







Executive Summary

Mississauga is becoming a more transit-oriented city. Transit ridership over the past decade has grown by 29%. Transit service is changing to meet the demands. Transit infrastructure needs to match this growth.

Transit ridership has outpaced population and employment growth in the past decade. Major investments in transit have supported and influenced this growth. These include the Mississauga Transitway, the introduction of MiExpress service, and a grid network of high-frequency routes, the latter two a direct result of the MiWay Five Service Plan, approved in 2015.

More major transit investments are underway. The Hurontario LRT is planned for completion in 2024. Three Bus Rapid Transit Projects are in development: Downtown Mississauga Terminal and Transitway Connection, Dundas Bus Rapid Transit, and Lakeshore Higher Order Transit.

To support these major projects, and in response to increasing ridership, MiWay is continuously planning for further increases to transit service on its MiExpress and MiLocal networks. Without investing in transit infrastructure, transit service will experience increasing congestion and delays. The addition of more bus service to already congested roads and terminals that are operating at capacity will result in unreliable travel times and inefficient operations and is a possible deterrent to adding service to respond to ridership growth. The customer experience, whether on the bus or at stops and terminals, will be affected by insufficient transit infrastructure.

The MiWay Five Service Plan (2016-2020) identified the need for a capital program to support increased MiWay service.

In response, the MiWay Infrastructure Growth Plan was initiated with the intent to identify a 10-year capital investment strategy for transit infrastructure that would maximize the benefits of added MiExpress service, facilitate route connections, make transit more reliable, and enhance the customer experience. This investment strategy would capitalize on upcoming projects to minimize throw-away costs while achieving the City's direction towards a transit-oriented city.

The Infrastructure Growth Plan investment strategy is designed to accommodate the City's planned growth and change, to maximize benefits to transit passengers and operational efficiencies and to meet three main objectives:

- designs to support a consistent "look and feel" for MiWay stops and terminals:
- such treatments will have the greatest benefit; and
- Identify and prioritize terminal needs in response to changing local, express, and rapid transit networks.



Photograph by Ben Rahn/A-Frame

Develop a stop and terminal classification system with supporting standard

Identify and prioritize transit priority applications at MiExpress stops where

The MiExpress network covers over 220 km, with 163 on-street stops serviced by 9 routes, serving over 40,000 passengers every weekday.

The MiExpress network operates with an average peak period service of approximately 5 buses an hour. 163 MiExpress stops support this service, with 147 located on-street within the City of Mississauga, ten (10) within the City of Toronto, and six (6) within the City of Brampton. The remaining stops are located within MiWay terminals and stations. The available infrastructure and amenities at these on-street stops vary significantly across the network.

The MiWay network connects 44 terminals and stations.

There are 22 terminals in Mississauga, Brampton and Toronto, plus 11 Transitway stations and 11 GO stations. These terminals and stations range in size and function, from large multi-modal facilities, to smaller lay-bys and route turnaround locations. Six (6) of the terminals and stations served by MiWay routes are located in the City of Toronto and four (4) are located within the City of Brampton. The 11 GO stations and three (3) of the Transitway stations are owned by Metrolinx.



MiWay's terminals and MiExpress stops need a stronger visual identity, effective connections to adjacent land uses, consistency in supporting infrastructure and amenities to increase operational efficiencies.

Opportunities exist to address inconsistencies. A consistent "look and feel" would make it easier to identify MiExpress stops and MiWay terminals. The same amenities would be available for customers. Clear access and improved connections would continue to be a priority. Operator amenities would be improved. Transit priority infrastructure and on-road infrastructure would be planned for operational efficiencies. A well-defined infrastructure direction and supporting guiding principles would aid in the strategic planning of improvements.

Strategic investments will provide comprehensive barrier-free transit infrastructure to enhance the customer experience, attract new passengers, and strengthen the connection between land use and transit.

Four guiding principles directed the development and prioritization of on-street and off-street transit infrastructure:

Guiding Principle #1: Accessibility and Pedestrian-friendliness

Barrier-free access that improves the safety and attractiveness of the system, and can reduce dwell-times.

Guiding Principle #2: Consistency

A look and feel for terminals, stops and amenities that creates a stronger identity for MiWay and makes the use of transit easier and more intuitive.

Guiding Principle #3: Transit Competitiveness

Better infrastructure and amenities to improve the overall customer experience and perception of transit.

Guiding Principle #4: Placemaking

Terminals and stops that are sensitive to existing surrounding land uses and can connect future land uses with the transit system.

A classification system provides the framework for a more consistent "look and feel" at stops and terminals, with the intent to attract more riders.

The classification system also enables a process to address amenity deficiencies, attract new passengers and accommodate people of all ages and abilities at MiWay stops and terminals. The classification system for stops promotes consistency while recognizing the important placemaking role that transit stops play as part of the streetscape:



Higher-order Transit Stops for the LRT and planned BRT



Major Transfer Stops, which provide transfers between two or more MiExpress routes



Enhanced Stops, which include all remaining MiExpress stops as well as MiLocal stops that provide transfers to MiExpress

Standard Stops, which are all remaining MiLocal stops. Most amenities at these stops are optional, based on the local context and stop usage patterns.



The classification system for terminals promotes efficient transit operations while recognizing the important relationship between transit and land use:



Turnaround Terminals which are primarily route-ends and turnaround locations



Through Terminals which primarily provide through service



Photograph by Ben Rahn/A-Frame

Connect and Turnaround Terminals which provide connections to other routes and services, and function as route-ends and turnarounds

Connect Terminals which primarily provide connections to other MiExpress and MiLocal routes, but are not likely to be route ends

Recommended MiExpress stop infrastructure improvements incorporate best practices to improve accessibility and transit reliability.

Design standards for on-street stops were developed specific to the City of Mississauga to address existing infrastructure deficiencies. The standards are based on current best practices in transit, plus City of Mississauga and Region of Peel standards, including:

- Compliance with AODA Integrated Accessibility Standards, because all • public services in Ontario are required to be fully accessible by 2025;
- Transit priority measures; and
- Active transportation, to improve multimodal access to MiWay services.

The proposed design standards can be applied to all stops to promote consistency. A site-specific design approach is required to develop context sensitive transit improvements.

Opportunities to improve corridor-segment operations are recommended through the strategic implementation of transit priority measures. Transit priority measures (TPM) can address delay issues and improve overall transit competitiveness in Mississauga.

Preliminary design concepts were developed to address the identified issues and needs at a schematic design level with a focus on the Dixie, Derry and Erin Mills Parkway MiExpress corridors. The design concepts coordinate in-boulevard and onstreet improvements to limit disruptions to service and improve constructability. Opportunities for improvement were explored at each location, including:

- Transit priority measures, such as queue jump lanes; ٠
- Stop relocation;
- Pedestrian connectivity and multimodal integration;
- Accessibility including compliance with AODA Integrated Accessibility Standards; and
- Passenger amenities.

Recommended on-street transit infrastructure improvements will benefit transit passengers, reduce delays, and improve operations.



Queue Jump Lanes on Airport Rd. and Queen St. E Source: City of Brampton



Source: MiWay

Recommended MiWay terminal improvements incorporate best practices to improve connections and transit operations.

Opportunities to improve terminal operations are recommended through the strategic implementation of terminal infrastructure improvements. Preliminary design concepts for infrastructure improvements were prepared at a schematic design level with a focus on Central Parkway Transitway Station, Laird/Vega on-street terminal, Cawthra Transitway Station and Meadowvale Town Centre Transit Terminal. In general, the improvements are within lands owned by the City of Mississauga. Property ownership provides greater certainty to implementation timelines.

- Opportunities for improvement were explored at each location, including:
- Transit operations, including the number of existing and potential future routes;
- Surrounding land uses (existing and planned);
- Pedestrian connectivity and multimodal integration;
- Passenger and operator amenities; and
- Site constraints.

Recommended infrastructure at MiWay terminals will address identified operational challenges, maximize the benefits of transit investments, facilitate route connections and create a more reliable transit network.



Photograph by Ben Rahn/A-Frame

A clear implementation strategy provides the blueprint for MiWay's 10-year capital requirements to carry out the design and construction of infrastructure needed to support MiWay's service plans and make transit the mode of choice for Mississauga residents.

On-street and terminal infrastructure improvements are being recommended through the MIGP to provide comprehensive barrier-free transit infrastructure to enhance the customer experience, attract new passengers, and strengthen the connection between land use and transit. Key steps for successful implementation will include:

- A funding strategy: High level cost estimates will be used to request funding through the annual City of Mississauga's capital budget or other funding opportunities (e.g., Investing in Canada Infrastructure Program).
- Furthering of designs: Conceptual designs and feasibility plans will be carried forward to detailed design to advance projects to constructionreadiness once funding is approved.
- Coordination and timing: Opportunities will be leveraged in delivering planned capital improvements whether with the City, the Region of Peel, private landowners or with other transit service providers. These opportunities will drive the timing of improvements.



Five monitoring activities are recommended to measure the benefits of investing in transit infrastructure.

Collecting and measuring baseline data, combined with a regular monitoring and maintenance program, is an important step in tracking the benefits of investing in transit infrastructure. To determine how implementation achieves the guiding principles, five monitoring activities are recommended at specific intervals:

- 1. Update stop infrastructure and amenity deficiency list with regular maintenance activities, field observations, and implementation of capital improvements (e.g. new sidewalks or multi-use trails, new shelters).
- 2. Collect corridor-segment operations data and compare findings to the existing conditions and measure the impact implementation has on corridor operational challenges. Once completed, the corridor prioritization list should be updated.
- 3. Update terminal operational challenges with the implementation of any service changes resulting from the MiWay Five Service plan, the Metrolinx 2041 RTP, or the completion of the ongoing terminal changes identified in the MIGP. Once complete, the terminal prioritization lists should be updated.
- 4. Update the MIGP in tandem with MiWay's five-year service planning process to determine where service expansion may be constrained by infrastructure.
- 5. **Monitor and track the cost of construction** of infrastructure implementation. By comparing actual costs to the cost estimates provided here, MiWay will be in a better position to budget and request for funding for future on-street and within the terminal footprint improvements.

transit infrastructure that will best serve transit riders, improve become a more transit-oriented city.

This first MiWay Infrastructure Growth Plan provides a traceable, data-driven, and repeatable process to invest in transit infrastructure. These investments will accommodate the transit service improvements approved in the MiWay Five (2015) service plan. The MIGP also identifies where investment in on-street and off-street locations will most benefit transit operations and the passenger experience.

The stop and terminal classification systems support a consistent "look and feel" for MiWay stops and terminals. This classification system is applicable to MiLocal stops as well and can be applied to new stops when service is expanded.

The prioritization processes developed for the application of transit priority measures are repeatable and can apply to new MiExpress corridors. The same process can also be considered for high performing MiLocal routes, as Mississauga shifts towards becoming more transit-oriented.

The prioritization process developed for improving transit terminals is iterative and can be repeated in response to changing local, express, and rapid transit networks. Terminal improvements will better accommodate service expansion and make operations more efficient and flexible.

Updating the MIGP in tandem with MiWay's five-year service planning process is recommended. The next MIGP should be developed with the output of MiWay's fiveyear service planning process, which will identify service expansion that may be constrained by a lack of infrastructure, with a focus on the issues and needs of highperformance MiLocal routes.

The MiWay Infrastructure Growth Plan identifies investments in transit operations, and support the City of Mississauga's goal to

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Introduction 1

Mississauga is undergoing a significant change, from an auto-dominated suburban community, to a transit-oriented city. This shift has been supported by major investments in transit over the past decade: the Mississauga Transitway, increased MiExpress service, and a network of high-frequency routes. This investment has resulted in a 29% increase in transit ridership, far outpacing the growth in population and employment for the same period.

In 2015, MiWay approved the MiWay Five Service Plan, which identified the expansion of the MiExpress network as one of its most important elements. Since the implementation of the service plan, MiWay has added four (4) new MiExpress routes on major corridors. Over the next decade, the City of Mississauga plans to further increase transit service on the bus network, introduce additional express service, and continue to work with other transit agencies to deliver major transit initiatives, including the Hurontario LRT, planned for completion in 2024.

To maximize the benefit of transit service investments, facilitate route connections and create a more reliable transit network, MiWay has developed a program to build complementary transit infrastructure. The MiWay Infrastructure Growth Plan (MIGP) recommends an investment strategy for transit infrastructure that supports a transitoriented city and minimizes throw-away costs. MiWay currently provides service to 21 terminals in Mississauga, Brampton and Toronto, in addition to 11 Transitway stations (excluding City Centre Transit Terminal) and 11 GO stations. These terminals range in size and function, from large off-street multi-modal facilities, to smaller on-street stops and route turnaround locations.

The 10-year MiWay Infrastructure Growth Plan is traceable, data-driven, and repeatable. The main objectives of the plan were to:

- Develop a stop and terminal classification system with supporting standard designs to support a consistent "look and feel" for MiWay stops and terminals:
- Identify and prioritize transit priority applications at MiExpress stops where such treatments will have the greatest benefit; and
- Identify and prioritize terminal needs in response to changing local, express, and rapid transit networks.

Review Existing Policies Data Collection of • Infrastructure Inventory Develop Infrastructure Direction, Guidelines, and Classify Terminals and MiExpress Stops Evaluate and Prioritize Issues and Needs Identify Infrastructure • **Opportunities** Prepare Feasibility Plans and Standard Drawings Implementation Strategy and Monitoring

1.1

- Appendix B, C);

Study Process

This report documents the development of the MIGP, including:

Review of existing policies, studies, and plans that identify directions for transit infrastructure investment in Mississauga, such as the Official Plan, Metrolinx Regional Transportation Plan, and area master plans. Review of the MiWay operating context, population and employment growth and planned transit improvements (Section 1, Appendix A);

Infrastructure inventory and operational data collection for MiExpress corridors, including on-street stop locations (Section 3), terminals (Section 4), and route operations along corridors and in terminals (Sections 3 and 4.

Develop Infrastructure Direction and supporting quidelines (Section 2) to establish on-street stop infrastructure requirements for MiExpress routes and supporting terminal infrastructure for accessibility, placemaking, transit competitiveness and consistency resulting in a classification system for MiWay's MiExpress stops and terminals (Sections 3 and 4);

Evaluation and prioritization of MiExpress stops and terminals based on existing and future issues and needs according to a traceable, data-driven and repeatable framework (Sections 3 and 4, Appendix H);

Identification of opportunities for new MiExpress stop and terminal infrastructure, (Sections 3.5 and 4.2.2);

Preparation of feasibility plans for stop and terminal improvements including conceptual infrastructure, land requirements, transit routing, and cost implications. Prepared standard drawings for bus stops and terminal infrastructure (Sections 3 and 4 Appendix L, M, N); and

Recommended implementation strategy and monitoring program, compatible with the existing 10-year Capital Works Plan and other known transportation and land use projects, to direct the implementation of MiExpress stop improvements, terminal redesign or new development. Development of a monitoring program for annual review to adjust for funding availability and changing opportunities for implementation (Section 5, Appendix O).

1.2 Background Review

Mississauga is Ontario's third largest municipality, with a population of 744,590 according to 2016 estimates. By 2051, the population is expected to grow another 26%. From incorporation until 2006, the city's population has grown an average of 20% with each census. As the population grew, so did employment. Mississauga had 476,880 workers employed within the City in 2016, a number expected to increase 23% by 2051. Initially developed as a primarily suburban bedroom community, the city grew outward in a low-density pattern until land supply was exhausted. Prior to 2015, the MiWay network was designed to serve the low density suburban built form. With the city's continuous growth in population and employment, MiWay has evolved from the former radial network to the present-day grid network.

With the approval of the MiWay Five Service Plan in 2015, service and network improvements were identified to 2020. The MiWay Five Service Plan identified the need for supporting infrastructure to maximize the benefits of service improvements. MiWay initiated this study to develop a transit infrastructure investment plan to best support MiWay Five. The MIGP recommends transit infrastructure investments to accommodate planned growth and change, and identifies where investment will have the most benefit to transit operations.

Mississauga has policies in place to direct growth where it can be supported by existing and planned infrastructure. The policies identified in Exhibit 1-1 dictate the urban structure and how the city will accommodate change, providing the foundation for infrastructure investments. The relationship of the MIGP within the existing policy framework is also shown in Exhibit 1-1. The main plans that set the stage for the MIGP are:

- Mississauga Official Plan (MOP) (2015), the city's land use plan;
- Mississauga Moves (2019), the city-wide transportation master plan;
- MiWay Five (2015), the transit service plan for 2016-2020;
- Metrolinx Regional Transportation Plan (RTP) (2018), the Greater Toronto and Hamilton Area's (GTHA) multi-modal long-range transportation plan; and
- Cycling Master Plan (CMP) (2018) for the city.



Hurontario Express bus at Stop #0326 Lakeshore Rd east of Elizabeth St

These plans are the foundation of project planning, including major station area plans, municipal infrastructure projects, land use and development, and corridor improvement projects. The consolidated policy directions from these plans for MIGP are:

- infrastructure;

Targeting growth toward areas sustainably supported by resources and

Creating a network of nodes connected directly using transit; and

Integrating a multi-modal network to supplement the new transit network.

Exhibit 1-1: Policy and Planning Framework for MiWay Infrastructure Growth Plan



1.2.1 Infrastructure Context

A detailed inventory of existing stop and terminal infrastructure, including on-street and within-terminal infrastructure, passenger amenities, and operator facilities, is necessary to identify needs and challenges and develop a system-wide stop and terminal classification.

There are over 200 existing MiExpress stops serviced by 8 MiExpress routes. The intent of the MiExpress network is to provide connections to higher order transit and a faster, more frequent and efficient service to customers. In general, the MiExpress stops are not easily differentiated from MiLocal stops. There is no distinct look-and-feel for MiExpress stops with the exception of a more sophisticated bus stop marker. To obtain a better understanding of the infrastructure at existing MiExpress stops, the MIGP reviewed the stops and corridors serviced by routes 101/101A, 104, 107, 108, 109, 110, and 185. Route 103, which runs along Hurontario Street, is excluded from the scope of the MIGP due to the planned Hurontario LRT.

As of December 2019, there are 21 MiWay terminals serving a variety of MiExpress and MiLocal routes. MiWay terminals are located at route ends, major transfer points, and other attractions in and around the City of Mississauga. In addition, MiWay routes use Mississauga Transitway stations and GO stations in the City of Mississauga as transfer points between routes. For the development of the MIGP, three terminals were not reviewed: Brampton Gateway, City Centre Transit Terminal, and Islington Subway Station. These terminals were excluded from the scope for various reasons, including improvements just completed, improvements currently underway, or the station will no longer be serviced by MiWay.

Exhibit 1-2 maps the stops, express route corridors, terminals, and stations reviewed as part of the scope of the MIGP. Detailed inventories of on-street MiExpress stop infrastructure are provided in **Appendix B**, and detailed inventories of terminal and station infrastructure are provided in **Appendix C**.

1.2.2 Data Collection

Two data sets were collected in the field. First, the type and amount of existing infrastructure was collected at on-street MiExpress stops, MiWay terminals, Mississauga Transitway stations, and GO stations. Second, operational data was collected on MiExpress routes.

Data collection for stop and terminal infrastructure took place between October 30 and November 9, 2018 and used a combination of technology-assisted data recording on tablets and manual data recording. The field data collection for MiExpress stops and corridors covered 163 MiExpress stops on all the in-scope MiExpress routes. In addition, data was collected from 19 MiWay terminals, 11 Transitway stations, and 11 GO stations with MiWay infrastructure. Field staff noted the infrastructure owner, whether MiWay, GO Transit, other transit providers, or private owners. Field data was supplemented with land use data (from the City of Mississauga).

The field survey for MiExpress route operational data was conducted between October 9 and October 12, 2018, inclusive. Data was recorded between 3:30 p.m. and 6:30 p.m. each day to capture p.m. peak conditions using GPS data logger devices and a log sheet to record the route number, bus number, the time the bus departed the first stop, and the time the bus arrived at the last stop. Data collected included location coordinates, current speed, and elapsed travel time in one-second increments. Multiple runs were collected for each in-scope MiExpress route. Following the completion of the data collection, raw data was trimmed and cleaned to match the start and end times noted on the log sheets. Next, bus stop locations and intersection locations were identified as points of interest (POI) along MiExpress routes using GIS data. These POI were used to match data points with bus stops or intersections using a typical 25-metre geo-fence. This helped to identify the operating conditions on the MiExpress corridors. Field data was supplemented with MiWay route operational data (from MiWay).

The details of the data collection methods are available in **Appendix B** and **C** for stop and terminal infrastructure, and **Appendix D** for MiExpress route operational data.

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Exhibit 1-2: MiWay Terminals, Transitway Stations, GO Stations, and MiExpress Routes and Stops

2 Infrastructure Direction

The MIGP provides MiWay with a strategy to effectively allocate the City of Mississauga's investments in transit infrastructure. The 10-year MiWay Infrastructure Growth Plan is traceable, data-driven, and repeatable. A strategic direction was established early in the study to articulate the goals and objectives for infrastructure investments.

This strategic infrastructure direction guided the development of the MIGP, to support the transformation of Mississauga to a transit-oriented city. Prioritizing necessary infrastructure will facilitate the MiWay Five Service Plan recommendations and future changes to the transit network.

MiWay's strategic infrastructure direction is:

To provide comprehensive barrier-free transit infrastructure that enhances the customer experience, attracts new passengers, and strengthens the connection between land use and transit.

The strategic infrastructure direction is supported by guiding principles to provide a framework for the design of terminals and stops. The guiding principles were developed and considered when prioritizing opportunities to invest in MiWay's infrastructure.





The four guiding principles developed to support the implementation of the infrastructure direction are:

Guiding Principle #1: Accessibility and Pedestrian-friendliness

system, and can reduce dwell-times.

Guiding Principle #2: Consistency

•

Guiding Principle #3: Transit Competitiveness

• experience and perception of transit.

Guiding Principle #4: Placemaking

can connect future land uses with the transit system.

Barrier-free access that improves the safety and attractiveness of the

A look and feel for terminals, stops and amenities that creates a stronger identity for MiWay and makes the use of transit easier and more intuitive.

