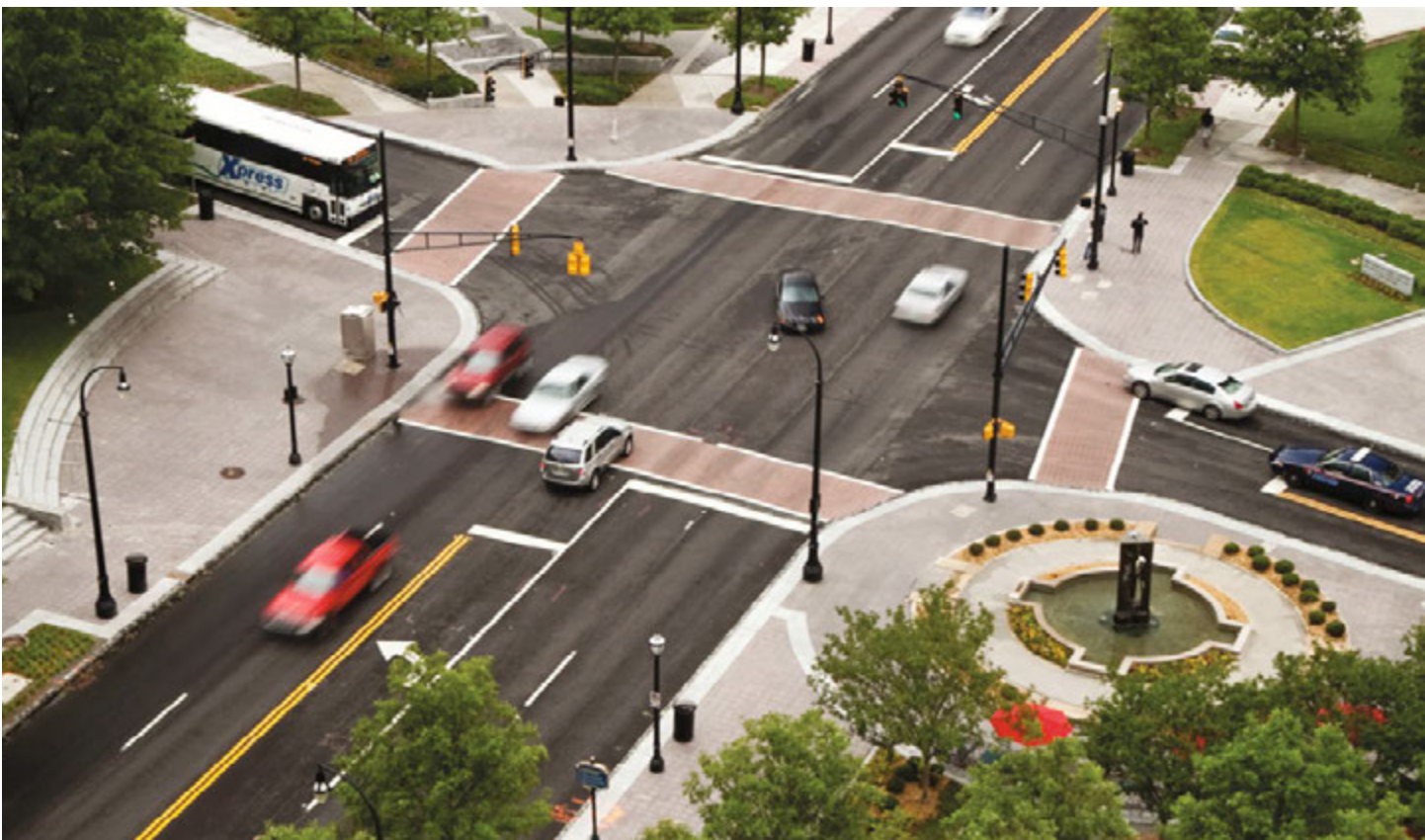


Figure 4.7: Effective Use of Space - Idylwyld Drive Vs. Best Practice Design
Imagine Idylwyld: Issues and Opportunities Report

TRANSPORTATION + CONNECTIVITY

USE OF SPACE

Most of the space on Idylwyld Drive is used for driving, reflecting its historical role in the city and province's motor vehicle transportation networks. The use of space for each block is a little different; details are provided in the Technical Appendix. As a fairly typical example, the block from 22nd Street to 23rd Street has a right of way around 30 metres wide. Of that, 4.3 m are used for sidewalks, 1.8 m for a median, and 23.9 m for seven traffic lanes.

A core purpose of this study is to make the best use of the space available – including making sure Idylwyld Drive continues to function as a major traffic street.

Three factors affect how much space is used for cars: number of lanes, lane width, and lane placement. The current arrangement is inefficient, and there may be opportunities to improve traffic flow while using less space. The inner lanes are not used to their potential capacity, since left turning traffic interferes with through traffic. Lane widths can be reduced to reflect modern best practice for urban arterials, to the range of 3.0 m to 3.3 m, both to save space and reduce speeding. Left turn lanes, if they aren't shared with through traffic, can face each other instead of being offset, conserving half the space.

Space re-purposed away from motor vehicle traffic could be used for dedicated accommodation from people walking or riding a bicycle, or for landscape and streetscape treatments. Additional technical analysis is required to determine the amount of space needed for motor vehicles. The principles to be used in this analysis are outlined in detail in the Technical Appendix.