Better infrastructure and amenities to improve the overall customer

Terminals and stops that are sensitive to existing surrounding land uses and

3 **MiExpress Stops**

Based on the data collected, as described in Section 1, this section summarizes the existing conditions at on-street MiExpress stops, identifies issues and needs, and describes the MIGP stop classification system. The classification system is supplemented with stop design considerations, and standard drawings for MiWay stops' infrastructure and amenities. The prioritization methodology for stops and corridors, and opportunities for corridor infrastructure improvement are presented. This section also identifies planned and potential changes to MiExpress routes that may become opportunities for a future iteration of the MIGP to address. Finally, guidelines for the application of transit priority measures are outlined, and feasibility plans for stop and corridor-segment infrastructure improvements are presented.

Stop Infrastructure and Amenity Review 3.1

Stop infrastructure and amenity issues and needs at MiExpress stops were identified based on the existing conditions inventory collection and review. The seven MiExpress routes surveyed included 163 stops: 147 on-street stops in the City of Mississauga, ten (10) on-street stops in the City of Toronto, and six (6) on-street stops in the City of Brampton. A "stop" is defined as serving one direction of travel, as opposed to a station or terminal that will generally serve routes travelling in different directions.

Exhibit 3-1 summarizes the MiExpress on-street stops by route, showing the type of infrastructure available at the stop. Infrastructure or amenities provided by other service providers or other municipalities are excluded from this summary. Appendix B contains tables detailing amenities and infrastructure at individual MiExpress stops by corridor.

In Exhibit 3-1, it is evident that Route 108 is not consistent with the other MiExpress routes in terms of the number of stops along the route and the type of infrastructure available. Route 108 serves 12 of the 14 stops that are farther than 120 m from an intersection. About 55% of Route 108 stops have a shelter (29 of 53), whereas the rest of the MiExpress system has shelters at about 90% of its stops. MiWay staff confirmed that Route 108 operates differently than other MiExpress routes. Route 108 functions as an employment shuttle, operating only during the a.m. and p.m. peak hours, and was excluded from further study.

Exhibit 3-1: Summary of MiWay-owned Infrastructure at MiExpress Stops

	Num	ber of:		Numb	er of	Stops	with	MiWa	ay:		
Route Number	On-Street Stops	Stops > 120 m from Intersection	Pass. Access Issues	On-Road Infrastructure	Poles/Signs	Shelters	Benches	Waste Bins (Peel)	Roof or Advertising Panel Lighting	Map Panels	Schedule Panels
101/101A ¹	33	-	-	17	33	28	28	22	28	26	10
104	26	2	1	2	26	21	21	18	21	19	4
107	18	-	-	1	18	10	10	2	10	8	-
108 ^{1, 2}	53	13	-	1	53	26	26	14	26	24	1
109 ¹	15	-	-	2	15	10	10	9	10	10	-
110	10	-	-	2	10	9	9	7	9	9	8
185	22	-	-	-	6	13	13	10	13	11	2
Total ³	163	14	1	20	147	111	111	72	111	103	23
Total excluding Route 108 ³	116	2	1	20	100	87	87	65	87	81	23

Note: 1 On-street MiExpress stops serving the Kipling Bus Terminal were included in the stop inventory. In future, these MiExpress stops will be included within the Kipling Terminal (off-street). 2 Route 108 is excluded from further study due to its primary function as an employment shuttle. 3 Some stops are shared by multiple routes, so numbers may not sum to total

The remainder of the study focuses on infrastructure and amenities along six (6) MiExpress routes, including 100 on-street stops in the City of Mississauga. This scope excludes Route 108 and its stops, as well as stops outside the City of Mississauga's jurisdiction.

As a minimum, each MiExpress stop should be located within 120 metres of an intersection, have a premium stop marker mounted to a premium stop pole, a sidewalk connection, a shelter (including a bench, lighting, and a map panel where applicable), and a waste bin. Stops that did not meet these requirements are deemed deficient.

Most MiExpress stops (70%) are near-side stops, located within 120 m of the centre of the intersection. Over a guarter (28%) of stops are located on the far-side within 120 m of the centre of the intersection, and 2% of stops are more than 120 m from the intersection.



Stop #2516 Derry Rd at Columbus Rd

Stop Poles and Markers

The majority of MiExpress stops (72%) feature a premium stop marker. Only 5% of Route 185 stops along Dixie Road feature premium poles and markers in addition to shared Brampton Transit (BT) poles and shared markers, while 14% of stops along this route (those within the City of Brampton) only feature shared BT stop markers. A small amount (8%) of MiExpress stops have a standard (flat) marker mounted to a light pole, hydro pole, or Viacom pole. The remaining 2% feature barrel markers mounted to in-ground pipes.

Concrete Passenger Landing Pads and Sidewalk Connections

About 34% of stops feature a concrete passenger landing pad connecting to the sidewalk, while 7% feature another type of hard surface between the stop and the sidewalk. Another 53% are placed directly on the sidewalk. One stop, (#2134 located on the northeast corner of Derry Road and Argentia Road in the WB direction) currently has a concrete passenger landing pad, but there is no adjacent sidewalk.



Stop #2518 Syntex Rd at Derry Rd

On-road Infrastructure

Most MiExpress stops (96%) do not have any on-road infrastructure, such as concrete bus pads, lay-bys, or high-occupancy vehicle (HOV) lanes. Thirteen



Stop #0855 Dundas St at Cawthra Rd

MiExpress stops have one of the onroad infrastructure elements, while seven stops have both a concrete bus pad and lay-by (e.g. #855, located on the south side of Dundas Street West, west of Cawthra Road in the EB direction). One stop is located adjacent to a HOV lane, #9007 located on the southwest corner of Dundas Street and Aukland Road in the WB direction. None of the existing MiExpress stops are configured with queue jump lanes or transit-only signals.

Shelters and Benches

Most MiExpress stops (69%) feature one MiWay shelter, while 8% feature one Toronto or Brampton shelter. Just over 5% of MiExpress stops feature two MiWay shelters. Of interest, one full-size MiWay shelter is located in the City of Toronto at stop #310 (WB Bloor Street West at Green Lanes). Nearly 20% of MiExpress stops currently do not have a shelter. There are 94 MiWay shelters deployed across all MiExpress stops included in this review, consisting almost entirely of full-size shelters (93). There is one double-size shelter located at stop #862 (southwest corner of Dundas Street East and Dixie Road in the EB direction).

All MiWay benches are located inside MiWay shelters – each full-size shelter contains a single bench, while the double-size shelter contains two benches. There are 80 MiExpress stops with one shelter and one bench, while another seven MiExpress stops with two shelters include two or three MiWay benches.



Stop #0545 Erin Mills Pkwy south of Dundas St W



Stop #0310 Bloor St W at Green Lanes

Waste Receptacles

More than half of all MiExpress stops have one or more waste receptacles (bins), in a grey rectangular style, a black round style, or a 'multi' bin that collects both garbage and recycling. Most stops with waste bins have a single waste receptacle (43%). The remaining stops have either a single bin from another municipality (7%) or multiple receptacles (13%). Currently, 37% of MiExpress stops do not have a waste bin.

Other types of miscellaneous stop infrastructure were found at some stops:

- Most MiExpress stops (65%, or 75 stops) have one MiWay map panel, while another 6 stops (5%) have multiple map panels. All map panels are attached to MiWay shelters;
- Some MiExpress stops (11%, or 13 stops) have one MiWay schedule panel, • while another 10 stops (9%) have multiple schedule panels; and
- Heating systems and electronic timing (next bus arrival) signs are not • available at any on-street MiExpress stops.

3.1.1 Issues and Needs at On-street MiExpress Stops

An understanding of existing inconsistencies between on-street MiExpress stops enabled the clear identification of issues and needs. Upon further assessment, recommendations to address the issues were identified with the intent of improving the transit rider experience and enhancing operational efficiency. The identified issues and needs also informed the development of a stop classification system (Section 3.3). For stops located outside Mississauga, infrastructure improvements will require coordination with other agencies.

Issue 1: Inconsistent Use of MiExpress Stop Markers

MiWay created a premium stop marker for the purpose of clear identification of MiExpress stops; however, this is inconsistent between routes, and between stops on the same route. For instance:

- All MiExpress stops have a stop marker, however stop marker styles vary ٠ between premium markers (majority) and lite bus stop markers; and
- Some MiExpress stops outside of Mississauga (on route 185 specifically) ٠ have stop markers and shelters consistent with the local jurisdiction, which makes stop identification challenging for customers.

Opportunity: Clear identification of MiExpress stops

A consistent "look and feel" for stops and amenities will create a stronger visual identity for MiWay. Consistency in the provision and placement of elements, such as dedicated bus poles and markers at each stop, can help both customers and bus operators locate and identify MiExpress stops.

Issue 2: Inconsistent Provision of Passenger Amenities

Passenger amenities provided at MiExpress stops can vary significantly, for example:

- multiple shelters;
- vary; and
- provided at any MiExpress stops.

Opportunity: Provide Consistent Passenger Amenities at MiExpress Stops to Improve the Transit Rider Experience

To improve the transit rider experience at MiExpress stops, MiExpress stops should provide consistent passenger amenities that include weather protection, seating, and next bus arrival information. By making the transit experience more comfortable, people who have the choice between taking a car and taking the bus may more often choose the bus.

Issue 3: Inadequate Access to Stops

Access to MiExpress stops can vary based on stop placement and stop infrastructure. Some access challenges were found, including:

- controlled crossings and makes transfers between routes easier.
- accessible pathways to or from the stop;
- Argentia Road in the WB direction;

Not all MiExpress stops on the same route have the same set of amenities, for example, shelters, benches, waste bins and lighting. Where shelters are provided, the style and size of shelters can vary, and some stops have

MiWay does not provide amenities at MiExpress stops in the City of Toronto or the City of Brampton, and amenities provided by the local agencies can

Heating systems and electronic timing (next bus arrival) signs are not

While the majority of MiExpress stops are located within 120 m of the centre of a signalized intersection. Locating stops closer to signalized intersections generally improves access to transit by reducing walk times, provides signal-

Some MiExpress stops have maintenance-related passenger access issues, such as rough asphalt or cracked concrete surfaces between the stop and the sidewalk, as well as unsecured waste bins occasionally found obstructing

One MiExpress stop has an isolated passenger landing pad with no connection to the sidewalk: #2134, northeast corner of Derry Road and

There is no consistent method for accommodating cycling supportive infrastructure at MiExpress stops to encourage cycling connections to transit.

Opportunity: Improve Access to MiExpress Stops

Stop placement to support convenient transfers is increasingly important as MiWay transitions to a grid network. The MIGP is an opportunity to improve stop connections to the pedestrian network and remove barriers to mobility. All MiWay stops should provide and maintain at least one accessible hard surface connection between the passenger landing pad and the adjacent sidewalk. The MIGP is also an opportunity to work with City of Mississauga active transportation staff to encourage cycling as a first mile/last mile mode to and from transit.

Regular maintenance, already conducted by MiWay, will address issues such as rough asphalt or cracked concrete surfaces between the stop and the sidewalk. MiWay may consider reviewing maintenance procedures and frequencies for MiExpress stops. Updating older waste bins with the fixed style is on-going and will help reduce obstructions on passenger landing pads and sidewalk connections.

Issue 4: Lack of On-road Infrastructure

On-road infrastructure, including transit priority infrastructure, and concrete bus pads is limited in Mississauga. Mississauga's roadways generally prioritize the private vehicle over transit, for instance:

- Most MiExpress stops (70%) are near-side stops, which when placed in right-turn lanes prioritize the flow of general traffic over transit, making it challenging for buses to re-enter the through traffic flow; and
- Most MiExpress stops do not have on-road infrastructure, such as concrete bus pads to decrease wear and tear at frequently used bus stops, transitonly signs or markings such as a red pavement surface, or transit priority infrastructure such as queue jump lanes or HOV lanes.

Opportunity: Improve On-road Infrastructure at MiExpress Stops

Improving on-road infrastructure, such as transit priority measures at intersections with MiExpress stops, can improve transit travel time reliability and reduce conflicts between transit and general traffic. The application of transit priority measures should be considered at near-side stops and at high-traffic-volume intersections.

MiExpress stops should also be assessed on a continual basis to determine applicability for far-side placement, concrete bus pads, or red plastic application to minimize bus and vehicular conflicts and enhance the operator and passenger experience. The potential benefits of transit infrastructure investments include improving the overall customer experience and perception of transit. This study has reviewed these potential improvements at 30 MiExpress stops within the City, which is further described in Section 3.6.

3.1.2 Summary of MiExpress Stop Issues and Needs

The review of existing infrastructure and amenities at MiExpress stops enabled the clear identification of issues and needs. Recommendations to address the issues were identified with the intent of improving the transit rider experience and enhancing operational efficiency. The identified issues and needs, common to all on-street stops serviced by the MiExpress network are:

- Inconsistent use of MiExpress stop markers 1.
- 2. Inconsistent provision of passenger amenities
- 3. Inadequate access to MiExpress stops
- 4. Lack of on-road infrastructure

The four issues and needs identified at MiExpress stops limit the attractiveness of the MiExpress network because of the inconsistent provision of amenities and can be a barrier in terms of accessibility for MiWay users. The lack of on-road infrastructure also affects the efficiency of the MiExpress network, and results in schedule adherence issues and delays, further explored in Section 3.2.

To address these issues and needs, the MIGP identifies the following four opportunities for MiExpress stops:

- Clear identification of MiExpress stops 1.
- Provide consistent passenger amenities at MiExpress stops to improve the 2. transit rider experience
- 3. Improve access to MiExpress stops
- Improve on-road infrastructure at MiExpress stops. 4.

considerations in Section 3.3.

These opportunities, along with the guiding principles of the MIGP, were further considered in the following sections, and informed the stop classification and design

3.2 Corridor-segment Operations Review

Operational challenges on MiExpress corridors were identified based on the existing conditions operational data collection and review. When combined with the current state of infrastructure at stops, the operational challenges were used to identify locations on the MiExpress network where transit priority measures and stop infrastructure improvements will have the most benefit. Operational data was collected for MiExpress corridors, as described in Section 1.2 and detailed in Appendix D. The operational data was processed to produce stop-level performance measures related to vehicle and passenger delay, vehicle travel time, and vehicle travel speed.

The following performance measures were measured or calculated directly from data collected in the field:

- Actual Travel Time The time it takes for a bus to travel between two POI • (stops or intersections) on a route. Directly measured from field data.
- **Free Flow Travel Time** The time it should take for a bus to travel between two POI on a route, if the vehicle is travelling at the posted speed limit. Calculated for each trip between two POI by dividing the distance between points by the posted speed limit.
- **Dwell Time** The amount of time required for passengers to board and ٠ alight at a stop. Calculated for each route at each stop based on the number of boarding and alighting passengers from MiWay ridership data¹, multiplied by average passenger boarding and alighting times.
- **Signal Delay** The time a vehicle waits at an intersection for a traffic signal ٠ to turn green. Calculated for each trip at each intersection based on the time elapsed between the vehicle travel speed falling below 5 km/h on approach to an intersection and the vehicle clearing the intersection, subtracting dwell time. See Exhibit 3-2.
- Average Load The average number of passengers on a bus between two • stops, in one direction. Calculated from 2016 MiWay ridership data.¹

Exhibit 3-2: Visual Representation of Signal Delay Measurement



Time since Trip Start (minutes)

The performance measures were used to calculate the following Key Performance Indicators (KPI). Each KPI is calculated for a segment of a one-way trip between two stops on the route:

- **Total Delay** = Actual Travel Time Free Flow Travel Time
 - signals and time spent at stops.
- **Operational Delay** = Total Delay Dwell Time
 - signals excluding time spent at stops.
- **Congestion Delay** = Total Delay Dwell Time Signal Delay
 - _ signals and stops.
- **Total Passenger-Minutes Delay =** Total Delay × Average Load
 - _ passengers on the vehicle.
- **Operational Passenger-Minutes Delay** = Operational Delay × Average Load
 - time spent at stops.

Time spent travelling less than free-flow speed, including time spent at

Time spent travelling less than free-flow speed, including time spent at

Time spent travelling less than free-flow speed, excluding time spent at

Combined time spent travelling less than free flow speed for all

The amount of time for all passengers on the vehicle spent travelling less than free-flow speed, including time spent at signals but excluding

¹ Provided by MiWay. Collected for MiExpress Route 104 in 2018, and all other MiExpress routes in 2016.

Appendix D contains a summary of the findings for each MiExpress route based on all performance measures and KPI. Of the observed total route travel time, congestion delay ranged from 17% to 38%, and signal delay ranged from 15% to 42%. Route 185 southbound had the highest congestion delay (38%), and Route 101A eastbound had the highest signal delay, at 42%. Dwell time ranged from 3% to 8% of total travel time and was highest on Route 110 southbound. For some routes, the combined congestion delay and signal delay accounted for nearly half of the route travel time.

The Total Passenger-Minutes Delay was selected as the preferred Key Performance Indicator to prioritize stops and corridor segments based on operational challenges. Total Passenger-Minutes Delay is passenger-centric, considering the number of people on the bus who experience the delay. This measure considers delay from all sources, whether caused by congestion, dwell time, or signal delay. The delay on each segment may occur anywhere between the previous stop or intersection and the current stop or intersection. An example route segment with intersection and stop POI is illustrated in Exhibit 3-3.

Exhibit 3-3: Example of Route Segment with associated POI



Similarly, each segment on approach to a terminal or station includes the portion of the route on approach to the terminal or station. The delay on these segments may occur anywhere between the previous stop or intersection and the entrance to the terminal or station. The delay does not consider delays within the facility or layover times. An example route segment of approach to a terminal is shown in Exhibit 3-4, Route 110 southbound on approach to South Common Centre.

Exhibit 3-4: Example of Terminal Based Route Segments (Route 110 Southbound)



3.2.1 Operational Challenges at MiExpress Corridor-segments

Using the Total Passenger-Minutes Delay performance measure, all segments on MiExpress routes with a total delay of 60 passenger-minutes or more were identified. These locations are presented in Exhibit 3-5 and mapped on Exhibit 3-6.

Twenty-one (21) route segments were found to experience at least 60 minutes of passenger delay in the p.m. peak period. Most of these segments are located on Route 185 northbound (6), Route 101/101A westbound (4), and Route 110 northbound (3).

Five (5) route segments were found to experience more than 120 minutes of passenger delay. Three of the top five (5) segments are located on Dixie Road. Five (5) of the twenty-one (21) segments end at MiWay terminals, specifically on approach to South Common Centre, University of Toronto Mississauga, and Westwood Square.

These corridor segments and stops are potential candidates for the implementation of transit priority measures, further discussed in Section 3.6.1.

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Route		From:	On Approach To:		p.m. Peak Period Total
Number	Direction	Stop ID and Name	Stop ID and Name	Municipality	Passenger Minutes Delay
185	NB	5023 – Dixie Road at Mid-Way Boulevard	2623 – Dixie Road at Derry Road	Mississauga	161
185	NB	2632 – Dixie Road at Drew Road	5019 – Dixie Road at Steeles Avenue	Brampton	135
110	NB	0910 – University of Toronto at Mississauga Campus	4007 – South Common Centre Bus Terminal Platform C	Mississauga	131
185	NB	2623 – Dixie Road at Derry Road	2632 – Dixie Road at Drew Road	Mississauga	127
101	WB	0310 – Bloor Street at Green Lanes	0811 – Dundas Street at Aukland Road*	Toronto	120
110	SB	1717 – Erin Mills Parkway at Folkway Drive	1062 – South Common Centre Bus Terminal Platform H	Mississauga	111
101	EB	0910 – University of Toronto at Mississauga Campus	0642 – Dundas Street at Glengarry Road	Mississauga	109
110	NB	4007 – South Common Centre Bus Terminal Platform C	1720 – Erin Mills Parkway at Folkway Drive	Mississauga	103
110	NB	0535 – Dundas Street W east of Erin Mills Parkway	0910 – University of Toronto at Mississauga Campus	Mississauga	92
109	NB	0310 – Bloor Street at Green Lanes	0811 – Dundas Street at Aukland Road*	Toronto	83
109	NB	4552 – Winston Churchill Station West Platform 4	0772 – Winston Churchill Boulevard at Eglinton Avenue	Mississauga	82
107	SB	7201 – Humber College North Campus Platform 1	2875 – Westwood Square Bus Terminal Platform G	Mississauga	79
104	WB	2546 – Derry Road at Cardiff Boulevard	2548 – Derry Road at Tomken Road	Mississauga	75
101	WB	1197 – Dundas Street at Erindale Station Road	0991 – University of Toronto at Mississauga Campus	Mississauga	74
108	SB	1423 – Derry Road west of Meadowvale Boulevard	4517 – Mississauga Road at Dupont Meadow Place	Mississauga	73
185	NB	2041 – Dixie Road at Matheson Boulevard	2637 – Dixie Road at Britannia Road	Mississauga	71
101	EB	0858 – Dundas Street at Tomken Road	0862 – Dundas Street at Dixie Road	Mississauga	70
101	WB	1283 – Dundas Street at Cawthra Road	1189 – Dundas Street at Hurontario Street	Mississauga	67
185	NB	2502 – Dixie Road at Meyerside Drive	2503 – Dixie Road at Courtneypark Drive	Mississauga	67
101	WB	1377 – Dundas Street west of Dixie Road	1381 – Dundas Street at Tomken Road	Mississauga	65
185	NB	5019 – Dixie Road at Steeles Avenue	5020 – Dixie Road at Balmoral Drive	Brampton	64

Exhibit 3-5: MiExpress Route Segments with One Hour or More of PM Peak Period Passenger Delay (list)

Note: * Stop #0811 (Dundas and Aukland) was included in the existing on-street inventory for completeness. In future, these MiExpress stops will be included within the Kipling Bus Terminal (off-street)

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Exhibit 3-6: MiExpress Route Segments with One Hour or More of PM Peak Period Passenger Delay (map)

3.3 MiWay Stop Classification and Standards

A stop classification system was developed in response to the infrastructure direction (Section 2), and the issues and needs identified for on-street MiExpress stops (Section 3.1). The purpose of the stop classification system is to provide a consistent customer experience on and between all MiExpress routes. The stop classification system also includes MiLocal stops.

Using the stop classification system, existing MiExpress stops were classified and mapped. Stop design considerations were examined, and infrastructure and amenities are defined for each stop type. In anticipation of service changes to the network, a stop placement process is recommended, to increase consistency in the placement of MiExpress and MiLocal stops.