OPPORTUNITIES


Use lane widths that are appropriate for urban streets

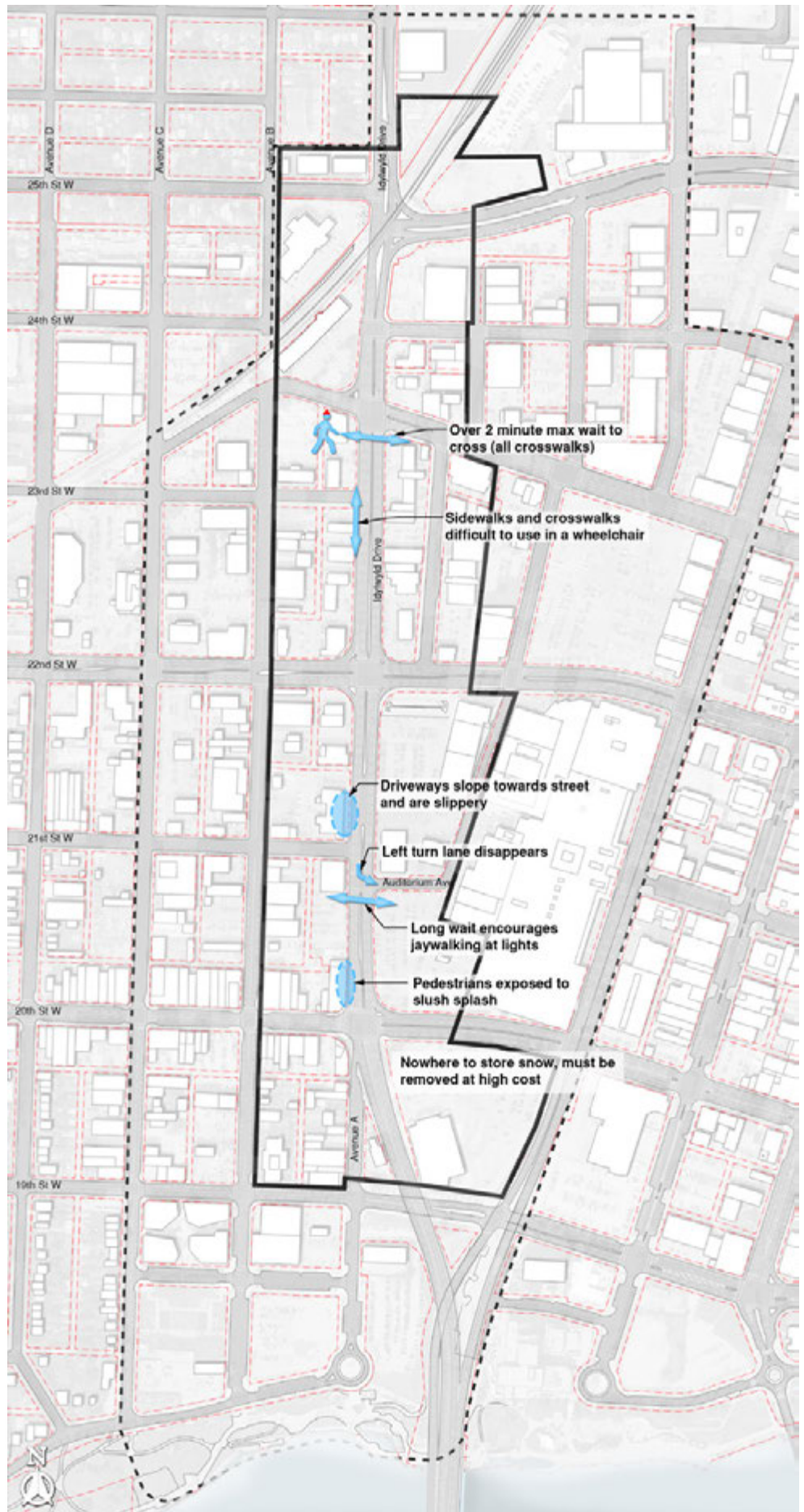
Create dedicated left turn lanes and orient them head to head

Increase amount of dedicated space for people walking

Consider dedicated space for people riding bicycles

LEGEND

-  Winter Specific Issue
-  Study Area
-  Area of Impact



TRANSPORTATION + CONNECTIVITY

SNOW AND WINTER

Like many streets in Saskatoon, Idylwyld Drive changes in the winter.

For drivers, the wide street can become covered in snow or slush, obscuring lane markings and exacerbating the lane alignment issues that are present year-round. The narrow left turn lane at Auditorium Avenue can disappear entirely, leading to additional delays and confusion.

For pedestrians, an icy driveway becomes a slippery slope toward traffic. The waits for walk lights become uncomfortable, or in the most extreme days, unbearable and intolerable. When it's windy, the open spaces and lack of trees provide little shelter for anyone waiting. On milder days, snow becomes a messy brown slush that splashes passers-by, most notably inescapable at the pinch points where the narrow sidewalk just fits between a driving lane and a building, entirely within the splash zone.

There are no boulevards or other areas for on-site snow storage, so snow must be trucked away. What does remain, melts and drains unfiltered into the river, adding salt, oil, and other pollutants to the water.

OPPORTUNITIES

Align the lanes to work intuitively even when covered by snow

Reconstruct and level abandoned driveways

Reduce the number of driveways as land redevelops over time

Provide a buffer between the driving lanes and sidewalks to minimize splash exposure

Provide boulevards for on-site snow storage

Provide vegetation and other shelter opportunities, especially where pedestrians wait for red lights