The stop design considerations are supplemented by standard drawings for transit infrastructure elements at MiWay stops. MiWay's existing standard drawings for transit stops were updated, and new drawings were developed to provide consistency in the improvement of transit stops. Recommended updates to standard drawings are described in this section. Guidelines for the application of transit priority measures to address corridor operational challenges were reviewed and are also described briefly in this section.

3.3.1 Stop Classification System

The three main considerations for developing a MiWay stop classification system were:

- The **context**, including the road classification, right-of-way widths and surrounding land uses;
- The **operational requirements**, based on the service type, which informs ٠ the route frequency; and
- The **stop usage patterns**, including transfers available at stops. •

Four types of on-street stops were defined for MiWay:



Higher-order Transit Stops are stops for the LRT and planned BRT. These stops typically attract users from further distances and are generally expected to have higher passenger volumes (greater than 100 boardings per day). Higher-order transit stops also provide transfers for parallel or intersecting MiWay routes.



Major Transfer Stops are stops that provide transfers between two or more MiExpress routes and are generally expected to have higher passenger volumes.



Enhanced Stops are all remaining MiExpress stops and MiLocal stops that provide transfers to higher-order transit or the MiExpress network. Some MiLocal stops that do not provide transfers to higher-order transit or MiExpress routes may also be Enhanced Stops, based on their context, operational requirements and expected passenger volumes.



Standard Stops are all remaining MiLocal stops. Most amenities at these stops are optional, based on the local context and stop usage patterns.

Exhibit 3-7 summarizes the characteristics of each stop type. The stop classification system includes MiExpress and MiLocal stops. The system can be applied to improve consistency between existing stops, and should be considered for new stops, serviced by both MiExpress and MiLocal routes.

Exhibit 3-7: Stop Classification Characteris Higher-order Transit Stops Major Transfer Stops Enhanced Stops

Standard Stops

Exhibit 3-8 illustrates the stop classification system applied to existing MiExpress routes. Only stops that serve MiExpress routes are mapped; Higher-order Transit Stops and Standard Stops are not mapped. Transitway stops are also higher-order stops but are not included in the map because they are all within terminals, (Section 4.1.2).

sti	CS

Service Type	Available Transfers				
LRT or BRT	To all parallel or intersecting routes				
MiExpress	Between MiExpress routes				
MiExpress or MiLocal	MiLocal routes to MiExpress, LRT or BRT				
MiLocal	Between MiLocal routes				

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Exhibit 3-8: Stop Classification Applied to Existing MiExpress Routes



3.3.2 Stop Design Considerations

To address accessibility needs, stop usage patterns, and promote a consistent look and feel for MiWay's on-street infrastructure, the stop typologies were developed considering both stop infrastructure and amenities. The required and desirable stop elements (infrastructure and amenities) for each stop type are shown in Exhibit 3-9. Stop elements that improve accessibility and help users identify the services offered at the stop were identified as "required". Stop elements that improve the overall customer experience and perception of the system were identified as "desirable". For standard stops, some desirable elements were identified as "optional" as their main function is to support higher service levels at the stop.

At some locations, it is possible that existing constraints will limit the amount and type of amenities that can be provided in the short-term. A context-sensitive approach is recommended to identify opportunities for placemaking at high volume on-street MiExpress stops.

Section 3.1 of this report identifies the infrastructure and amenities at MiExpress stops. This information was paired with the stop typology to identify deficiencies at MiExpress stops. A table ranking stops by their infrastructure and amenity deficiencies is included in **Appendix F** and used for the prioritization of stops.

The MIGP developed standard drawings for the required and desirable transit infrastructure at stops. The standard drawings, provided in **Appendix K**, were applied in the development of stop feasibility plans (**Section 3.6**), and are applicable under existing contracts and maintenance efforts.

Stop Type				
Requirements	Higher-Order Transit Stops	Major Transfer Stops	Enhanced Stops	Standard Stops
Infrastructure				
Stop Marker (route number, stop ID, system branding)	Required	Required	Required	Required
Concrete Bus Pad	Desirable	Desirable	Desirable	Optional
Passenger Landing Pad (minimum 1.5 m by 2.5 m accessibility clearance area; maximum length based on number of buses expected at the stop)	Required	Required	Required	Required
Sidewalk Connection to Landing Pad (front and rear door connections)	Required	Required	Required	Required
Amenities				
Weather Protection (shelter/canopy with lighting and seating)	Required	Required	Required ¹	Desirable ¹
Garbage Bin	Required	Required	Required	Desirable
Wayfinding Information (real-time information where available)	Required	Required	Desirable	Optional
Bicycle Parking	Desirable	Optional	Optional	Optional
Shelter Heating	Desirable	Desirable	Desirable	Optional

Exhibit 3-9: Stop Typology and Infrastructure and Amenity Requirements

Note: 1 Weather protection provided when warranted by MiWay

Stop Placement Process

As MiWay continues to update service plans and add new routes, stop placement should support the operational requirements of the service offered while meeting the access needs for passengers on the service, per best practice recommendations.

MiWay is in the process of developing a stop rationalization document, which will incorporate stop infrastructure standards identified in the MIGP. Currently, stop placement follows the process identified in Exhibit 3-10. The distance between the stops was chosen to minimize the walking distance to the stop and attract more riders, while maintaining an appropriate level of service for the route type (express or local).

The industry standard for stop spacing varies by built form, but has the common goal of maximizing the number of people who can walk to a stop, while reducing duplication in coverage. An average stop spacing of 400 m is typical for local routes, with the spacing increasing up to 800 m or more for routes providing a higher level of service (e.g. express and rapid transit routes)². MiWay routes currently adhere to this practice, evaluated on a case-by-case basis. Average stop spacing on MiLocal routes can reach a maximum of 400 m, and average stop spacing on express routes can reach a maximum of 1200 m.

Exhibit 3-10: Proposed Stop Placement Process for New Routes



² Transportation Research Board. (2017). Quality of Service Concepts. In Transit Capacity and Quality of Service Manual (3rd ed., pp. 4-18-4-19). Washington DC.

3.3.3 MiWay Stop Standard Drawings

MiWay and the City of Mississauga currently have standard drawings for a select number of transit infrastructure elements. Updating these standard drawings based on current best practices provides a foundation for MiWay to move forward with the Infrastructure Growth Plan, increasing consistency across the city. Recommended updates to standard drawings are described in this section.

The recommended stop standard drawings provide MiWay with up-to-date transit infrastructure standards that reflect current requirements, including:

- challenges; and
- MiWay services.

First, existing MiWay standards were reviewed and updated to meet AODA Integrated Accessibility Standards where required. Recommended changes maintain or increase consistency with other existing City of Mississauga roadway design standards and transit design standards and best practices. The Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads was referenced where appropriate.

Next, new standard drawings were developed based on common and best practice for on-street bus stop infrastructure in surrounding municipalities, primarily the Region of Peel and the City of Brampton. Standard drawings were reviewed from other GTHA municipalities that operate in environments similar to Mississauga, have comparable service structures, or interact with MiWay (e.g. York Region, Durham Region, City of Toronto, and City of Hamilton).

The list of the existing standard drawings that were revised and proposed new standards that were developed is provided in Exhibit 3-11, and Appendix L contains the recommended standard drawings.

While standard drawings can provide guidance for most contexts, consideration must be made for site-specific challenges. Exceptions may include constrained rights-of-way, existing driveways, and existing utilities. If challenges at existing stop locations prevent the implementation of stop infrastructure to meet the standards, relocating stops to less constrained sites can be considered (guidelines in Section 3.3.2).

Compliance with AODA Integrated Accessibility Standards, because all public services in Ontario are required to be full accessible by 2025;

Accommodation of priority measures, to address the corridor operational

Integration with active transportation, to improve multimodal access to

Exhibit 3-11: List of Standard Drawings

Standard	Description				
Revised Existing Standards					
2250.010	Concrete Bus Stop Platform (no bus shelter)				
2250.030	Standard Concrete Shelter Pad				
2250.040	Accessible Bus Stop (Sidewalk in front of Bus Shelter)				
2250.050	Accessible Bus Stop (Sidewalk behind Bus Shelter)				
2260.010	Bus Stop Nearside				
2260.020	Bus Stop Farside				
2260.030	Bus Stop Midblock				
2270.010	Bus Bay Nearside (updated for 60' buses)				
2270.020	Bus Bay Farside (updated for 60' buses)				
2270.040	Bus Bay Midblock (updated for 60' buses)				
2270.050	Typical Cross Section Concrete Bus Bay				
2280.010	On-Street Bus Stop Marker (updated with current marker designs)				
2240.083	Raised Cycle Track at Nearside & Farside Bus Stops (Constrained)				
Proposed Star	ndards				
2240.085	Raised Cycle Track at Nearside & Farside Bus Stops (Preferred)				
2240.086	Bike Lane Transition to Cycle Track at Nearside Bus Stops (Preferred)				
2240.087	Bike Lane Transition to Cycle Track at Farside Bus Stops (Preferred)				
2240.088	Bike Lane Transition to Cycle Track at Nearside Bus Stops (Retrofit)				
2240.089	Bike Lane Transition to Cycle Track at Farside Bus Stops (Retrofit)				
2240.090	Bike Lane at Nearside & Farside Bus Stops (Constrained)				
2240.091	Multi-use Trail set behind Nearside & Farside Bus Stops (Preferred)				
2240.092	Multi-use Trail set in front of Nearside & Farside Bus Stops (Constrained)				
2250.060	Enhanced Concrete Shelter Pad				
2250.070	Bus Queue Jump Lane				
2250.080	Concrete Bus Pad				
2270.060	Concrete Bus Bay Nearside, Farside, and Midblock				
2271.010	Terminal Bus Stop Configurations for Standard (40') Bus				
2271.020	Terminal Bus Stop Configurations for Articulated (60') Bus				
2280.020	Terminal Bus Stop Marker				

Evaluation and Prioritization of MiExpress Stops 3.4

Based on the findings of the infrastructure and amenity review and the corridor operational review, two priority lists for MiExpress stops were developed:

- A stop infrastructure and amenities deficiency list, using the stop classification system described in Section 3.3; and
- delay performance measure described in Section 3.1.2.

This section details the evaluation and prioritization process undertaken to develop a priority list of potential stop and corridor-segment improvements. The prioritization process allows MiWay to screen the long list and generate a short list for investment.

The two priority lists reflect how improvements can be implemented. Infrastructure and amenity improvements can generally be implemented by MiWay. Corridor-segment improvements will involve coordination with other city departments and/or other municipalities or agencies. Opportunities for coordinating the work on both lists was considered in the development of the implementation strategy, described in Section 5.

3.4.1 Prioritizing Stop Infrastructure and Amenities Issues and Needs

Existing MiExpress stops with infrastructure and amenity deficiencies were identified by comparing the stop classification requirements described in Section 3.3 to the MiExpress stop inventory tables (**Appendix B**). Two of the four stop types are applicable to MiExpress stops: Major Transfer stops and Enhanced stops.

A scoring system was generated and applied to produce a priority list for improvements. The existing infrastructure and amenities at each MiExpress stop were scored against the requirements from the typology, with any substandard or missing "required" element allocated one (1) point each. The higher the score, the greater the need for improvements.

- stops were scored out of three (3).
- (3) and Enhanced stops were scored out of two (2).
- Enhanced stops was five (5), as shown in Exhibit 3-12

A corridor-segment operations list, based on the total passenger-minutes of

For infrastructure requirements, both Major Transfer stops and Enhanced

For amenities requirements, Major Transfer stops were scored out of three

The maximum possible score for Major Transfer stops was six (6) and for

Exhibit 3-12: MiExpress Stops Infrastructure and Amenity Scores

	Major Transfer Stops	Possible Points	Enhanced Stops	Possible Points
Infrastructure		•	•	
Stop Marker (route number, stop ID, system branding)	Required	1	Required	1
Concrete Bus Pad	Desirable	N/A	Desirable	N/A
Passenger Landing Pad (including accessibility clearance area; length based on number of buses expected at the stop)	Required	1	Required	1
Sidewalk Connection to Landing Pad (should connect to both doors)	Required	1	Required	1
Amenities		T	Γ	
Weather Protection (shelter/canopy with lighting and seating)	Required	1	Required	1
Garbage Bin	Required	1	Required	1
Wayfinding Information (real-time information where available)	Required	1	Desirable	N/A
Bicycle Parking	Optional	N/A	Optional	N/A
Shelter Heating	Desirable	N/A	Desirable	N/A
Total Possible Points	-	6	-	5

Note: N/A: Not required and therefore not scored in the prioritization process

Stops were prioritized from highest to lowest score, with the highest score indicating the most improvements needed to meet the stop typology. Exhibit 3-13 illustrates the application of the infrastructure evaluation and prioritization process to one "Enhanced" MiExpress stop (5011, Dixie Rd at Drew Road).

Exhibit 3-13: Example Stop Prioritization A

Category	Existing Condition	Points Awarded
Infrastructure		
Stop Marker	Not Premium	1
Passenger Landing Pad	Not Present	1
Sidewalk Connection	Available	-
Amenities		
Weather Protection	No Shelter	1
Garbage Bin	No Bin	1
Tota	al	4/5

The ten highest-scoring stops are listed in Exhibit 3-14. The full list is provided in **Appendix F**. Some MiExpress stops are outside of the City of Mississauga's jurisdiction, and indicated as out of scope. Improvements to these stops will require coordination with other municipalities.

Exhibit 3-14: MiExpress Stop Infrastructure and Amenities Prioritization List

Stop Name (Number)	Туре	Out of Scope?	Infrastructure Deficiencies	Amenity Deficiencies	Total
Dixie Rd at Mid-Way Blvd (1065)	Enhanced	N	2/3	2/2	4/5
Winston Churchill Blvd at Battleford Rd (1767)	Enhanced	Ν	2/3	2/2	4/5
Dixie Rd at Drew Rd (2632)	Enhanced	Ν	2/3	2/2	4/5
Renforth Dr at Convair Dr (2904) ¹	Enhanced	Y	2/3	2/2	4/5
Renforth Dr at Convair Dr (2905)	Enhanced	Ν	2/3	2/2	4/5
Dixie Rd at Drew Rd (5011)	Enhanced	N	2/3	2/2	4/5
Dixie Rd at Steeles Ave (5019) ¹	Enhanced	Y	2/3	2/2	4/5
Dixie Rd at Balmoral Dr (5020) ¹	Enhanced	Y	2/3	2/2	4/5
Dixie Rd at Derry Rd (2623)	Major Transfer	N	2/3	2/3	4/6
Dixie Rd at Derry Rd (5015)	Major Transfer	N	2/3	2/3	4/6

Note: ¹Outside the City of Mississauga's jurisdiction

Opportunities to address stop infrastructure and amenity deficiencies were explored in the development of stop and corridor feasibility plans. There may also be opportunities through MiWay's ongoing maintenance efforts.

Exhibit 3-15 shows the MiExpress stops by classification and infrastructure and amenity deficiencies.

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ppiication	(Dixie n	u al Die	w κα, δια	יו טנ #JU.)





3.4.2 **Prioritizing Corridor-segment Operations Issues and Needs**

The total passenger-minutes of delay was the key performance indicator used to prioritize MiExpress corridor-segments as detailed in **Section 3.1.2** Total passenger-minutes of delay was measured by direction of travel, on approach to a signalized intersection or route end.

Combining operational issues at the intersection-level was recommended to simplify infrastructure implementation. Nearly all MiExpress stops are provided in pairs at a signalized intersection, for example, one northbound and one southbound. By combining the operational issues at a pair of stops, the prioritization process considers intersections as a whole. Prioritizing stop pairs also maximizes the benefits of infrastructure improvements, by reducing delay for transit in both directions of travel.

To prioritize corridors-segments at the intersection-level, stop-pairs were identified, and the operations issues combined:

- At each intersection, northbound and southbound, or eastbound and westbound, stops were paired (where available); and
- Total passenger-minutes of delay from the pair of stops were summed, with more delay representing a greater need for transit priority measures.

Some MiExpress stops do not have an equivalent in the opposite direction at the same location. These stops were not paired and were assessed individually.

Exhibit 3-16 illustrates the combination of the total passenger-minutes of delay at pair of stops at the intersection of Dixie Road and Drew Road.





Stop ID	Direction of Travel	MiExpress Routes Served	PM Stop Delay (h:mm)
2632	Northbound	185	2:07
5011	Southbound	185	0:41
	Total Delay	Experienced at Intersection	2:48

Exhibit 3-17 lists the ten highest scoring stop pairs, which represent the most delay from a passenger perspective in the MiExpress network. Stop pairs are identified by the signalized intersection name, e.g. Dixie Road at Derry Road. The full list of paired stop delay is available in **Appendix J** Exhibit 3-18 maps the stop pair delay along MiExpress corridors.

The process was applied to nine MiExpress stops outside Mississauga to provide context and insights for further discussion. Improvements to these stops will require coordination with other municipalities.

Exhibit 3-17: MiExpress Corridor Segment Prioritization List Based on MiExpress Stop Pairs

Stop Pair Name	Туре	Out of Scope?	Stop 1 Delay	Stop 2 Delay	Total Delay
Dixie Rd at Derry Rd ¹	Major Transfer	Ν	2:42 (h:mm)	0:13	2:55
Dundas St at Aukland Rd	Major Transfer	Y	2:01	0:49	2:50
Dixie Rd at Drew Rd ¹	Enhanced	Ν	2:07	0:42	2:49
Erin Mills Pkwy at Folkway Dr	Enhanced	Ν	0:35	1:44	2:18
Dixie Rd at Steeles Ave ¹	Enhanced	Y	0:00	2:16	2:16
Dundas St at Hurontario St	Major Transfer	Ν	0:55	1:08	2:03
Winston Churchill Blvd at Eglinton Ave W	Enhanced	N	1:23	0:22	1:45
Derry Rd at Tomken Rd	Enhanced	Ν	0:27	1:15	1:43
Dundas St at Billingham Rd	Major Transfer	Y	0:50	0:50	1:41
Dundas St at Tomken Rd	Enhanced	N	0:32	1:06	1:38

Note: ¹ Stops also rank in the top ten on the infrastructure and amenities deficiencies list ² Dundas and Aukland stops will be included within the Kipling Bus Terminal (off-street)

Opportunities to improve the operational functions along MiExpress corridors through transit priority measures at corridor-segments at intersections are discussed in **Section 3.6.1**.

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Exhibit 3-18: MiExpress Stop Pair Delay



3.5 **MiExpress Corridor Opportunities**

In order to be forward-looking and create an infrastructure growth plan that maximizes the benefit of transit investments, facilitates route connections and creates a more reliable transit network, MiExpress corridor opportunities were identified. Planned and potential changes to MiExpress routes were reviewed with MiWay staff. The impacts of planned and potential changes on MiExpress operations were considered, building on the operational challenges discussed in Section 3.2 and 4.2. Planned and potential changes include:

- Implementation adjustments to the MiWay Five 2020 corridors;
- New high-frequency transit corridors proposed in the Metrolinx 2041 Regional Transportation Plan, including the construction of Hurontario Light Rail Transit; and
- Potential future MiExpress routes based on high ridership on existing • MiLocal corridors.

Each of these planned and potential changes are described in the following sections and are likely to have an impact on MiExpress operations. MiWay terminals and stations will also be affected by planned and potential changes to the MiExpress route network.

3.5.1 MiWay Five 2020 Route Network

The 2020 MiWay Five route network has mostly been implemented, with some adjustments to the final network identified by staff. Some outstanding changes have been deferred or postponed after further analysis of the network.

Deferred MiExpress route changes include:

- Keeping the MiLocal designation for Route 71, which will continue to provide a "business park shuttle" service, consistent with route 70 and 108; and
- Extending Route 185 further south to to Long Branch GO Station, also providing service to Dixie GO Station and Dixie Outlet Mall, due to a planned reconstruction of the interchange at Dixie and QEW.

Maintaining the service of Route 71 as is excludes it from further study in this iteration of the MIGP, which focuses on express routes. The changes to Route 185, if implemented, will increase pressure in the long-term at terminals already facing challenges related to bus bay capacity and bus access, specifically, Long Branch GO Station and Dixie Outlet Mall Terminal. However, the extension of Route 185 reduces demand for layover space at the Dixie Transitway Station, enabling improvements to layover challenges experienced at Dixie Transitway Station. As part of the Dixie/QEW interchange improvements, additional on-street bus bays will be provided at Dixie Outlet Mall, alleviating bus bay capacity issues at that terminal.

An update to the MiWay Five Service Plan is currently underway, and may result in new or changed MiExpress corridors, as well as potential impacts to terminals.

3.5.2 Metrolinx 2041 Regional Transportation Plan

The impacts of new Bus Rapid Transit (BRT) and priority bus corridors in Mississauga, as identified in the 2041 Metrolinx Regional Transportation Plan (RTP), were also considered. While some corridors already feature MiExpress service that may be extended beyond Mississauga, others would receive new express service. It is assumed that existing MiExpress service along corridors would be upgraded to BRT or priority bus, as opposed to duplicating this service. Relevant corridors and corridor extensions identified in the RTP are:

- Waterfront West (Lakeshore Road East):
- Harvester / Speers / Cornwall (Lakeshore Road West);
- Dundas Street / Brant Street:
- Eglinton Avenue Mississauga;
- Britannia Road / Matheson Boulevard;
- Derry Road;
- Steeles Avenue / Taunton Road (connects to Lisgar GO);
- Erin Mills Parkway / Mississauga Road;
- Airport Road; and
- Highway 27 (connects to Derry and other MiExpress corridors).

- **MiWay Terminals:** Airport Terminals 1 and 3, Humber College, Meadowvale Town Centre, Westwood Mall;
- Transitway Stations: Renforth, Erin Mills;
- GO Stations: Clarkson, Lisgar, Long Branch, Port Credit; and
- Other: Kipling Bus Terminal, Laird and Vega and Churchill Meadows Community Centre

These BRT and priority bus corridors will also place additional bus bay, layover space, and operator facility demands on terminals and stations located at route ends or intermediate stops. Terminals that could foresee these additional demands include:

3.5.3 Potential Ridership-based Corridors

Finally, corridors in Mississauga were identified for potential express service based on ridership data collected in 2015 and 2016, where:

- Peak hour (a.m. or p.m.) average and peak loads met or exceeded the 75th percentile loads for all MiWay routes, including MiLocal and MiExpress, shown in Exhibit 3-19;
- The corridor was not planned for MiExpress service by 2020; and •
- The corridor has not been identified by Metrolinx for future rapid transit service.

Based on these three criteria, corridors identified for potential express service included Bloor Street, Cawthra Road, Burnhamthorpe Road, Winston Churchill Boulevard, and Mavis Road/ McLaughlin Road. Peak hour loads for routes operating on these corridors in 2015/2016 are presented in Exhibit 3-19, along with peak hour loads for MiExpress routes.

Exhibit 3-19: Peak Hour Loads on MiWa	ay Routes (a.m. and p.m.)
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	AM Peak Hour (7:00 – 8:00 a.m.)		PM Peak Hour (4:00 – 5:00 p.m.)	
Corridor (Route Number)	Average Load	Peak Load	Average Load	Peak Load
75 th Percentile Loads	13.1	25.6	13.7	27.5
Candidate MiLocal Routes				
Bloor (3)	15.9	27.5	19.3	29.9
Cawthra (8)	13.1	25.6	12.7	23.2
Burnhamthorpe (26 / 76)	20.3	38.3	20.4	32.4
Winston Churchill (45A)	17.0	25.8	11.7	20.2
Mavis/McLaughlin (61 / 61A / 66)	24.0	35.1	21.6	34.9
MiExpress Routes				
Dundas Express (101)	18.9	38.3	18.2	32.0
Dundas Express (101A)	19.8	33.6	22.4	48.5
Malton Express (107)	18.8	27.2	20.4	31.2
Meadowvale Business Express (108)	9.6	30.3	18.3	46.0
Meadowvale Express (109)	23.8	42.9	26.0	43.9
University Express (110)	13.7	29.7	19.0	34.7
Dixie Express (185)	15.7	25.2	22.1	33.2
MiExpress Average	17.6	32.9	20.9	38.3

Additional transit service on these five potential corridors, would necessitate improvements to terminals and stations at route ends. Facilities related to these corridors include:

- Transit Terminal. Meadowvale Town Centre:
- Transitway Stations: Cawthra and Winston Churchill;
- **GO Stations:** Clarkson and Port Credit: and
- **Other:** Kipling Bus Terminal

3.5.4 Summary of Corridor Changes

Together, the MiWay Five 2020 route changes, the 2041 Metrolinx RTP corridors, and the potential ridership-based MiExpress corridors form a comprehensive rapid transit network in Mississauga. All three sets of routes and corridors are shown in Exhibit 3-20.

Introducing rapid transit service (MiExpress, BRT, or priority bus) along major corridors in Mississauga provides more efficient service and allows passengers to get to their destinations faster. Given that congestion can lead to operational challenges for transit service, these corridors may be good candidates for transit priority measures.

A high-level review of congestion focusing on the potential future rapid transit corridors shown in Exhibit 3-20 was conducted using Google Maps' typical travel times, as MiLocal service is out of scope for the MIGP. Based on typical traffic speeds between 3:00 p.m. and 6:00 p.m., four corridor segments were identified with lower than average typical travel speeds, an indication that congestion is already prevalent under existing conditions. Accordingly, these corridors may be more susceptible to operational delays:

- Winston Churchill Boulevard (ridership-based corridor);
- Mavis Road / McLaughlin Road (ridership-based corridor);
- Airport Road (Metrolinx RTP corridor).

If MiWay service levels are to increase on these already congested corridors without consideration for transit priority measures, increased delays are likely for all road users, defeating the purpose of providing an express service on the corridor. Consideration can be made for measuring the operational delay along these and other highperformance MiLocal corridors for a future iteration of the MIGP.

Opportunities for corridor improvements are summarized in Exhibit 3-21, alongside existing MiExpress route segments with one hour or more total passenger delay (from Exhibit 3-5) for context. These corridor improvements should be considered in the ongoing update to the MiWay Five Service Plan. The next iteration of the MIGP should further consider these corridors to maximize the benefits of transit investments, facilitate route connections and create a more reliable transit network.

MiWay Terminals: Sheridan College, South Common Centre, City Centre

Britannia Road / Matheson Boulevard (Metrolinx RTP corridor); and


Exhibit 3-20: MiWay Five Express Routes, Potential Corridors, and Metrolinx RTP Corridors

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Exhibit 3-21: Opportunities for Corridor Infrastructure Improvement

Route Number	Direction	From: Stop ID and Name	On Approach To: Stop ID and Name	Municipality	p.m. Peak Period Total Passenger Minutes Delay			
Existing MiEx	press Corri	dors						
185	NB	5023 – Dixie Road at Mid-Way Boulevard	2623 – Dixie Road at Derry Road	Mississauga	161			
185	NB	2632 – Dixie Road at Drew Road	5019 – Dixie Road at Steeles Avenue	Brampton	135			
110	NB	0910 – University of Toronto at Mississauga Campus	4007 – South Common Centre Bus Terminal Platform C	Mississauga	131			
185	NB	2623 – Dixie Road at Derry Road	2632 – Dixie Road at Drew Road	Mississauga	127			
101	WB	0310 – Bloor Street at Green Lanes	0811 – Dundas Street at Aukland Road*	Toronto	120			
110	SB	1717 – Erin Mills Parkway at Folkway Drive	1062 – South Common Centre Bus Terminal Platform H	Mississauga	111			
101	EB	0910 – University of Toronto at Mississauga Campus	0642 – Dundas Street at Glengarry Road	Mississauga	109			
110	NB	4007 – South Common Centre Bus Terminal Platform C	1720 – Erin Mills Parkway at Folkway Drive	Mississauga	103			
110	NB	0535 – Dundas Street W east of Erin Mills Parkway	0910 – University of Toronto at Mississauga Campus	Mississauga	92			
109	NB	0310 – Bloor Street at Green Lanes	0811 – Dundas Street at Aukland Road*	Toronto	83			
109	NB	4552 – Winston Churchill Station West Platform 4	0772 – Winston Churchill Boulevard at Eglinton Avenue	Mississauga	82			
107	SB	7201 – Humber College North Campus Platform 1	2875 – Westwood Square Bus Terminal Platform G	Mississauga	79			
104	WB	2546 – Derry Road at Cardiff Boulevard	2548 – Derry Road at Tomken Road	Mississauga	75			
101	WB	1197 – Dundas Street at Erindale Station Road	0991 – University of Toronto at Mississauga Campus	Mississauga	74			
108	SB	1423 – Derry Road west of Meadowvale Boulevard	4517 – Mississauga Road at Dupont Meadow Place	Mississauga	73			
185	NB	2041 – Dixie Road at Matheson Boulevard	2637 – Dixie Road at Britannia Road	Mississauga	71			
101	EB	0858 – Dundas Street at Tomken Road	0862 – Dundas Street at Dixie Road	Mississauga	70			
101	WB	1283 – Dundas Street at Cawthra Road	1189 – Dundas Street at Hurontario Street	Mississauga	67			
185	NB	2502 – Dixie Road at Meyerside Drive	2503 – Dixie Road at Courtneypark Drive	Mississauga	67			
101	WB	1377 – Dundas Street west of Dixie Road	1381 – Dundas Street at Tomken Road	Mississauga	65			
185	NB	5019 – Dixie Road at Steeles Avenue	5020 – Dixie Road at Balmoral Drive	Brampton	64			
Potential Futu	ire MiExpres	ss Corridors (Extents)						
TBD	3D Winston Churchill Boulevard (Clarkson GO to Winston Churchill Transitway)							
TBD	BD Mavis Road / McLaughlin Road (City Centre to north of Mississauga)							
TBD		Britannia Road / Matheson Boulevard (Renforth Transitwa	ay to Ninth Line)					
TBD		Airport Road (Pearson Airport to north of Mississauga)						

Note: * Stop #0811 (Dundas and Aukland) was included in the existing on-street inventory for completeness. In future, these MiExpress stops will be included within the Kipling Bus Terminal (off-street)

3.6 MiExpress Stop Feasibility Plans

The MIGP identifies opportunities to improve corridor-segment operations by recommending transit priority measures, while the stop classification and updated standard drawings will be used to address the infrastructure and amenity deficiencies. This section outlines potential transit priority measures, and outlines the approach recommended to address corridor-segment delay at priority locations in the MiExpress network. The recommended approach was used to develop feasibility plans for the priority locations.

3.6.1 Transit Priority Measure Guidelines

Transit priority measures (TPM) can address delay issues and improve overall transit competitiveness in Mississauga. The Transportation Association of Canada (TAC) has published guidelines for the planning and implementation of TPM in urban areas (2013). TPM include regulatory measures, transit signal priority, and physical measures as shown in Exhibit 3-22.

Regulatory measures include legislation or regulations at all levels of government. Examples at the provincial level include "Yielding right-of-way to buses" (O. Reg. 393/02) under section 142.1 of the Highway Traffic Act. Examples at the municipal level include parking restrictions, lane-use restrictions, and transit exemptions to movement restrictions. Application of regulatory measures at the municipal level generally occurs through by-laws and require signage for enforcement.

Transit signal priority (TSP) measures are the adjustment of signal phase times and/or phase sequences to prioritize transit movements at signalized intersections. Examples of TSP include passive approaches prioritizing transit movements in signal timing plans, actuated TSP, which detect transit vehicles approaching an intersection and activate a transit signal display, and active TSP, which dynamically invoke traffic control algorithms in response to the real-time location of transit vehicles. These measures are outside the scope of the MIGP.

Physical measures are typically either dedicated (continuous from one intersection to the next along a defined corridor), or local (applied at a single intersection). Transit priority applications at on-street stops focus on physical measures, which minimize the interaction between transit vehicles and other vehicles. Physical measures considered include dedicated transit lanes, queue jump lanes, queue bypass lanes, and High Occupancy Vehicle (HOV) lanes.

Exhibit 3-22: Examples of Transit Priority Measures



Areas (2013)

Transit Priority Measures

- R1 Vehicular Movement Restrictions
- R2 Transit Exemptions to Movement
- Restrictions
- R3 Parking Restrictions
- R4 Reserved Lanes

TSP1	Passive Transit Signal Priority
→TSP2	Actuated Transit Signal Priority
→ TSP3	Active Transit Signal Priority

- **Traffic Signal Required by Transit** TS1
- TS2 **Transit Signal Displays**
- PD1 Busway PD2 Transit Mall
- PD3 **Curbside Bus Lane**
- PD4 **Offset Bus Lane**
- > PD5 Median Bus Lane
- PD6 **Central Bus Lane**
- PD7 **Contraflow Bus Lane**
- PD8 Shoulder Bus Lane
- Queue Jump Lane Bus Through PL1
- Queue Jump Lane Bus Left Turns PL2
- PL3 **Queue By-pass Lane**
- PL4 Bus Bulb
- PL5 **Bus Bay**
- [≥]PL6 Off Street Transit Centre

Source: TAC Guidelines for Planning and Implementation of Transit Priority Measures (TPM) in Urban

3.6.2 Recommended Infrastructure at Priority Locations

To improve passenger access, improve the customer experience, increase consistency of MiExpress stops and improve transit reliability, 15 locations (i.e., 30 MiExpress stops) were assessed for the feasibility of improvements. The locations were selected from the two priority lists identified in Section 3.3.3, in discussion with MiWay staff, with preference for:

- Coordinating on-street and in-boulevard improvements to limit disruption to service caused by construction; and
- Maximizing the impact transit priority measures can have on service delivery • by applying improvements along a corridor, instead of in isolation.

The intersections where feasibility plans were developed is provided in Exhibit 3-23. The feasibility plans are available in **Appendix M**. The feasibility plans are preliminary concepts that address the identified issues and needs at a schematic design level.

Exhibit 3-23: Intersections Assessed for Improvements and for Feasibility Plans

Intersection (Direction of Travel)	Stop Classification	Infrastructure and Amenity Deficiency	p.m. Total Passenger- Delay (h:mm)
Dixie Rd at Derry Rd (N/S)	Major Transfer	Medium, High	2:54
Dixie Rd at Derry Rd (E/W)	Major Transfer	Medium, High	1:02
Derry Rd at Kennedy Rd (E/W)	Enhanced	Low, Medium	1:01
Derry Rd at Tomken Rd (E/W)	Enhanced	Low, High	1:42
Derry Rd at Hurontario Rd (E/W)	Major Transfer	Medium, High	0:59
Derry Rd at Mavis Rd (E/W)	Enhanced	Medium, High	0:39
Derry Rd at Bramalea Rd (E/W)	Enhanced	High, High	0:25
Derry Rd at Airport Rd (E/W)	Enhanced	Low, Low	1:15
Goreway Dr at Derry Rd (N/S)	Enhanced	Medium, Medium	1:33
Dixie Rd at Courtneypark Dr (N/S)	Enhanced	Medium, High	1:19
Dixie Rd at Britannia Rd (N/S)	Enhanced	Low, High	1:19
Dixie Rd at Matheson Dr (N/S)	Enhanced	Low, Medium	1:09
Erin Mills Pkwy at Folkway Dr (N/S)	Enhanced	Medium, Medium	2:18
Southdown Rd at Truscott Dr (N/S)	Enhanced	High, Medium	0:35
Southdown Rd at Bromsgrove Dr (N/S)	Enhanced	High, Medium	0:05

The stop and corridor design process included:

- Review of stop usage, considering:
 - _ and
 - routes by other service providers.
- Review of the stop context, including:
 - Stop location (nearside versus farside);
 - _ each direction, presence of channelized right-turns);
 - _ driveways, bridges); and
 - _

Once each stop was reviewed, opportunities for improvement of the stop-pair location were explored. Improvements considered followed the guiding principles of the MIGP described in Section 2. Improvements considered at each location include:

- perception of transit (see Section 3.6.1);
- accommodate improvements;
- Pedestrian connectivity to surrounding land uses;
- Accessibility; and
- classification.

Average daily boardings and alightings for the MiExpress routes at each stop using ridership data collected by MiWay in 2016 and 2018;

Number of routes serving the stop, including all MiWay routes and

Intersection configuration (e.g. right-of-way widths, number of lanes in

Site constraints (e.g. planned cycling facilities, the presence of

Traffic operations (e.g. through queues at the intersection, right-turn volumes and storage needs, volume of right-turning heavy vehicles).

Physical transit priority measures to improve transit reliability and the

Stop relocation to reduce walk times, facility passenger transfers, and

Improved passenger amenities, including shelters based on stop

3.7 MiExpress Stop and Corridor-segment Summary

Four main issues and needs were identified at MiExpress stops through the review of infrastructure and amenities. The issues and needs identified were:

- Inconsistent use of MiExpress stop markers:
- Inconsistent provision of passenger amenities at MiExpress stops;
- Inadequate access to MiExpress stops; and
- Lack of on-road infrastructure.

Each of these issues and needs are an opportunity to be addressed in the implementation of the MIGP. The four opportunities for the MIGP related to MiExpress stops are:

- 1. Clear identification of MiExpress stops
- 2. Provide consistent passenger amenities at MiExpress stops to improve the transit rider experience
- Improve access to MiExpress stops 3.
- Improve on-road infrastructure at MiExpress stops. 4.

The MIGP aims to address these challenges using a repeatable process that also creates a consistent "look and feel" for MiExpress stops. To do so, a stop classification system and a method for prioritizing the improvements of stops were developed.

Four types of stops were identified based on the operational requirements identified through the service type, and stop usage patterns:



Higher-order Transit Stops for the LRT and planned BRT

Major Transfer Stops, which provide transfers between two or more **MiExpress routes**



Enhanced Stops, which include all remaining MiExpress stops as well as MiLocal stops that provide transfers to MiExpress



Standard Stops, which are all remaining MiLocal stops. Most amenities at these stops are optional, based on the local context and stop usage patterns.

The stop classification was also used to inform the design considerations for MiWay's transit infrastructure, and the standard drawings. The design considerations include the placement of amenities at stops to maintain accessible clearance, and the types of amenities required for each type of stop. Standard drawings for on-street stops were developed to provide up-to-date transit infrastructure standards and reflect the most current requirements, including:

- challenges; and
- MiWay services.

The standard drawings apply to infrastructure at all stops to promote consistency, but a site-specific approach is still required for stop improvements.

To address the long list of existing issues and needs at MiExpress stops and operational challenges along MiExpress corridors, a framework for evaluating challenges and prioritizing improvements was developed. Two priority lists for stops were developed based on the findings of the infrastructure and amenity review and the corridor operational review:

- A stop infrastructure and amenities deficiency list, using the stop • classification system described in Section 3.3; and

The two priority lists reflect how improvements can be implemented. The prioritization process allows MiWay to generate a short list to further explore for infrastructure investment. These two priority lists allow MiWay to plan for infrastructure and amenity improvements as stand-alone projects or as opportunities arise in regular maintenance work. Corridor-segment improvements can involve coordination with other city departments or agencies.

This iteration of the MIGP does not review MiLocal corridors, however, potential corridor opportunities have been identified in Section 3.5. These potential corridors are an opportunity for review through the ongoing MiWay Five Service Plan. If identified for service improvements, the next iteration of the MIGP should further consider these corridors to maximize the benefits of transit investments, facilitate route connections and create a more reliable transit network.

Compliance with AODA Integrated Accessibility Standards, because all public services in Ontario are required to be full accessible by 2025;

Accommodation of priority measures, to address the corridor operational

Integration with active transportation, to improve multimodal access to

A corridor-segment operations list, using the based on total passengerminutes of delay performance measure described in Section 3.1.2.

To identify a short-list of stops for the development of feasibility plans, opportunities to coordinate both priority lists were explored. The resulting short-list of priority locations included 15 intersections (30 total stops) for which feasibility plans were developed. Improvements considered at each location include:

- Physical transit priority measures to improve transit reliability and the perception of transit (see **Section 3.6.1**);
- Stop relocation to reduce walk times, facility passenger transfers, and accommodate improvements;
- Pedestrian connectivity to surrounding land uses;
- Accessibility; and
- Improved passenger amenities, including shelters based on stop classification.

The feasibility plans aimed to coordinate in-boulevard and on-street improvements to limit disruptions to service. The feasibility plans also maximize the impact of physical transit priority measures by applying the improvements along successive corridor segments, rather than in isolation. The short-listed intersections for which feasibility plans were developed are shown in Exhibit 3-24.

Exhibit 3-24: Stop and Corridor-segment Short-list for Feasibility Plans

Intersection (Direction of Travel)	Stop Classification
Dixie Rd at Derry Rd (N/S)	Major Transfer
Dixie Rd at Derry Rd (E/W)	Major Transfer
Derry Rd at Kennedy Rd (E/W)	Enhanced
Derry Rd at Tomken Rd (E/W)	Enhanced
Derry Rd at Hurontario Rd (E/W)	Major Transfer
Derry Rd at Mavis Rd (E/W)	Enhanced
Derry Rd at Bramalea Rd (E/W)	Enhanced
Derry Rd at Airport Rd (E/W)	Enhanced
Goreway Dr at Derry Rd (N/S)	Enhanced
Dixie Rd at Courtneypark Dr (N/S)	Enhanced
Dixie Rd at Britannia Rd (N/S)	Enhanced
Dixie Rd at Matheson Dr (N/S)	Enhanced
Erin Mills Pkwy at Folkway Dr (N/S)	Enhanced
Southdown Rd at Truscott Dr (N/S)	Enhanced
Southdown Rd at Bromsgrove Dr (N/S)	Enhanced

In developing the feasibility plans, opportunities to improve MiExpress corridor operations with the application of physical transit priority measures were explored, as were opportunities to apply the guiding principles of the MIGP and improve MiWay's accessibility. When the recommended improvements are implemented, the selected stops will have a more consistent "look and feel" and MiExpress routes will have better priority along the selected corridor-segments. Opportunities for coordinating the work on the priority locations were considered in the development of the implementation strategy, described in **Section 5**.

MiWay Terminals 4

MiWay terminals are located at route ends, major transfer points, and other major destinations in and around the City of Mississauga. In addition, MiWay routes use Mississauga Transitway stations and GO stations in the City of Mississauga as transfer points between routes.

Based on the data collected, as described in **Section 1**, this section summarizes the existing conditions, issues and needs at MiWay terminals, Transitway stations and GO stations. To address noted issues and needs, the MIGP has defined a terminal classification to ensure consistency in the infrastructure being provided and identifying and recommending a shortlist of terminals and associated improvements for implementation.

Terminal Infrastructure and Amenity Review 4.1

Issues and needs at MiWay terminals and stations were identified based on the existing conditions data collection and review. Infrastructure inventory data was collected for 19 MiWay terminals, 11 Mississauga Transitway stations, and 11 GO stations where MiWay infrastructure was provided. The terminals and stations are listed in Exhibit 4-1. Summary reports for each terminal and station, including schematic diagrams, land use maps for MiWay terminals, and an infrastructure inventory, are provided in **Appendix** С.

The following sections summarize infrastructure available at the three groups of terminals and stations: MiWay terminals, Transitway stations, and GO stations. Issues and needs at the three groups of terminals and stations are identified.

Survey

MiWay Terminals Airport Terminal 1 (3) Airport Terminal 3 (3) Bramalea Terminal ⁽¹⁾ Brampton Gateway^(1,3) City Centre Transit Terminal (3) Credit Valley Hospital **Dixie Outlet Mall** Dundas/ESR/Glengarry Erin Mills Town Centre Humber College North Campus⁽²⁾ Hurontario & 407 Park and Ride ⁽¹⁾ Islington Subway Transit Terminal (2, Meadowvale Town Centre Transit Terminal Sheridan Centre Sheridan College ⁽¹⁾ Sherway Gardens⁽²⁾ South Common Centre Trillium Health Centre University of Toronto Mississauga (UTM) Viscount Station Westwood Square Transit Terminal Woodbine Centre Terminal (2, 3) **Notes:** (1) Located in the City of Brampton (2) Located in the City of Toronto (3) Out of scope for further study in the MIGP

Exhibit 4-1: List of all MiWay Terminals, Transitway Stations, and GO Stations Included in Field

	Transitway Stations	GO Stations
	Cawthra	Clarkson GO
	Central Parkway	Cooksville GO
	Dixie	Dixie GO
	Erin Mills	Erindale GO
	Etobicoke Creek	Kipling Bus Terminal ⁽²⁾
	Orbitor	Lisgar GO
	Renforth	Long Branch GO ⁽²⁾
	Spectrum	Malton GO
	Tahoe	Meadowvale GO
	Tomken	Port Credit GO
	Winston Churchill	Streetsville GO
3)		

4.1.1 Issues and Needs at MiWay Terminals

MiWay terminals vary significantly in layout and structure. While the majority of the stations are located within a site adjacent to the travelled roadway, four (4) of MiWay's terminals are located either on-street in existing bus bays or within the terminal footprint servicing a single stop/platform. MiWay terminals were noted to serve between one and seventeen MiWay routes, providing between one and ten MiWay stops. Exhibit 4-3 summarizes the municipality, the number of MiWay routes utilizing each terminal, and the existing infrastructure and amenities. Most of the terminals are located in the City of Mississauga, while three are located in Toronto and three are located in Brampton.

Detailed terminal summaries including surrounding land uses within 250 m and potential relocation opportunities are included in **Appendix C**.

The majority of MiWay terminals include the following MiWay infrastructure and amenities (Exhibit 4-2), which are required to support operations, provide passenger information and enhance the transit experience.

Infrastructure typically available at MiWay terminals includes:

- One or more stop markers, depending on the number of stops and routes serviced;
- Bus layover areas;
- Operator washrooms; and
- Sidewalk connections and/or delineated walking paths.

Passengers wishing to transfer between stops at a terminal or on-street may have to cross between platforms or make their way to on-street stops. Crosswalks are identified at some but not all terminals.

Typical passenger amenities available at MiWay terminals include:

- One or more schedule panels;
- One or more MiWay map panels;
- Shelters (with shelter roof or advertising panel lights);
- Benches; and
- Waste bins (provided by the City of Mississauga).

Some of these amenities are also provided by other transit agencies or land owners at the non-MiWay terminals.

Exhibit 4-2: Typical Infrastructure and Amenities at Existing MiWay Terminals





Stop Marker

Schedule Panels



Shelters, Benches, Waste Bins at Sheridan Centre Terminal

Map Panel

Exhibit 4-3: MiWay Terminal Infrastructure and Amenities

				MiWay In	frastructu	ıre	MiWay Amenities							
Terminal	Municipality ⁽¹⁾	MiWay Routes	MiWay Stops	Stop Poles/ Markers	Layovers Areas	Operator Facilities	Security Features	Schedule Panels	Shelters	Shelter Lighting	Benches	Map Panels	Waste Bins ⁽²⁾	Bicycle Racks
Airport Terminal 1	М	2	2	-	-	-	-	2	I	-	-	1	-	-
Airport Terminal 3	М	1	1	1	-	1	-	-	I	-	-	-	-	-
Bramalea Terminal	В	1	1	1	-	1	-	-	I	-	-	-	-	-
Credit Valley Hospital	М	6	7	7	-	1	-	-	4	4	4	4	3	-
Dixie Outlet Mall	М	2	2	2	-	1	-	4	2	-	2	1	-	-
Dundas/Erindale Station Road/ Glengarry	М	8	4	4	-	1	-	8	5	4	5	5	4	-
Erin Mills Town Centre	М	5	3	3	-	1	-	9	3	3	3	2	-	-
Humber College North Campus	Т	2	2	1	-	1	-	1	I	-	-	-	-	-
Hurontario & 407 Park and Ride	В	2	1	1	-	1	-	2	-	-	-	-	-	-
Meadowvale Town Centre Transit Terminal	М	17	9	10	1	1	-	16	7	6	7	7	8	-
Sheridan Centre	М	4	3	5	-	1	-	4	4	4	4	4	4	-
Sheridan College	В	2	2	2	-	1	-	2	-	-	-	-	-	-
Sherway Gardens	Т	1	1	1	-	1	-	1	-	-	-	-	-	-
South Common Centre	М	10	10	12	1	1	-	12	6	6	6	5	2	-
Trillium Health Centre	М	5	3	3	-	1	-	4	1	1	1	1	1	-
University of Toronto Mississauga	М	5	3	3	-	1	-	7	I	-	-	-	-	-
Viscount Station	М	2	2	-	-	-	-	3	-	-	-	-	-	-
Westwood Square Transit Terminal	М	13	10	11	1	1	5	11	9	-	12	9	13	1
Woodbine Centre	Т	1	1	1	-	1	-	1	-	-	-	-	-	-

Notes: (1) M – Mississauga T – Toronto B – Brampton (2) Waste bins provided by the City of Mississauga

Focusing on improving the transit rider experience, and improving transit operations, the following issues and needs were identified at MiWay terminals. The issues and needs identified informed the development of a system for the classification of terminals, described in **Section 4.4**. Terminals located outside the City of Mississauga will require coordination with other agencies to address challenges.

Issue 1: Ineffective MiWay Terminal Identification

MiWay terminals are not easily identifiable and the infrastructure provided is inconsistent. Types of terminal infrastructure are noted as follows:

- All MiWay terminals have some form of stop marker for MiWay routes, however stop marker styles vary, including premium terminal markers, and stop markers in MiWay and non-MiWay styles.
- Stop marker mounting styles vary between terminals for premium terminal stop markers. These markers may be mounted to terminal stop poles, walls, light poles, or other infrastructure.



A consistent "look and feel" for stops and amenities will create a stronger visual identity for MiWay. Stop markers and platform markers should be easily identifiable and consistent with MiWay's branding guidelines. This will contribute to establishing a consistent "look and feel" for transit system infrastructure.

MiWay should consider providing terminal totem identification, and consistent terminal markers with MiWay branding for MiWay stops at all terminals. Consistency in the placement of dedicated markers at each stop can help both customers and bus operators locate and identify MiExpress stops.



Non-MiWay Marker (Viscount

Station)

Premium MiWay Marker (Trillium Health Centre)

Issue 2: Inconsistent Provision of Passenger Amenities

Passenger amenities at MiWay terminals can vary significantly, and amenities at terminals outside city limits, or at terminals operated by other agencies or property owners, are generally not provided by MiWay. The main discrepancies with existing passenger amenities at MiWay terminals include:

- Not all MiWay terminals have the same set of amenities, and MiWay amenities range from no shelter or other amenities to multiple shelters (of varying size and style) with one or more benches, map panels, advertising panels, lighting sources, and waste bins (provided by the City of Mississauga).
- Amenities at MiWay terminals outside Mississauga range from one shelter to multiple shelters, overhead canopies, or enclosed and heated waiting areas provided by the land owner or local call boxes; however, these are not provided by MiWay.
- if it is too far from their bus stop.

Opportunity: Provide Consistent Passenger Amenities at MiWay Terminals to Improve the Transit Rider Experience

To improve the transit rider experience at MiWay terminals, it is recommended that consistent amenities should be provided at every terminal, including weather protection, seating, and wayfinding information. Amenities should also be strategically placed at stops to make terminals more comfortable and improve passenger perceptions of waiting for a bus or transferring between buses at terminals.



No Amenities (Sheridan College)

agency. These terminals can have a variety of other amenities, including benches, waste bins, next bus arrival signs, bicycle racks, and emergency

Amenities are not always strategically placed at MiWay terminals, which presents a challenge when stops are spread around an intersection, a long platform, or multiple platforms. Passengers may not wish to wait at a shelter



Full Amenities (Sheridan Centre)

Issue 3: Inconspicuous Access to Terminals and Connections within Terminals

The size, design, and layout of MiWay terminals can vary significantly, including the number of bus stops or bays. Each terminal services different numbers and types of route. With these differences, it is likely challenging for MiWay passengers, in particular new riders, to access or navigate terminals. For example:

- MiWay terminals include both within-terminal and on-street transit infrastructure, such as bus loops and large bus platforms that can service multiple routes, or small off- and on-street platforms with one or more stops.
- Passengers transferring between stops at a terminal may have to cross between platforms. Crosswalks are identified at some but not all terminals.
- MiWay terminals currently do not provide MiWay wayfinding signage, such as a terminal map, to assist passengers with finding their stop. In some



No Crosswalks (Meadowvale Town Centre)

cases, riders need to follow sidewalks or crosswalks to connect between within-terminal and on-street stops without any clear wayfinding information.

11 MiWay terminals have bicycle racks, three of which are outside the City of Mississauga, which can be a limitation for cycling as a first/last mile access mode to MiWay.

Opportunity: Improve Terminal Access and Connections within Terminals

The placement and distances between all onstreet and within-terminal stops is a balancing act between transit operations and passenger transfer times. All MiWay terminals could consider access improvements for intraterminal transfers and access improvements to and from surrounding areas for pedestrians and cyclists.



Elements to Guide Pedestrians (Credit Valley Hospital)

Passenger access and safety in existing MiWay terminals may be improved by identifying crossing locations. Other improvements that can also be considered range from signs, markings, surface textures, to planters or other elements to guide pedestrians. Providing a terminal map could also help passengers locate bus stops or bays.

The MIGP is an opportunity to accommodate cycling-supportive infrastructure and amenities provided by the active transportation team, which can encourage MiWay riders to be less reliant on cars for the first or last part of their transit trip.

Issue 4: Lack of Operator Facilities at Terminals

Operator facilities provided at MiWay terminals can vary significantly, ranging from no dedicated facilities to public washrooms to washrooms exclusively for use by bus operators. Operator facilities at terminals outside city limits, or at terminals operated by other agencies or property owners, are generally not provided by MiWay. In summary:

- Not all MiWay terminals have operator washrooms.
- operator washrooms with 24-hour access.

Opportunity: Provide Sufficient Operator Washrooms to Support Bus Operators, Service Schedules, and On-Time Performance

Providing dedicated operator facilities, specifically washrooms, can support operators while also improving MiWay performance. Without operator washrooms, MiWay terminals may not be used for layovers. Where washrooms are available with limited hours of service, MiWay schedules must work around these hours, limiting service flexibility. Further, if operator facilities are located a certain distance away from bus stops or layover spaces at a terminal, scheduling and on-time performance may be impacted.

Most MiWay terminals do not have other facilities such as break rooms.

Facilities provided for operators at MiWay terminals include public washrooms with limited hours of access, or occasionally dedicated transit



Operator Washrooms (Westwood Square)

4.1.2 Issues and Needs at Mississauga Transitway Stations

Transitway stations are located in the City of Mississauga along the Transitway, a dedicated bus corridor that runs east-west in Mississauga. Three of the Transitway stations are owned by Metrolinx (Winston Churchill, Erin Mills and Renforth), with the remaining owned by City of Mississauga. The Transitway stations service a variety of MiExpress and MiLocal routes, as well as some TTC and GO Bus routes. This section summarizes the infrastructure and amenities at 11 Transitway stations.

While the Transitway stations provide similar amenities and infrastructure, there are still variances between stations. All Transitway stations consist of two parallel platforms, fully- or partially-covered by an overhead canopy and offer between 1 and 4 bus bays. Pedestrians can transfer between platforms using crosswalks, a tunnel, or street-level pathways.

Infrastructure provided by MiWay at the Metrolinx-owned Transitway stations generally includes premium terminal stop markers, distinguished from premium stop markers, and MiWay map and schedule panels. Premium terminal stop markers may be mounted to premium terminal poles, light poles, or walls. Transitway stations also include passenger amenities, such as weather protection and seating provided either within the fully enclose shelters, or partially-enclosed canopies. Transitway stations owned by Metrolinx also feature heated shelters. Other amenities available at transitway stations include vending machines, bicycle parking, and public and operator washrooms.

Customers on MiWay routes intersecting the Transitway can also connect to routes on the Transitway via on-street stops at some of the stations. Transitway stations with onstreet stops are listed below, with an example of a typical layout of the on-street stop in relation to the Transitway station stops shown in Exhibit 4-4:

- Central Parkway Station (2 on-street stops);
- Tomken Station (2 on-street stops);
- Dixie Station (2 on-street stops); and
- Renforth Station (7 on-street stops).

On-street MiWay stops near Transitway stations typically include the following MiWay infrastructure:

- One stop marker mounted to a stop pole; and
- One shelter, including at least one bench.

Some on-street stops also include a waste bin, a map panel mounted to a shelter, or an advertising panel. Uniquely, some on-street stops at Renforth Station use double shelters with two benches. A summary of MiWay infrastructure at each Transitway station and at nearby on-street stops is provided in Exhibit 4-5. Additional features available at Metrolinx-owned Transitway stations are also included.

Exhibit 4-4: On-Street MiWay Stops near Central Parkway Transitway Station





Premium Terminal Stop Marker

Map not to scale



Premium Stop Marker

Exhibit 4-5: MiWay and City of Mississauga Infrastructure at Mississauga Transitway Stations

	In Tra	nsitwa	y Station	S	-										At On-	Street S	tops					
Transitway Station	MiWay Routes	MiWay Stops	Platforms / Bus Bays / Bays used by MiWay	Stop Markers	Waste Bins	Map Panels	Schedule Panels	Tunnel	Elevators	Code Blue Boxes	Bicycle Racks	Vending Machines	Operator Facilities	Public Washrooms	MiWay Routes	MiWay Stops	Stop Markers	Shelters	Benches	Waste Bins (Peel)	Map Panels	Advertising Panels
Cawthra	3	2	2/2/2	2	2	2	2	1	-	3	1	-	-	-	-	-	-	-	-	-	-	-
Central Parkway	3	2	2/2/2	2	7	2	-	-	2	2	2	2	-	-	2	2	2	2	2	2	2	2
Dixie	6	2	2/4/2	2	8	2	-	-	2	2	2	2	1	-	1	2	2	2	2	1	1	-
Erin Mills*	6	4	2/8/4	4	12	2	10	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-
Etobicoke Creek	4	2	2/2/2	2	6	1	-	-	2	2	-	2	-	-	-	-	-	-	-	-	-	-
Orbitor	4	2	2/2/2	2	2	2	-	-	2	2	1	4	-	-	-	-	-	-	-	-	-	-
Renforth*	5	2	2/8/2	2	7	-	-	-	2	-	1	2	1	1	7	7	7	7	11	4	4	-
Spectrum	4	2	2/2/2	2	6	2	-	-	2	2	1	4	-	-	-	-	-	-	-	-	-	-
Tahoe	4	2	2/2/2	2	6	2	-	-	2	2	2	2	-	-	-	-	-	-	-	-	-	-
Tomken	3	2	2/2/2	2	6	2	-	-	2	2	1	2	-	-	1	2	2	2	2	-	2	-
Winston Churchill*	5	4	2/8/4	4	7	2	5	-	-	-	2	-	1	-	-	-	-	-	-	-	-	-

Note: * Stations are owned by Metrolinx. Infrastructure and amenities in Transitway Stations may include both MiWay/City and Metrolinx property.

Focusing on improving the transit rider experience, and improving transit operations, the following issues and needs were identified at Transitway stations. For some Transitway stations, addressing challenges will require additional coordination with Metrolinx and other agencies.

Issue 1: Inconsistent Provision of Passenger Amenities at Stops Connecting to the Transitway

Passenger amenities provided at Transitway stations are generally consistent and include benches, next bus arrival signs, ticket vending machines, wayfinding signs, and security features. However, passenger amenities provided at on-street MiWay stops near Transitway stations vary, and some Transitway stations feature additional amenities, for instance:

- Amenities at on-street MiWay stops near Transitway stations typically include a shelter with a bench and a map panel.
- Stops with additional amenities also feature waste bins.

Opportunity: Provide Consistent Passenger Amenities to Improve the Transit Rider Experience

To improve the end-to-end experience for customers using the Transitway, and to attract more riders to access the Transitway using local transit, transit stops connecting to the Transitway should have consistent passenger amenities. Amenities should include weather protection, and seating. With 20- to 30-minute service on local routes, passengers transferring from the Transitway will wait 10 to 15 minutes on average. Making the transfer from the Transitway to MiLocal routes more comfortable with consistent amenities will attract more customers to the Transitway.



On-street stop near Renforth Transitway Stations with no stop amenities

At some on-street stop locations, existing constraints may limit the amount and type of amenities that can be provided in the short-term. It is recommended that MiLocal onstreet stops that connect to the Transitway be reviewed for improvements either in combination with terminal improvements, or in a future iteration of the MIGP. A contextsensitive approach can be used to identify opportunities for placemaking at on-street stops near Transitway stations with higher passenger volumes.



Amenities at an on-street stop near Central Parkway Transitway Station

Issue 2: Inconspicuous Connections from the Transitway to On-Street Stops

Transitway stations are generally similar in size, design, and layout, making it easy for MiWay passengers to access and navigate the station buildings. However, passengers transferring from the Transitway to MiLocal routes may find it challenging to navigate to on-street stops that may or may not be located near Transitway stations. Some associated stops are 100 m from the station. Generally, there is little to no wayfinding signage to guide customers between MiWay stops and the Transitway Station. Challenges faced by passengers transferring to or from the Transitway include:

- Passengers wishing to transfer between MiWay, GO, or other transit routes at a Transitway station may have to cross between platforms (using marked crosswalks, tunnels, or sidewalks) or use city sidewalks or crosswalks to access on-street stops.
- Stations currently do not provide MiWay wayfinding or informational signage for on-street stops to assist passengers making transfers.



Stop located over 100m from Renforth **Transitway Station**

IBI GROUP REPORT MIWAY INFRASTRUCTURE GROWTH PLAN Prepared for the City of Mississauga

Opportunity: Improve Connections between On-Street Stops and Transitway Stations

To attract more riders, and serve customers of all ages and abilities, all onstreet stops associated with Transitway stations should consider access and transfers to and from the Transitway. This should include a review of the placement and distances between all onstreet and off-street stops. Accommodating connecting routes in offstreet turnarounds at Transitway stations can also be considered where possible.

Providing wayfinding signage within Transitway stations, both inside and outside of the building, could help passengers locate on-street bus stops. This can include overhead signs, or station area maps. At connecting stops with mapboxes available, consideration can be made for including wayfinding

information for the routes available at the terminal.



Wayfinding signage for parking at Central Parkway Transitway Station

Issue 3: Lack of Operator Facilities at Transitway Stations

Operator facilities provided at Transitway stations can vary significantly, ranging from no dedicated facilities to private transit operator washrooms and food vending machines. Operator facilities at Transitway stations are provided by the owner of the facility:

- •
- operator washrooms.
- except for Renforth and Winston Churchill Transitway Stations.
- facilities provide 24-hour access, seven days a week.

Opportunity: Provide Operator Washrooms to Support Bus Operators, Service Schedules, and On-Time Performance

Transitway stations with no available operator facilities cannot be used for layovers, which limits service flexibility. When operator facilities are located further away from layover spaces, there needs to be additional scheduling adjustments to make sure that on-time performance is not impacted. Providing dedicated operator washrooms facilitates bus operator requirements and supports MiWay's operational performance. The need for an operator washroom at a Transitway station will be dependent on the key function of the station, as further defined in the terminal classification system in Section 4.4.

One City of Mississauga Transitway station, Dixie, has operator washrooms.

Two Metrolinx Transitway stations, Renforth and Winston Churchill, have

Most Transitway terminals do not have other facilities such as break rooms,

For each of the Transitway stations that provide operator facilities, the



Washrooms in Renforth Transitway Station

4.1.3 Issues and Needs at GO Stations

MiWay services 11 GO stations either at a bus loop or platform adjacent to the train station, or at on-street stops within walking distance of the station. Seven of the GO stations surveyed have MiWay stops in the GO station bus loop. Dixie and Kipling GO are both serviced via on-street stops near the station. Erindale and Malton are both serviced by MiWay via on-street stops near the station and also within its bus loop.

This section summarizes the infrastructure and amenities at 11 GO stations located on the Kitchener, Milton, and Lakeshore West GO Train lines that are serviced by MiWay routes. Nine of these stations are located in the City of Mississauga, while two (Kipling and Long Branch) are located in the City of Toronto. GO stations in Mississauga provide connections to GO trains, GO buses, MiWay routes, as well as TTC, Brampton Transit, and Oakville Transit routes.



All GO stations consist of one or more train platforms and a station building, which are generally connected by an elevated walkway, a surface path, or an underground tunnel. Some stations also include a dedicated bus platform or loop with one or more bus bays, which may be used by GO buses, MiWay buses, or buses from other transit agencies.

Most infrastructure at GO stations is provided and maintained by Metrolinx/GO Transit. Where stations are shared by Brampton Transit, Oakville Transit, or TTC, some infrastructure may be owned and maintained by these transit agencies. Infrastructure provided by MiWay on GO station property in the terminal footprint generally includes:

- Stop markers and stop poles (9 stations);
- Schedule panels (8 stations); and
- Map panels (3 stations).

All on-street MiWay stops near GO stations include a MiWay stop marker mounted to a stop pole. Some on-street MiWay stops have additional amenities, such as shelters, benches, waste bins, and advertising panels.



stops is provided in Exhibit 4-6.

On-street MiWay stop serving Dixie GO Station

A summary of MiWay infrastructure at each GO station and at nearby on-street MiWay

Exhibit 4-6: MiWay Infrastructure at GO Stations

		On GO B	on GO Bus Platform (Within Terminal Footprint) At On-Street Stops														
GO Station	Municipality*	MiWay Routes	MiWay Stops	Platforms / Bus Bays / Bays used by MiWay	Stop Markers	Map Panels	Schedule Panels	Operator Facilities	MiWay Routes	MiWay Stops	Stop Markers	Shelters	Benches	Waste Bins (Peel)	Map Panels	Schedule Panels	Advertising Panels
Clarkson	М	7	8	1/7/5	8	1	8	1	-	-	-	-	-	-	-	-	-
Cooksville	М	2	1	1/3/5	1	-	2	1	-	-	-	-	-	-	-	-	-
Dixie	М	-	-	1/4/-	-	-	-	1	1	2	2	1	1	1	1	-	1
Erindale	М	2	2	1/6/2	2	-	2	1	4	4	4	2	2	2	2	-	1
Kipling**	Т	-	-	- / - / -	-	-	-	-	18	4	4	-	-	-	-	-	-
Lisgar	М	3	1	1/6/1	1	-	2	1	-	-	-	-	-	-	-	-	-
Long Branch	Т	2	1	1/2/1	1	-	2	1	-	-	-	-	-	-	-	-	-
Malton	М	1	1	1/1/1	1	1	-	1	2	2	2	-	-	2	-	-	-
Meadowvale	М	3	2	1/4/1	2	-	5	1	-	-	-	-	-	-	-	-	-
Port Credit	М	6	5	1/5/5	5	2	6	1	-	-	-	-	-	-	-	-	-
Streetsville	М	3	2	1/2/1	1	-	4	1	-	-	-	-	-	-	-	-	-

Note: * M Mississauga T Toronto

**Two (2) on-street MiExpress stops serving the Kipling Bus Terminal were included in the Route 101, 108, 109 stop inventories. In future, these MiExpress stops will be included within the Kipling Terminal (off-street).

Focusing on improving the transit rider experience, and improving transit operations, the following issues and needs were identified at GO stations. Addressing challenges at GO stations will require additional coordination with Metrolinx and other agencies.

Issue 1: Inconsistent Provision of Passenger Amenities for MiWay Stops at GO Stations

Passenger amenities provided and maintained by Metrolinx at GO stations are generally consistent, including benches, waste bins, ticket vending machines, wayfinding signs, and security features. However, MiWay amenities provided at GO stations and passenger amenities provided at on-street MiWay stops near GO stations vary, for instance:

- Amenities at GO Station stops within the terminal footprint range from no MiWay map or schedule panels to multiple map and schedule panels.
- Amenities at on-street MiWay stops near GO stations range from no shelter or other amenities to one shelter with a bench, map panel, and illuminated advertising panel, and one waste bin.



Amenities at Port Credit GO Station

Opportunity: Provide Consistent Passenger Amenities to Improve the Transit Rider Experience

To improve the end-to-end experience for customers using MiWay to access GO services, and to encourage MiWay as the first and last mile mode of choice to GO services, stops connecting to GO stations should have consistent passenger amenities. Amenities should include weather protection, and seating. Making the experience for passengers transferring from MiWay to GO services more comfortable with consistent amenities will attract more customers to MiWay.

At some on-street stop locations, existing constraints may limit the amount and type of amenities that can be provided in the short-term. It is recommended that on-street MiWay stops that connect to GO stations be reviewed for improvements either in combination with terminal improvements, or in a future iteration of the MIGP. A context-sensitive approach can be used to identify opportunities for placemaking at high volume on-street stops near GO stations.

Issue 2: Inconspicuous Connections to GO Stations and between On-street MiWay Stops and GO Stations

GO stations vary in size, design, and layout, as do connections between transit stops and GO stations. Stations may have off-street bus loops or platforms. On-street stops may or may not be located near GO stations. Some associated on-street stops do not have well-marked or accessible pedestrian access to the GO station. This can present challenges for passengers transferring to or from other transit routes or services at GO stations, including:

- Passengers wishing to transfer between MiWay, GO, or other transit routes at a GO station may have to cross between bus bays at the platform (within the terminal). To access on-street stops, passengers may have to travel circuitous paths through the GO station parking lot.
- There is limited to no wayfinding or informational signage at onstreet stops to direct or assist customers in transferring to GO stations.

Opportunity: Improve GO Station Access and Connections between On-street Stops and GO Stations

To attract more riders, and serve customers of all ages and abilities, all on-street stops associated with GO stations could consider access improvements for transfers to and from the GO Station. This should be done in coordination with Metrolinx, considering improvements recommended in the GO Rail Station Access Plan (2016). Providing a station area map or route/stop-based wayfinding signage could help passengers locate on-street bus stops. Supported by operational analysis to determine impacts on routing and run times, accommodating connecting routes in off-street turnarounds at GO stations could be considered to simplify transfers and reduce passenger walk times between MiWay and GO services.



Insufficient wayfinding from on-street stop to Dixie GO Station

4.1.4 Summary of Terminal Issues and Needs

An understanding of existing inconsistencies between MiWay terminals enabled the clear identification of issues and needs. Upon further assessment, recommendations to address the issues were identified with the intent of improving the transit rider experience and enhancing operational efficiency. The identified issues and needs, common to all types of terminals serviced by MiWay are:

- Ineffective MiWay terminal identification, and inadequate stop identification at MiWay terminals;
- Inconsistent provision of passenger amenities;
- Inconspicuous connections to and within MiWay terminals; and
- Lack of sufficient operator washrooms to support bus operators.

The four recurring issues and needs identified at MiWay terminals affect MiWay operations and limit flexibility in the scheduling process, particularly due to the lack of operator washrooms. The issues and needs identified also affect the attractiveness of MiWay to passengers, especially as a first- and last-mile access mode to the Transitway and GO service.

To address these issues and needs, the following five opportunities at MiWay terminals:

- Make it easier to identify MiWay terminals
- Provide more passenger amenities to improve the transit rider experience
- Improve access and connections within terminals
- Improve wayfinding and connections between on-street stops and terminals
- Provide sufficient operator washrooms to support bus operators

These opportunities, along with the guiding principles of the MIGP, were further considered in the following sections, and informed the terminal classification and design considerations in **Section 4.4**.

4.2 Terminal Operations Review

The existing issues and needs discussed in **Section 4.1** affect terminal operations and influence how service is provided across the City of Mississauga. Terminal operations are also affected by the surrounding context of the terminal area; and the planned service changes, primarily identified in the MiWay five-year service planning process.

The issues and needs, surrounding context, and planned service changes affect multiple routes and influence how service is provided across the City of Mississauga. The surrounding context of the terminal, including the road network, land uses, and congestion, can result in delays for buses accessing terminals. The surrounding context can also make pedestrian access and the provision of operator facilities challenging, as discussed in **Section 4.1**. Planned service changes as part of the implementation of the MiWay Five (2015) service plan, have resulted in an increased level of service for many MiWay routes since 2016. The increase in service to meet the demand for transit has resulted in capacity constraints for many terminals, specifically in the availability of bus bays and layover spaces.

To identify operational challenges at MiWay terminals and stations in 2020 and beyond, MiExpress and MiLocal route ends as noted in MiWay Five were reviewed in consultation with MiWay staff during various workshops as the study progressed. Operational changes to improve conditions were identified and impacts of new routes and corridors based on potential MiExpress routes and the Metrolinx RTP were considered. These changes are discussed in **Section 3.5**. Finally, on-going challenges at MiWay terminals and stations were discussed. The outcome of this work was a long list of terminal and station operational challenges, detailed in **Appendix E**.

Though this lens, five operational challenges at MiWay terminals and stations emerged:

- 1. Bus access;
- 2. Bus bay capacity;
- 3. Pedestrian access;
- 4. Operator facility; and
- 5. Layover space.

Through a review of current terminal operations and the MiWay 2020 route network as identified in MiWay Five (2015), these challenges were identified for MiWay terminals and stations. This review was conducted in two workshops with MiWay staff from service planning and operations, providing diverse perspectives on the challenges faced and potential solutions. The impact of these challenges on MiWay terminal operations in the next ten years was also considered, given the staff's understanding of potential changes in the network. The purpose of this exercise was to define end-of-line requirements for all MiWay routes in 2020 and identify obstacles to planned service expansion beyond 2020, working towards flexibility for future route changes and service increases.

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> The terminals and stations were categorized by operational challenge as presented in Exhibit 4-7, detailed in Appendix E and are described in more detail in the following section.

Operational Challenges at MiWay Terminals 4.2.1

Many locations are expected to experience more than one challenge in the short- and medium-term. Three terminals (Brampton Gateway, City Centre Transit Terminal, and Islington Subway Station) are out of scope as improvements are already planned within the next five years as part of other projects. However, existing and future challenges at these facilities were identified and are included in Exhibit 4-7.

Bus Access Challenges



No location for surface routes to turnaround at Central Parkway Station

Terminals or stations with bus access challenges are designed or located in such a way that buses face additional delays or have to detour from their routes to access the facility. Specific challenges include multiple traffic signals near bus access points and related traffic congestion, long or circuitous access roads, and a lack of access from surface streets (i.e. Transitway stations).

Facilities with bus access challenges include:

- MiWay Terminals: Airport Terminal 1, Airport Terminal 3, Bramalea Terminal, City Centre Transit Terminal, Credit Valley Hospital, Dixie Outlet Mall, Erin Mills Town Centre, Islington Subway Transit Terminal, Meadowvale Town Centre, Sheridan College, South Common Centre, Trillium Health Centre, University of Toronto Mississauga, Viscount Station, and Westwood Square;
- Transitway Stations: Cawthra, Central Parkway, Etobicoke Creek, Orbitor, Spectrum, Tahoe, and Tomken; and
- GO Stations: Clarkson, Cooksville, Erindale, Lisgar, Long Branch, Malton, Meadowvale, Port Credit, and Streetsville.

Opportunities to improve bus access challenges include working with traffic operations staff to address congestion issues, such as identifying opportunities for transit priority measures to access terminals, reconfiguring terminals to provide access from surface streets, or identifying new locations with fewer access challenges for terminals.

Bus Bay Capacity Challenges



Westwood Square's bus bays are at capacity and cannot accommodate demand

Terminals or stations with bus bay capacity challenges are unable to efficiently accommodate all route demands currently or in the future. In other words, the existing number of bus bays cannot accommodate the required buses to serve peak service demand. This means that service levels cannot be increased on existing routes and no future routes can be brought in to these facilities.

Facilities with bus bay capacity challenges were identified by MiWay staff and include:

- and Winston Churchill; and
- Meadowvale, and Streetsville.

Opportunities to improve bus bay capacity challenges include designating drop-off zones and boarding areas rather that assigning bays to specific routes, increasing the footprint of terminals to accommodate more bus bays, and moving routes to different terminals through an in-depth service planning exercise.

MiWay Terminals: Airport Terminal 1, Airport Terminal 3, Bramalea Terminal, City Centre Transit Terminal, Credit Valley Hospital, Dixie Outlet Mall, Humber College, Hurontario & Highway 407 Park & Ride, Islington Subway Transit Terminal, Meadowvale Town Centre, Sheridan College, Sherway Gardens, South Common Centre, Trillium Health Centre, University of Toronto Mississauga, Viscount Station, and Westwood Square;

Transitway Stations: Cawthra, Central Parkway, Dixie, Erin Mills, Renforth,

GO Stations: Clarkson, Cooksville, Lisgar, Long Branch, Malton,

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Exhibit 4-7: Operational Challenges at Existing MiWay Terminals and Stations in 2020

Pedestrian Access Challenges

Pedestrian access challenges include both accessibility and safety challenges in the facility, as well as accessibility and connectivity challenges to access a facility or transfer between stops. Specific challenges within terminals and stations include split platform designs that require pedestrians to cross the path of buses, narrow or inaccessible sections of platforms, or facilities where stops are spread between multiple platforms or intersections. Other pedestrian access challenges arise when facilities are located at the end of long access roads, in parking lots with minimal sidewalks (i.e. Dixie Outlet Mall), or at the periphery of key destinations in areas that can be difficult to find.

Terminals or stations with pedestrian access challenges include:

MiWay Terminals: Airport Terminal 1, Airport Terminal 3, City Centre Transit Terminal, Credit Valley Hospital, Dixie Outlet Mall, Dundas /Erindale Station Road/Glengarry, Erin Mills Town Centre, Meadowvale Town Centre, Sheridan Centre, Sherway Gardens, South Common Centre, Viscount Station, and Westwood

Square;

- **Transitway Stations:** Cawthra, Erin Mills, Renforth, and Winston Churchill; and
- GO Stations: Cooksville, Dixie, Long Branch, Malton, and Meadowvale.

Opportunities to address pedestrian access challenges include providing direct pedestrian connections to platform access points, providing designated



Long access distances for pedestrians at Erin Mills Town Centre

crossing facilities to accommodate connections at split platforms, and providing wayfinding signage to and from adjacent key destinations.

Operator Facility Challenges

Terminals or stations identified as having operator facility challenges are those facilities where layovers may be provided; however, there is a lack of available operator facilities (e.g. washrooms). Operator facilities may not be available due to a physical lack of facilities or due to time restrictions where inadequate time is provided to access nearby facilities.

Without operator facilities at some route-end terminals and stations, some routes feature disruptive mid-route layovers while others must travel to out-of-the-way facilities. Specific terminals and stations with operator facility challenges include:

- MiWay Terminals: Dixie Outlet Mall, Dundas/Erindale Station
- Creek, Orbitor, Spectrum, Tahoe, and Tomken; and
- Streetsville.

Opportunities to address the lack of operator facilities include providing pre-fabricated facilities where no designated facilities are available and negotiating access to existing facilities provided by private entities.



Operator washroom at Hurontario & Highway 407 Park and Ride

Road/Glengarry, Humber College, Sheridan Centre, Sheridan College, Sherway Gardens, South Common Centre, and Viscount Station;

Transitway Stations: Cawthra, Central Parkway, Erin Mills, Etobicoke

GO Stations: Clarkson, Cooksville, Lisgar, Meadowvale, Port Credit, and

Layover Space Challenges



Insufficient layover space at Meadowvale Town Centre

Terminals or stations with layover space challenges are unable to serve route layovers because they do not have sufficient or easily accessible space to accommodate buses outside of the bus bays. These challenges may arise due to a physical lack of layover space or due to the location of existing layover space. Much like operator facility challenges, layover space challenges can lead to layovers occurring mid-route, at outof-the-way facilities, or the inability to schedule a layover due to lack of space.

Specific terminals and stations with layover space challenges include:

- MiWay Terminals: Airport Terminal 1, Airport Terminal 3, Bramalea Transit Terminal, City Centre Transit Terminal, Dixie Outlet Mall, Humber College, Hurontario & Highway 407 Park & Ride, Islington Subway Transit Terminal, Meadowvale Town Centre, Sheridan College, Sherway Gardens, South Common Centre, Trillium Health Centre, University of Toronto Mississauga, Viscount Station, and Westwood Square;
- Transitway Stations: Cawthra, Central Parkway, Dixie, Erin Mills, Etobicoke Creek, Orbitor, Spectrum, Tahoe, and Tomken; and;
- GO Stations: Clarkson, Cooksville, Lisgar, and Long Branch.

Note that although Erin Mills Transitway Station has sufficient layover space, it may not be used due to ongoing community concerns that restrict bus circulation within the station footprint. Opportunities to improve layover space challenges include increasing the footprint of terminals to accommodate more layover space and moving routes to layover at nearby terminals where applicable.

No Challenges

Two locations were identified as having no existing or medium-term challenges:

- MiWay Terminals: Brampton Gateway; and
- GO Stations: Kipling Bus Terminal.

4.2.2 Summary of Terminal Operational Challenges

Most terminals within the City of Mississauga (nearly 80%) experience 3 or more operational challenges, which limits current operations and planned service expansion. The five operational challenges faced by MiWay terminals and stations are:

- 1. Bus access;
- 2. Bus bay capacity;
- 3. Pedestrian access:
- Operator facility; and 4.
- 5. Layover space.

These operational challenges were also reviewed in the context of planned and potential changes to MiExpress routes and terminals (Section 4.3). Opportunities to address the terminal operational challenges build on the terminal infrastructure and amenity opportunities of the MIGP, identified in Section 4.1:

- Make it easier to identify MiWay terminals 1.
- 2. Provide more passenger amenities to improve the transit rider experience
- 3. Improve access and connections within terminals
- 4. Improve wayfinding and connections between on-street stops and terminals
- 5. Provide sufficient operator washrooms to support bus operators

challenges.

Opportunities to improve bus bay capacity challenges include designating drop-off zones and boarding areas, increasing the footprint of terminals, and moving routes to different terminals through an in-depth service planning exercise.

Opportunities to address pedestrian access challenges include providing direct connections to platform access points, providing designated crossing facilities within terminals, and providing wayfinding signage to and from adjacent key destinations.

Opportunities to address the lack of operator facilities include providing pre-fabricated washrooms where no designated facilities are available and negotiating access to existing washrooms provided by private entities.

Opportunities to improve layover space challenges include increasing the footprint of terminals to accommodate more layover space and moving routes to layover at nearby terminals based on an in-depth service planning exercise.

These opportunities are further explored in the development of the feasibility plans for terminal improvements in Section 4.6. Specific opportunities for improvements to terminals that are part of existing plans are discussed in Section 4.3

Opportunities to improve bus and pedestrian access challenges include working with traffic operations staff to address congestion issues, reconfiguring terminals to provide access from surface streets, or identifying new terminal locations with fewer access

4.3 Terminal Opportunities

In order to be forward-looking and create an infrastructure growth plan that maximizes the benefit of transit investments, facilitates route connections and creates a more reliable transit network, MiExpress terminal opportunities were identified. Planned and potential changes to MiExpress routes were reviewed with MiWay staff, as described in Section 3.5.

Proposed changes to terminals in Mississauga and Toronto may be an opportunity to alleviate the operational challenges identified in Section 4.2. The five operational challenges at MiWay terminals are:

- 1. Bus access:
- 2. Bus bay capacity;
- Pedestrian access: 3.
- Operator facility; and 4.
- Layover space. 5.

Potential changes to MiWay routes and terminals that may present opportunities to address these challenges were reviewed. The review described in the following sections supplements the issues, needs and challenges identified at MiWay terminals to inform the terminal improvements recommended by the MIGP. The terminal opportunity review included consideration of moving route ends to other facilities, planned and potential changes to terminals and stations, and potential new or improved MiWay terminals. These terminal opportunities are intended to anticipate how service planning considerations and planned terminal and station changes may affect terminal operations.

4.3.1 Route End Review

Improvements to terminals and stations with bus bay capacity challenges may be made by moving route ends to other facilities. By reducing the number of routes using an existing facility, bus bay and layover capacity challenges may be addressed.

Based on the 2020 MiWay route network, MiExpress and MiLocal routings and route ends were reviewed. Examples of potential revisions to route ends include:

- Moving route ends from an over-capacity terminal or station to a nearby GO ٠ Station with available bus bay capacity (for example, from Meadowvale Town Centre to Lisgar GO); and
- Moving route ends from existing terminus points or on-street locations to a new bus loop, turnaround or terminal (for example, Routes 1/1C and 101/101A from South Common, to Laird and Vega, or routes from Trillium Health Centre or Dundas/ESR/Glengarry to the Huron Park loop).

While this review identified some opportunities to relocate route ends, these changes should be further examined in the context of a service planning exercise to minimize

knock-on effects on existing terminals and on passenger connections. In general, route ends should only be relocated where they can be accommodated in existing terminal facilities, or where terminal improvements are being considered through the implementation of the MIGP. Additionally, many passengers use terminals and stations to transfer between routes, meaning that moving routes to other facilities should not be at the cost of lengthening trips or increasing numbers of transfers for riders.

Terminal and station challenges related to bus and passenger access to the terminal may not be resolved by moving route ends. In many cases, these challenges are related to the physical structure, layout, or location of a facility.

Overall, it was determined that no short-term changes to route ends can resolve challenges at any of the terminals and stations. However, consideration should be given to three potential future terminal locations (Huron Park Loop, Laird and Vega, and Meadowvale Business Park) to serve route ends and reduce bus bay capacity issues and layover space issues at existing facilities. The potential benefits of these three locations are described further in Section 4.3.2.

As new facilities are proposed and developed in Mississauga, route end reviews should be repeated to identify new opportunities to resolve challenges while maintaining connectivity. A set of tables summarizing all 2020 and potential revised route ends was produced during this workshop and is provided in Appendix E.

4.3.2 Proposed Terminal and Station Changes

Other planned and/or potential changes to terminals and stations were reviewed, including the development of new facilities in and around Mississauga by MiWay, other transit agencies, or other land owners. Some terminals and stations have the potential to serve existing MiWay routes, reducing pressure on other terminals and stations, while other terminals and stations may serve new routes.

MiWay terminals and stations that are in development by MiWay, other transit agencies (e.g., Metrolinx), or other land owners (e.g., Greater Toronto Airports Authority) within the next ten years are:

relief to the bus bay capacity issues and layover space issues at presented in Exhibit 4-8, as provided by MiWay.

Churchill Meadows Community Centre – This new terminal will be located on Ninth Line near Tacc Drive and is scheduled to open in 2020 as a terminus for Routes 9, 35, and 39. This new terminal would provide some Meadowvale Town Centre Transit Terminal as Route 39 is removed. This new terminal will also provide a route-end facility for Routes 9 and 35, providing more flexibility for operations. These routing changes are



- will be provided at the Kipling Bus Terminal.
- LRT by the end of 2024.⁴
- could use this facility as a terminus.
- as other local MiWay routes, may connect into this facility.
- operational changes.

⁷ "Regional Transit Centre," Greater Toronto Airports Authority, 2019. https://torontopearson.com/transit/#.

Kipling Bus Terminal – This new terminal is under construction and expected to be complete by 2020³. Kipling Bus Terminal is located adjacent to Kipling GO Station in Toronto, near Kipling Avenue and Dundas Street West. Routes currently terminating at Islington Subway Station (1/C, 3, 11, 20, 26, 35/A, 70, 71, 76, 101/A, 108, and 109) are expected to move to this facility. Connections to GO Transit (bus and rail) and TTC (bus and subway)

Cooksville GO Station – This existing station is located in Mississauga on the Milton GO Line, near Hurontario Street and Hillcrest Avenue. As part of GO Expansion on the Milton Line, Cooksville GO Station is being redeveloped (expected completion in 2020⁴) with more amenities, a new station building, and better connections to MiWay and GO Transit services. The redeveloped station is expected to be integrated with the Hurontario

Woodbine GO Station – This new station, which will be located on the Kitchener GO Line at Highway 27 in Toronto, is expected to be completed by 2023.⁵ Route 11, which travels along Highway 27, is likely to serve this facility once complete, and it is possible that other MiWay routes (e.g. 104)

Malton GO Station – This existing station is located in Mississauga, near the intersection of Derry Road and Airport Road. When all-day, two-way rail service is introduced to the GO Kitchener line, Malton GO Station may become an important service location (expected completion in 2025⁶). With high frequency rail service at this station, MiWay routes 104 and 107, as well

Regional Transit and Passenger Centre – This new transit hub at Pearson Airport is scheduled to open in the late 2020s⁷, and will be located near Airport Road and Highway 409 (opposite Pearson Airport) in Toronto. Routes currently serving Pearson Airport at Terminal 1, Terminal 3, or Viscount Station (7, 100, and 107) would instead serve the Transit Hub, eliminating the need to circulate through airport access roads. While the Transit Hub is scheduled for completion beyond the scope of this plan, it is important to consider this future facility when planning for MiWay infrastructure or

³ "Kipling Transit Hub," Metrolinx, 2019. http://www.metrolinx.com/en/greaterregion/projects/kipling-mobility-hub.aspx.

⁴ "Cooksville GO Station," Metrolinx, 2019. http://www.metrolinx.com/en/greaterregion/projects/cooksville-go.aspx.

⁵ New Station Initial Business Case: Highway 27-Woodbine. Metrolinx, November 2018.

407 Transitway – This new Transitway is planned to include several new stations along Highway 407 in Brampton and Mississauga. Stations are being planned at Goreway Drive, Airport Road, Dixie Road, Hurontario Street, Mississauga Road, Lisgar GO, Derry Road, and Britannia Road. These stations are identified in the Hurontario Street to Highway 400 Environmental Project Report⁸ and the Hurontario Street to Brant Street PIC #1 Presentation Panels.⁹ Although these stations could be used by MiWay once open, they are not expected to be operational within the ten-year horizon of this plan. As such, the 407 Transitway stations are not considered further in he development of this plan.

Potential new or improved MiWay terminals, as identified through discussion with MiWay staff, are:

- **Cawthra Transitway Station** This existing station is located in Mississauga on the northeast corner of Eastgate Parkway and Cawthra Road. The potential for an expanded station, with a bus terminal serving non-Transitway routes, could be considered through the MIGP. This would provide a new terminus for MiWay Route 8.
- **Central Parkway Transitway Station** This existing station is located in Mississauga on the northeast side of Central Parkway, north of Rathburn Road. The potential for an expanded station, with a bus terminal serving non-Transitway routes, could be considered through the MIGP. This would provide improved connections for MiWay Routes 10 and 53, and potentially a new terminus for other routes that currently terminate at City Centre Transit Terminal.
- Dixie Outlet Mall This existing terminal is located in Mississauga, near the Queen Elizabeth Way (QEW) and Dixie Road. As part of MTO work to reconfigure the QEW interchange at Dixie Road, bus stops at Dixie Outlet Mall will be relocated to Dixie Road with the provision of layover space. This work is expected to be complete in 2024.¹⁰ Redevelopment of this terminal would likely resolve existing challenges at Dixie Transitway Station and provide a new terminus opportunity for Route 185.
- Huron Park Loop An expanded terminal at the existing Huron Park bus loop could provide a terminus for MiWay Routes 4, 6, and 38. This facility could provide an alternative to the existing terminal at Dundas/ESR/Glengarry.
- Laird/Vega Terminal A new terminal in the area of Laird Road east of Vega Boulevard, or along Ridgeway Drive north of Dundas Street West,

could provide a terminus for MiWay Routes 1C, 101A, and potentially Route 71. This facility could also improve connections to Oakville Transit routes. Passenger amenities could be improved, along with layover space and an operator washroom. A new terminal could alleviate some of the bus bay capacity issues and layover space issues at the South Common Centre Transit Terminal.



Source: Google Maps (2020)

at the Meadowvale Town Centre Transit Terminal.

The proposed new or improved MiWay terminals and stations are shown in Exhibit 4-10. Given that some of these projects are in the planning phase and may not be funded, MiWay should continue to be involved in the planning process to identify MiWay's needs early in the planning stages and as designs develop.

As the timing of new terminals and stations can vary over time, proposed terminal and station changes should be reviewed on a regular basis to identify new opportunities to resolve challenges while maintaining connectivity.

¹⁰ Infrastructure Canada Projects, Government of Canada, 2019. https://open.canada.ca/data/en/dataset/beee0771dab9-4be8-9b80-f8e8b3fdfd9d.

Meadowvale Business Park Terminal – A new terminal in the area near Derry Road and between Creditview Road and Syntex Court could provide a single transfer point between routes serving the Meadowvale Business Park. Passenger amenities could be improved, along with layover facilities and an operator washroom. A new terminal could alleviate some bay capacity issues

⁸ "407 Transitway, Hurontario Street to Brant Street: Public Information Centre #1," Ministry of Transportation – Central Region, 2018. http://www.407transitway.com/brantToHurontario/downloads/PIC1BoardsFINAL.PDF.

⁹ "407 Transitway, Hurontatio Street to Highway 400: Environmental Project Report," Ministry of Transportation – Central Region, 2018. http://www.407transitway.com/hurontarioTo400/EPR.html.

4.3.3 Summary of Terminal Opportunities

Most terminals within the City of Mississauga (nearly 80%) experience 3 or more operational challenges. The terminal operational challenges (**Section 4.2**) present an obstacle for current operations and for planned service expansion. Even with service change improvements, such as moving routes to other facilities, most of these challenges will persist. Terminals and stations in the MiWay network that present more significant ongoing challenges due to proposed changes, as well as potential terminals that may be developed and added to the MiWay network to help resolve challenges faced by existing MiWay terminals and stations are shown in Exhibit 4-9.

Exhibit 4-9: Opportunities for Terminal or Station Infrastructure Improvement

Terminal or Station Name
MiWay Terminals
Meadowvale Town Centre Transit Terminal
South Common Centre Transit Terminal
Trillium Health Centre
Westwood Square Transit Terminal
Transitway Stations
Cawthra Transitway Station
Central Parkway Transitway Station
Dixie Transitway Station
Erin Mills Transitway Station
Renforth Transitway Station
GO Stations
Clarkson GO Station
Dixie GO Station
Long Branch GO Station
Streetsville GO Station
Terminal Opportunities
Huron Park Loop
Laird/Vega
Meadowvale Business Park

The summary of proposed changes at MiWay terminals were considered when developing a method to prioritize improvements at terminals (**Section 4.5**) and when recommending improvements when developing the feasibility plans (**Section 4.6**). Prior to developing a method to prioritize terminal improvements, a classification system for terminals was developed, informed by the guiding principles of the MIGP (**Section 2**), and the terminal opportunities described in **Section 4.1**.

Exhibit 4-10: Potential New or Upgraded MiWay Terminals and Stations



Note: The 407 Transitway is beyond the scope of the MIGP

September 24, 2020

Terminal Classification and Design 4.4

In order to increase consistency in the development of MiWay's terminals and to address common issues, needs, and operational challenges (Section 4.1 and 4.2) that arise with existing terminals, a terminal classification system was identified as part of the MIGP. The purpose of the classification system is to provide a systematic and consistent guideline to inform the design and infrastructure considerations at MiWay terminals. This section:

- Classifies existing terminals by operational functions and identifies associated infrastructure requirements;
- Describes the terminal design considerations, balancing the issue and needs, operational challenges and terminal usage patterns; and
- Considers the land use and density to inform access considerations for the design process.

Of the 34 terminals within Mississauga, six have been identified as Mobility Hubs in the Metrolinx RTP. As Mobility Hubs are identified based on their regional significance, land use context and transportation functions to inform development policy, they are excluded from MiWay's terminal classification. The guiding principles for the MIGP align with the Metrolinx Mobility Hub Guidelines and should be applied with consideration to the Metrolinx guidelines.

4.4.1 Terminal Classification System

The terminal classification system is a hierarchy of terminals, based on operational functions: the main reasons buses use terminals. The classification is also an opportunity to consistently address the issues and needs at MiWay terminals, detailed in Section 4.1:

- 1. Ineffective MiWay terminal identification, and inadequate stop identification at MiWay terminals;
- Inconsistent provision of passenger amenities; 2.
- Inconspicuous connections to and within MiWay terminals; and 3.
- 4. Lack of sufficient operator washrooms to support bus operators.

The operational functions and these issues and needs are the main considerations for determining a classification for MiWay terminals, and for providing a framework for prioritizing terminal improvements.

Operational Functions

The design of a terminal must support transit operations, passenger access, and operator washrooms. Four terminal types were defined, focusing on operational functions.



Connect and Turnaround Terminals provide connections to other routes and services (including inter-municipal or regional transit services), and function as route-ends and turnarounds. Connect and turnaround terminals require layover space and operator washrooms.

Connect Terminals primarily provide connections to other MiExpress and MiLocal routes but are not likely to be route ends. As such, Connect terminals may include layover spaces or layovers may be accommodated in the in-service bays.



Through Terminals primarily provide through service. Connections to other routes and services are limited. Through terminals are not routeends or turnaround locations.

Exhibit 4-11 summarizes the characteristics of each terminal type. Checkmarks are a qualitative indication of the degree to which each function is accommodated by type.

Exhibit 4-11: Terminal Classification Characteristics

Terminal Type	Connections to other routes / inter-municipal or regional services	Layover Spaces for schedule recovery, breaks, stand-by buses	Operator Washrooms	Route Ends
Connect and Turnaround	$\checkmark\checkmark\checkmark$	$\checkmark\checkmark\checkmark$	$\checkmark\checkmark\checkmark$	$\checkmark\checkmark\checkmark$
Connect	$\checkmark\checkmark\checkmark$	\checkmark	~	~
Turnaround	✓	$\checkmark\checkmark\checkmark$	$\checkmark\checkmark\checkmark$	$\checkmark\checkmark\checkmark$
Through	~	_	\checkmark	_

Each of the in-scope terminals and their existing classification is shown in Exhibit 4-12, which also shows the terminals' future classification, if different than the existing classification. The future classification is based on changes to operations anticipated with the full implementation of the MiWay Five Service Plan, and input on future routeend needs from MiWay staff, also discussed in Section 4.3.1.

Turnaround Terminals are primarily route-ends and turnaround locations. Connections to other routes are limited. Turnaround terminals require layover space and operator washrooms.

Note: Metrolinx Mobility Hubs within Mississauga (Airport Terminals, Viscount Station, City Centre Transit Terminal, Renforth Transitway Station, Cooksville GO, and Port Credit GO) are excluded.

Exhibit 4-12: In-Scope Terminal Classification

MiWay Terminals and Stations	Existing Classification	Future Classification (if different)
Cawthra Transitway Station	Through	Connect and
	Though	Turnaround
Central Parkway Transitway Station	Through	Connect and
		lurnaround
Clarkson GO Station	Connect and Turnaround	
Credit Valley Hospital	Through	
Dixie Transitway Station	Connect and Turnaround	
Dixie GO Station	Through	Connect and Turnaround
Dixie Outlet Mall	Connect and Turnaround	
Dundas St. and Erindale Station Rd.	Connect and Turnaround	Through
Erin Mills Transitway Station	Connect and Turnaround	
Erin Mills Town Centre	Connect	
Erindale GO Station	Connect and Turnaround	
Etobicoke Creek Transitway Station	Through	
Hurontario and 407 Park and Ride	Turnaround	Discontinue
Lisgar GO Station	Connect	
Malton GO Station	Connect	
Meadowvale GO Station	Connect	
Meadowvale Town Centre	Connect and Turnaround	
Orbitor Transitway Station	Through	
Sheridan Centre	Through	Downgrade to Stop
South Common Centre	Connect and Turnaround	
Spectrum Transitway Station	Through	
Streetsville GO Station	Connect	
Tahoe Transitway Station	Through	
Tomken Transitway Station	Through	
Trillium Health Centre	Connect and Turnaround	
University of Toronto Mississauga	Through	
Westwood Square	Connect and Turnaround	
Winston Churchill Transitway Station	Connect and Turnaround	

4.4.2 Terminal Design Considerations and Standards

Transit terminals have a variety of forms and functions, even within the same classification. It is not possible to develop standard designs for each terminal type, but some terminal infrastructure elements can be standardized, based on accessibility requirements and the MiWay fleet operation needs. Standard drawings were prepared for terminal bus bays based on common and best practice for bus bay infrastructure in surrounding municipalities, as well as TAC guidelines. The remaining design considerations for terminals were informed by the guiding principles of the MIGP and the terminal classification, the opportunities for terminals, and the terminal operational challenges.

Design considerations for terminals include support for transit operational functions as defined in the classification, passengers' terminal usage patterns, and a contextsensitive approach to the surrounding land uses.

The operational design considerations at a terminal determine the footprint of a terminal, access and egress needs, and on-site staff facilities. The main design considerations to accommodate the operational functions include:

- spaces needed in the long-term;
- •
- accesses;
- Adaptable and flexible design (i.e. accounting for interim uses if mobility); and
- technology changes).

Providing or planning for the appropriate amount of bus bays and layover

Planning bus circulation routes to minimize travel distances and conflicts with other terminal users, including passengers arriving by all modes;

Locating layover spaces away from active frontages and pedestrian

Locating dedicated operator facilities and amenities close to layover areas;

implementation is phased, and consideration of shared modes and new

Future-proofing, or planning for efficiencies (e.g. dynamic assignment,

The terminal usage patterns, specifically passenger access and passenger circulation needs, determine the space requirements for waiting areas, amenity provision, and multimodal integration. The main considerations to accommodate terminal usage patterns are:

- Integrating first and last mile modes by encouraging connectivity and bicycle • parking and passenger pick-up and drop-off where applicable;
- Locating stops and amenities to minimize crossing distances for passengers;
- Locating stops and amenities to minimize conflicts with other modes (e.g. cyclists, private vehicle pick-up drop-off activities);
- Applying a consistent wayfinding strategy;
- Placing signage at uniform locations where possible;
- Providing weather protection and consistent passenger amenities; and
- Incorporating Crime Prevention through Environmental Design Principles (CPTED) and security measures, such as natural surveillance, natural access control and consistent maintenance.

The land use context identifies the availability of land and terminal access/egress points for both transit vehicles and passengers. Future land uses and densities around MiWay terminals will be influenced by various regional and local plans and initiatives, including Reimagining the Mall (2019), the Region's ongoing MTSA study, and other studies identified in Appendix A.

Terminal design must also consider future growth in population and employment or increases in services levels. This may be addressed by acquiring more land than immediately needed and phasing the terminal development, accounting for interim uses.

The main considerations to incorporate transit in the overall land use planning processes include:

- Accommodating transit priority measures in local development plans and • policies;
- Prioritizing transit on roadways adjacent to terminals; and
- Encouraging transit supportive urban forms, including complete streets, intensification, and enhanced active transportation access to transit.

Land Use and Density

The land use and density provide a snapshot of the surrounding context of a terminal. With data from the 2016 census, existing population and employment densities adjacent to terminals were used to better understand the context around each terminal. The surrounding land uses and their densities influence design considerations, in particular for passenger access and circulation. The Growth Plan (2017) for the Greater Golden Horseshoe sets 2041 density targets for Major Transit Station Areas (MTSA). which are:

- 150 people and jobs combined per hectare if served by GO rail,
- bus rapid transit, and
- 200 people and jobs per hectare if served by subways.

The delineation of the MTSA is at the discretion of the municipality, provided the area chosen maximizes the number of potential transit users within a walking distance of the station. MiWay terminals that have been identified as a part of MTSA will be impacted by future development policies related to the MTSA.

For this study, a 400 m buffer (straight-line distance) around the terminals was selected based on a common standard for an acceptable walking distance to access transit services.¹¹ This distance was selected to balance the operational functions required at terminals with passenger access to the terminals. Although generally accepted that a higher access distance can be used when higher service levels (such as express routes) are available, the terminals also serve local routes, and improving pedestrian access to terminals is generally beneficial, particularly for high density terminals.

High, medium, and low-density thresholds were identified based on existing conditions. To identify the population and employment densities around terminals, 400 m buffers were drawn around each terminal and station, and the population and employment densities within each traffic zone captured in the buffer are proportionally allocated to the area of the buffer. This method assumes that population and employment are evenly distributed within each traffic zone, and as such, the densities provided are estimated. High, medium, and low-density terminals are illustrated in Exhibit 4-13, Exhibit 4-14, and Exhibit 4-15.

160 people and jobs combined per hectare if served by light rail transit or

¹¹ In most urban settings, 400 m has been observed as the maximum distance most people are willing to walk to local transit. This distance is doubled for rapid transit services. Transportation Research Board. (2017). Quality of Service Concepts. In Transit Capacity and Quality of Service Manual (3rd ed., pp. 4-18-4-19). Washington DC.

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Exhibit 4-13: Example of Terminal with High Density Land Use: Trillium Health Centre



Exhibit 4-14: Example of Terminal with Medium Density Land Use: Winston Churchill Transitway Station



Between 51 and 100 people and jobs per hectare within a 400 m radius

Exhibit 4-15: Example of Terminal with Low Density Land Use: Dixie Outlet Mall



Fewer than 50 people and jobs per hectare within a 400 m radius

The terminal classification, based primarily on the operational functions, supports transit operations, passenger circulation and operator needs within terminals. The land use and density were an additional consideration to support the access to the terminal for buses and passengers. Terminals are an opportunity for placemaking and can connect future land uses with the transit system. In the future, the density around each terminal should be reviewed and updated as new census information is available.

Combining the operational functions and land use considerations provided context for the terminal design process. Exhibit 4-16 shows the MiWay terminals, their classification, and the associated densities of the terminals within city limits. Mobility Hubs were excluded from this map. **Appendix G** includes the process used to create this map. Exhibit 4-17 shows the same information in tabular form, excluding the out of scope terminals, and those outside City limits.





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Exhibit 4-17: In-Scope Terminal Classification and Population and Employment Density within 400 m (2016)

MiWay Terminals and Stations	People per Hectare (400 m radius)	Jobs per Hectare (400 m radius)	2016 People and Jobs per Hectare (400 m radius)	Existing Classif
Cawthra Transitway Station	26	9	35	Through
Central Parkway Transitway Station	42	3	45	Through
Clarkson GO Station	43	11	54	Connect and Tur
Credit Valley Hospital	16	83	99	Through
Dixie Transitway Station	17	16	33	Connect and Tur
Dixie GO Station	-	26	26	Through
Dixie Outlet Mall	14	7	21	Connect and Tur
Dundas St. and Erindale Station Rd.	63	7	70	Connect and Tur
Erin Mills Transitway Station	32	3	35	Connect and Tur
Erin Mills Town Centre	30	29	59	Connect
Erindale GO Station	14	5	19	Connect and Tur
Etobicoke Creek Transitway Station	-	72	72	Through
Hurontario and 407 Park and Ride	N/A	N/A	N/A	Turnaround
Lisgar GO Station	26	5	31	Connect
Malton GO Station	6	67	73	Connect
Meadowvale GO Station	4	43	47	Connect
Meadowvale Town Centre	66	28	94	Connect and Tur
Orbitor Transitway Station	-	95	95	Through
Sheridan Centre	27	26	53	Through
South Common Centre	63	17	80	Connect and Tur
Spectrum Transitway Station	-	69	69	Through
Streetsville GO Station	23	4	27	Connect
Tahoe Transitway Station	1	61	62	Through
Tomken Transitway Station	17	13	30	Through
Trillium Health Centre	73	185	258	Connect and Tur
University of Toronto Mississauga	12	12	24	Through
Westwood Square	69	19	88	Connect and Tur
Winston Churchill Transitway Station	38	13	51	Connect and Tur

ication	Future Classification (if different)		
	Connect and Turnaround		
	Connect and Turnaround		
naround			
naround			
	Connect and Turnaround		
naround			
naround	Through		
naround			
naround			
	Discontinue		
naround			
	Downgrade to Stop		
naround			
naround			
naround			
naround			

4.5 Evaluation and Prioritization of Terminals

To systematically address the issues, needs and operational challenges, a terminal prioritization list was developed. This section details the evaluation process developed and applied to prioritize MiWay terminal improvements. This process was designed to be repeatable. The main consideration for the prioritization process is the operational challenges at each terminal, because they limit the operational functions of the terminals and planned service expansion. The five operational challenges detailed in **Section 4.2**, and faced by MiWay terminals are:

- 1. Bus access;
- 2. Bus bay capacity;
- 3. Pedestrian access;
- 4. Operator facility; and
- 5. Layover space.

4.5.1 Terminal Prioritization Methodology

The terminal prioritization process was based on the long list of operational challenges at MiWay terminals, detailed in **Appendix E** and shown in Exhibit 4-7. The priority list was developed by evaluating five (5) criteria at each terminal that when put together:

- Anticipate challenges at terminals that may occur with increased service;
- Reflect the scale of the problem based on the potential land requirements and numbers and types of routes served; and
- Capture interactions with other service providers.

Each terminal was scored for every criteria. Terminals and stations were prioritized from highest to lowest score; the highest scoring terminals have the most significant challenges and the greatest impacts on service. The five criteria used to score the terminals are described in Exhibit 4-18. Using this method, terminals and stations can score up to twenty (20) points. Terminals should be prioritized from highest to lowest score, with the highest score indicating the most improvements needed to address the identified operational challenges.



9		
tisting or anticipated hallenges	Maximum five (5) points	
for additional land isting or anticipated	Maximum three (3) points	
routes accessing l routes by other d regional providers, even groups	Maximum seven (7) points	
rminal serves any outes	One (1) point if serving MiExpress	
ther municipal or vice providers minal	Maximum four (4) points	

Exhibit 4-19 illustrates the application of the terminal prioritization to South Common terminal.

Exhibit 4-19: Example Terminal Prioritization Application (South Common)

Category	Points Awarded
Challenges	5/5
Land Requirements	3/3
Number of Routes	2/7
MiExpress Routes	1 / 1
Number of Other Service Providers	1 / 4
Total Score	12 / 20

Priority List Filters

Many of the highest-scoring terminals and stations are outside of MiWay's jurisdiction, and some are out of scope for the MIGP. In order to obtain a priority list where improvements are implementable, the full list of terminals was filtered in four stages as illustrated in Exhibit 4-20.

The remaining terminals are not the subject of any existing plans and projects identified during stakeholder workshops with City of Mississauga staff and detailed in **Section 4.3**. Exhibit 4-21 shows the top ten terminals from the final prioritized list. All in-scope terminals with no existing projects and plans are mapped in Exhibit 4-22. Only two of the top ten scoring terminals are currently owned by MiWay or the City of Mississauga, highlighting the need for partnership in the delivering of the MIGP

Exhibit 4-20: Four-Stage Terminal Screening



Exhibit 4-21: MiWay	Terminals a	nd Statior
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	,						
Terminal Name	Challenges	Land Required	Route Score	MiExpress Routes?	Other Service Providers	Score	City or MiWay Owned
Westwood Square	4	3	5	Y	2	15	N
Meadowvale Town Centre	4	3	5	Y	-	13	N
Clarkson GO Station	4	3	3	Y	1	12	N
South Common Centre	5	3	2	Y	1	12	N
Erin Mills Transitway Station	4	2	3	Y	1	11	Ν
Renforth Transitway Station	2	1	5	Y	2	11	N
Lisgar GO Station	4	3	1	N	2	10	N
Cawthra Transitway Station	5	3	-	Y	-	9	Y
Central Parkway Transitway Station	4	3	1	Y	-	9	Y
U of T Mississauga	3	3	1	Y	-	8	Ν

MiWay terminal and station ownership varies (terminals and stations can be owned by the City or MiWay, leased from private property owners such as malls, or owned by other transit service providers such as GO Transit). Solutions can be more challenging to implement on privately-owned land, and land ownership at each facility was taken into account when determining where best to initiate changes. A full list of the terminals ranked by their score is available in **Appendix K**.

Opportunities to address terminal infrastructure and amenity deficiencies were explored in the development of terminal feasibility plans. There may also be opportunities to improve passenger amenities through MiWay's ongoing maintenance efforts.

ns Prioritization List Top Ten Terminals and Stations
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Exhibit 4-22: Operational Challenges at In-scope Terminals and Stations without Existing Plans and Projects

4.6 Terminal Feasibility Plans

The MIGP identifies opportunities to improve terminal operations by recommending infrastructure improvements. To address the infrastructure, amenity and operational challenges at top-ranked locations identified in **Section 4.5**, feasibility plans for infrastructure improvements were prepared. The terminal feasibility plans are preliminary concepts to address the operational challenges identified in **Section 4** at a schematic design level.

This section presents feasibility plans for the four MiWay terminals, short-listed for further review from the terminal priority list developed in **Section 4.5** and the new terminal opportunities in **Section 4.2.2**. The short-list was selected from the filtered list with a preference for:

- Terminals that are owned by MiWay or the City of Mississauga;
- Coordinating with other capital projects to streamline the implementation of solutions; and
- Maximizing investment by identifying potential opportunities to alleviate bus bay capacity issues and layover space capacity issues at nearby terminals.

The four (4) locations where feasibility plans were developed are listed in Exhibit 4-23. In general, the improvements are within lands owned by the City of Mississauga. Property ownership provides greater certainty to implementation timelines. The feasibility plans and standard drawings for terminal bus bays are available in **Appendix N**.

Exhibit 4-23: Terminal	Short-list for	Feasibility Plans
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Terminal	Prioritization Score	Ownership	Terminal Classification
Meadowvale Town Centre Transitway Terminal	13 / 20	Privately owned	Connect and Turnaround
Cawthra Transitway Station	9 / 20	City of Mississauga	Through (Future Connect and Turnaround)
Central Parkway Transitway Station	9 / 20	City of Mississauga	Through (Future Connect and Turnaround)
Laird and Vega	N/A	City of Mississauga right-of-way	Turnaround

N/A: Terminal is identified as a new opportunity and was not included in the prioritization process.

The terminal design process involved terminal, as well as:

- A review of terminal usage, considering:
 - The number of routes currently serving the terminal, including all MiWay routes and routes by other service providers;
 - The number of future routes expected to serve the terminal; and
- A review of the terminal context, including:
 - Surrounding land uses (existing and planned);
 - Density within 400 m of the terminal (people and jobs per hectare);
 - Pedestrian and cycling access options to the terminal; and
 - Site constraints (e.g., existing right-of-way, grading, bridges).

Once each terminal was reviewed, opportunities for improvement were explored, referring to the guiding principles of the MIGP. Draft terminal feasibility plans were reviewed in a workshop held on February 25, 2020 with key City of Mississauga stakeholders who provided feedback on the design concepts as well as input on the process and its implication on their work flows. Input from key stakeholders included opportunities to coordinate the implementation of the terminal improvements with planned capital projects and ongoing maintenance work.

The terminal design process involved reviewing the existing issues and needs at each

4.7 MiWay Terminal Summary

A review of the terminals and stations serviced by MiWay identified the following issues and needs common to all types of terminals:

- Ineffective MiWay terminal identification, and inadequate stop identification at MiWay terminals;
- Inconsistent provision of passenger amenities: ٠
- Inconspicuous connections to and within MiWay terminals; and
- Lack of sufficient operator washrooms to support bus operators.

The issues and needs identified affect the attractiveness of MiWay to passengers and affect MiWay operations. To address these issues and needs, the following five opportunities were identified for MiWay terminals:

- Make it easier to identify MiWay terminals 1.
- 2. Provide more passenger amenities to improve the transit rider experience
- Improve access and connections within terminals 3.
- Improve wayfinding and connections between on-street stops and terminals 4.
- 5. Provide sufficient operator washrooms to support bus operators

These opportunities, along with the guiding principles of the MIGP, informed the terminal classification and design considerations.

To provide systematic and consistent guidelines for the design and infrastructure considerations at MiWay terminals, four terminal types were defined, with a focus on their operational functions (the main reason buses go to a terminal):



Connect and Turnaround Terminals which provide connections to other routes and services and function as route-ends and turnarounds

Connect Terminals which primarily provide connections to other MiExpress and MiLocal routes, but are not likely to be route ends

Turnaround Terminals which are primarily route-ends and turnaround locations

Through Terminals which primarily provide through service

The terminal classification system is a hierarchy of terminals, based on their operational functions, and provides a framework to consistently address the issues and needs at MiWay terminals. The four recurring issues and needs identified at MiWay terminals affect MiWay operations and limit flexibility in the scheduling process, particularly in terms of access to terminals for MiWay buses, and the lack of operator washrooms.

A majority of terminals within the City of Mississauga (nearly 80%) experience 3 or more operational challenges. The terminal operational issues and needs present an obstacle for current operations and for planned service expansion. The five operational challenges faced by MiWay terminals and stations are:

- 1. Bus access;
- 2. Bus bay capacity;
- 3. Pedestrian access:
- Operator facility; and 4.
- 5. Layover space.

These operational challenges were also reviewed in the context of planned and potential changes to MiExpress routes and terminals to inform the method for prioritizing improvements at terminals.

A repeatable process to review and address operational challenges was developed. The terminal prioritization process takes into consideration the number of operational challenges at terminals, the facility ownership, whether additional land would be required for improvements, the number and type of routes served, and the other service providers present. To identify a short-list of terminals to develop feasibility plans for, the priority list was filtered in four stages, screening out terminals:

- Outside city limits and out of scope for the study,
- With no opportunity to add route terminuses,
- With plans for improvement in the near-term (up to 5 years), and
- With plans for improvement in the mid-term (6 to 10 years).

Near-term plans for improvement at terminals were explored further to identify opportunities to address terminal challenges in existing plans. These opportunities also included facilities that were not existing terminals but could provide route turnarounds or alleviate operational challenges at nearby locations. These opportunities were reviewed in the context of anticipated MiExpress corridor changes, based on existing service plans, the Metrolinx RTP, and MiWay ridership trends. From the filtered terminal prioritization list and the terminal opportunities, four (4) locations were short-listed for the development of feasibility plans. The short-list was selected from the highestscoring terminals with a preference for MiWay or City of Mississauga-owned terminals. The selection also:

- Coordinates with other capital projects to streamline the implementation of solutions, and
- Maximizes investment by identifying potential opportunities to alleviate bus bay capacity issues and layover space capacity issues at nearby terminals.

The short-listed terminals for which feasibility plans were developed are:

- **Meadowvale Town Centre Terminal** (the only selected terminal not owned by the City)
- Cawthra Transitway Station
- Central Parkway Transitway Station
- Laird and Vega Terminal (not an existing terminal but presents an on-road turnaround opportunity)

The feasibility plans present a recommended design concept for improvements to address identified operational challenges, maximize the benefits of transit investments, facilitate route connections and create a more reliable transit network.

5 Implementation Strategy

Specific transit infrastructure improvements that comprise the first MiWay Infrastructure Growth Plan include both on-street and off-street terminal improvements for MiWay to pursue over the next five to 10 years. In this section, the recommended on-street and off-street terminal improvements are summarized in an action plan, including proposed timing and cost considerations. This is followed by a review of how the MIGPs initiatives may be coordinated with other MiWay and City initiatives, Peel Region plans, and important guidance regarding the regular reviews required to keep the MIGP up-todate.

Estimated costs for delivering the recommended infrastructure improvements for priority locations (**Appendix M**) and terminals (**Appendix N**) are provided in this section. The recommended implementation strategy for this first MIGP considers the following steps to implementation:

- Funding;
- Design and approvals;
- Monitoring program; and
- Coordination and timing.

This section also includes a monitoring program for the MIGP, which outlines activities required to measure the effect of implementing the MIGP and takes into consideration coordinating improvements with other transit agencies.

5.1 Implementing Infrastructure at Priority Locations

The MIGP identifies opportunities to improve corridor-segment operations with roadway infrastructure and transit priority measures. There are opportunities to improve passenger access, improve the customer experience, increase consistency of MiExpress stops and improve transit reliability. The MIGP includes 15 locations (i.e., 30 MiExpress stops) assessed for the feasibility of improvements, as described in **Section 3.6**. The feasibility plans are available in **Appendix M**. The feasibility plans are preliminary concepts to address identified issues and needs.

5.1.1 Cost Estimates and Funding

The cost estimates for the proposed stop and corridor-segment improvements are summarized in Exhibit 5-1. The cost estimates assume all works can be completed within public right-of-way. Allowances were included for utility relocations and other costs that should be refined as the design is developed from the feasibility plans. Costs are based on unit prices from the 2019 construction season, and exclude applicable taxes.

Exhibit 5-1: Cost Estimates for Recommended On-street Improvements

Intersection Corridor-segments (Direction of Travel)	Stop Classification	Cost Estimate (\$
Dixie Rd at Derry Rd (N/S)	Major Transfer	2.8 M
Dixie Rd at Derry Rd (E/W)	Major Transfer	3.0 M
Derry Rd at Kennedy Rd (E/W)	Enhanced	2.8 M
Derry Rd at Tomken Rd (E/W)	Enhanced	2.9 M
Derry Rd at Hurontario Rd (E/W)	Major Transfer	2.2 M
Derry Rd at Mavis Rd (E/W)	Enhanced	3.8 M
Derry Rd at Bramalea Rd (E/W)	Enhanced	2.7 M
Derry Rd at Airport Rd (E/W)	Enhanced	2.5 M
Goreway Dr at Derry Rd (N/S)	Enhanced	2.2 M
Dixie Rd at Courtneypark Dr (N/S)	Enhanced	2.8 M
Dixie Rd at Britannia Rd (N/S)	Enhanced	2.2 M
Dixie Rd at Matheson Dr (N/S)	Enhanced	3.4 M
Erin Mills Pkwy at Folkway Dr (N/S)	Enhanced	2.8 M
Southdown Rd at Truscott Dr (N/S)	Enhanced	2.5 M
Southdown Rd at Bromsgrove Dr (N/S)	Enhanced	1.2 M
	Total Estimated Capital Cost	45 M

The stop standard drawings, feasibility plans, and cost estimates provide a starting point for the inclusion of stop and corridor-segment improvements in planned capital and road rehabilitation and construction projects.

MiWay has applied for funding through the Investing in Canada Infrastructure Program (ICIP), which will provide an opportunity to pursue the stop and corridor improvements over the next five years. The ICIP funding costs are shared by federal, provincial and municipal partners. Projects have been endorsed by Mississauga's Council to be included as part of the ICIP application submissions. As part of MiWay's ICIP application, 25 intersections were included for the application of transit priority measures, and 88 stops were included for shelter improvements between 2020 and 2027. The locations selected for ICIP funding are identified on the MIGP shortlist and located corridors of regional significance, based on the Metrolinx 2041 RTP.

ICIP is not a guaranteed recurring funding source, making it imperative that the stop and corridor-segment improvement program is delivered in coordination with City of Mississauga and Region of Peel road construction projects to leverage opportunities for quick wins.

5.1.2 Design and Approvals

The intersection improvements proposed are pre-approved [Schedule A+] under the Municipal Class EA process. This means the proponent may proceed and advise the public prior to project implementation, in a manner determined by the proponent. Examples of the project activity descriptions that apply to the proposed improvements are provided here. This list is not meant to be exhaustive, and should be reviewed for each project to confirm if the improvements may belong to a different description, following the Municipal Class Environmental Assessment guidance¹²:

Municipal Road Projects:

- 12. a) Construction of localized operational improvements at specific locations [Schedule A+, no limit]
- 22) Redesignation of a Linear Paved Facility through signage or pavement . marking modifications (i.e. not requiring physical construction beyond localized operational improvements described in activity No. 12 above) [Schedule A+, no limit]

Municipal Transit Projects:

- 3) New, expanded or extended transit stops (including roadside shelters, on road bays, platforms) [Schedule A+]
- 4) Construction of localized operational improvements at specific locations • (i.e. stopping lanes, access lanes, turning lanes, queue jump lanes, and roadway access ramps, etc.) [Schedule A+]
- 17) Redesignation of an existing General Purpose Lane (GPL) or High Occupancy Vehicle (HOV) lane to a transit lane through signage and pavement marking modifications (i.e. not requiring physical construction) [Schedule A+]

5.1.3 Coordination and Timing

To maximize the benefits of investments in transit infrastructure, implementation of the MIGP should be coordinated with other MiWay and City initiatives. Coordinating with City of Mississauga and Region of Peel road construction projects can also provide opportunities for quick wins.

To implement the transit infrastructure improvements at priority locations listed in Exhibit 5-1, MiWay will need to coordinate with the Region of Peel, as all 15 locations are on Region-owned roads. A coordinated approach will limit the disruption to transit service and traffic operations due to construction at these locations. Coordinating construction at adjacent intersections is also recommended to limit disruption to transit service during construction. This coordination can also streamline the bid and tender process and scheduled works with other activities.

There may also be opportunities to improve passenger amenities through MiWay's ongoing maintenance efforts.

In addition to coordinating with the Region of Peel, work at intersections will require coordination with internal City of Mississauga Transportation and Works staff and other departments. Internal coordination of projects should consider traffic management during construction including temporary transit stop locations and pedestrian access.

Opportunities for coordination include road rehabilitation projects, cycling network projects, and corridor enhancement projects. Consideration should be made for coordinating with projects identified in the Region of Peel's 2019 Ten Year Capital Program for the following intersections:

- In 2021:
- In 2022:
- In 2023:
 - Dixie Rd, Bramalea Rd, and Airport Rd);
 - _
 - Derry Rd and Mavis Rd intersection improvements.

Dixie Rd and Matheson Dr intersection improvements;

Derry Rd and Kennedy Rd intersection improvements;

Derry Rd and Tomken Rd intersection improvements;

Derry Rd and Bramalea Rd intersection improvements;

Derry Rd and Hurontario Rd intersection improvements;

Derry Rd (from Dixie Rd to Airport Rd) watermain replacement (affecting three of the intersections listed in in Exhibit 5-1 Derry Rd at

Dixie Rd and Matheson Dr intersection improvements; and

¹² Municipal Class Environmental Assessment guide (Municipal Engineers Association, October 2000, as amended through 2015). Project descriptions from Appendix 1.

5.2 Implementing Infrastructure at Terminals

Terminal improvements will need to be funded through the City of Mississauga's capital budget. Similar to stops, leveraging opportunities for coordination with planned capital improvements is recommended. Many of the terminals serviced by MiWay are not owned by the City of Mississauga, highlighting the need for partnership in delivering the MIGP. Coordinating improvements with other service providers and private land owners is also generally recommended.

5.2.1 Cost Estimates and Funding

The cost estimates for the proposed terminal improvements are summarized in Exhibit 5-2. The cost estimates assume all works can be completed within publicly owned lands. Allowances were included for utility relocations and other costs that should be refined as the design is developed from these feasibility plans. Costs are based on unit prices from the 2019 construction season, and exclude applicable taxes.

Terminal	Ownership	Cost Estimate (\$)
Meadowvale Town Centre Transitway Terminal	Privately owned	2.7M
Cawthra Transitway Station	City of Mississauga	1.6M
Central Parkway Transitway Station	City of Mississauga	2.1M
Laird and Vega	City of Mississauga right-of- way	1.5M
	Total Cost	39.2M

Exhibit 5-2: Cost Estimates for Recommended Terminal Improvements

The terminal standard drawings, feasibility plans, and cost estimates provide a starting point for the consideration of terminal improvements in planned capital works and City of Mississauga construction projects.

There are currently no funding opportunities for the terminal improvements identified through federal or provincial programs. To implement the improvements, MiWay staff will need to make a funding request through the City's capital budget process.

5.2.2 Design and Approvals

The proposed improvements to existing terminals are pre-approved [Schedule A/A+] under the Municipal Class EA process. This means the proponent may proceed and, if Schedule A+, can advise the public prior to project implementation in a manner determined by the proponent. Examples of the project activity descriptions that apply to the proposed terminal improvements are provided here. This list is not meant to be exhaustive, and should be reviewed for each project to confirm if the improvements may belong to a different description, following the Municipal Class Environmental Assessment guidance^[1]:

Municipal Transit Projects:

- land acquisition is required. [Schedule A]
- sensitive land-uses. [Schedule A]
- sensitive land-uses. [Schedule A+]

5.2.3 Coordination and Timing

To maximize the benefits of investments in transit infrastructure, implementation of the MIGP should be coordinated with other MiWay and City initiatives. Coordinating terminal improvements with other City of Mississauga and Region of Peel plans and projects can also leverage opportunities for cost-efficiencies.

A coordinated approach will limit the disruption to transit service and traffic operations due to construction at these locations. This coordination can also streamline the bid and tender process and schedule works with other activities. Opportunities to improve onstreet stops connecting to terminals in combination with terminal improvements should be explored where connecting stops are not being relocated to within the terminal footprint.

19) Reconstruction of stations, maintenance/storage facilities, passenger pickup/drop off areas (e.g. Kiss and Ride), park and ride lots, etc. Where no

20) Expansions, improvements and modifications to existing stations, maintenance and storage facilities, passenger pick-up/drop off areas (e.g. Kiss and Ride), park and ride lots, etc. not in or adjacent to residential landuse or an environmentally-sensitive area including natural heritage features, cultural heritage and archaeological resources, recreational or other

21) Expansions, improvements and modifications to existing stations, maintenance and storage facilities, passenger pick-up/drop off areas (e.g. Kiss and Ride), park and ride lots, etc. in or adjacent to residential land-use or an environmentally-sensitive area including natural heritage features, cultural heritage and archaeological resources, recreational or other

^[1] Municipal Class Environmental Assessment guide (Municipal Engineers Association, October 2000, as amended through 2015). Project descriptions from Appendix 1.

Improvements at terminals should be coordinated with internal City of Mississauga Transportation and Works staff and other departments. Internal coordination of projects should consider traffic management during construction including temporary transit stop locations and pedestrian access. Opportunities for coordination include road rehabilitation projects, cycling network projects, and corridor enhancement projects.

Coordination with other transit service providers servicing terminals is recommended for subsequent iterations of the MIGP. The four shortlisted terminals being considered for improvements in this first MIGP are not planned for service changes by other municipal service providers. This is based on consultation with external stakeholders, documented in Appendix O.

The implementation for each terminal will vary, due to site-specific challenges and planned projects. For the four terminals recommended for improvements from this MIGP, site-specific coordination and timing recommendations are described next.

- Meadowvale Town Centre Terminal: As the only terminal not owned by the city, any changes will require engagement with the property owners. This will require input from the City of Mississauga's Realty Services and may require changes to the lease agreement in place. Meadowvale Town Centre is also part of the City of Mississauga's Reimagining the Mall study (2019), which identifies opportunities for redevelopment at mall sites. MiWay staff will continue to consult with internal City staff and the property owners to implement the improvements.
- Cawthra Transitway Station: This terminal is owned by the City of Mississauga, and the improvements proposed can be accommodated within the existing footprint. MiWay staff will continue to consult with internal City staff to promote better pedestrian access to the terminal from the residential developments south of the terminal.
- Central Parkway Transitway Station: This terminal is also owned by the City of Mississauga. Improvements to this terminal will require expanding the terminal footprint to the east. This work overlaps with City of Mississauga plans to expand a stormwater swale in that location as well as an off-road multi-use trail. Coordination with this work will be required. In addition, Central Parkway presents a unique opportunity to alleviate some constraints at CCTT. As reconstruction is underway for CCTT and slated for completion in 2021, improvements to Central Parkway should be prioritized.
- Laird and Vega Terminal: This on-road turnaround can be accommodated in the existing right-of-way, owned by the City of Mississauga. The inboulevard improvements, including a larger shelter and the sidewalk extension west to Vega Blvd. will require internal coordination with City of Mississauga staff. The sidewalk extension is currently planned for the 2021 sidewalk program. Due to the limited disruption posed by the improvements recommended for this terminal and the planned sidewalk improvements,

2022, pending funding.

Monitoring Program 5.3

selected stops and terminals, the implementation of the MIGP will result in:

- More accessible and pedestrian friendly transit infrastructure;
- A consistent look and feel for terminals, stops and amenities, and a stronger visual identity for MiWay services;
- More transit competitiveness because of improved operations; and
- Stops and terminals that are sensitive to existing and planned surrounding land uses.

benefits of investing in transit infrastructure, five monitoring activities are in Exhibit 5-3.

5.3.1 Annual

City's capital budget process:

- 1. Update stop infrastructure and amenity deficiency list with regular maintenance activities, field observations, and implementation of capital improvements (e.g. new sidewalks or multi-use trails, new shelters). Consider opportunities to improve passenger amenities along with MiWay's ongoing maintenance efforts, such as adding or improving sidewalk connections.
- 2. Collect corridor-segment operations data and compare findings to the existing conditions and measure the impact implementation has on corridor operational challenges. Once completed, the corridor prioritization list should be updated.
 - As new ridership data becomes available and corridor conditions change it will be necessary to collect data and recalculate total passenger-minutes of delay to keep the prioritization list up to date.

- Laird and Vega is an opportunity for a quick win, and can be completed in
- The MIGP complements MiWay's operations, and the implementation of the feasibility plans will address the challenges identified through the study. The monitoring program outlines activities required to measure the effect of implementing the MIGP. The guiding principles of the study are applied in the development of the feasibility plans, and for the

- To determine how implementation achieves these guiding principles, and quantify the recommended, to be reviewed at regular intervals. These activities focus on measuring the costs and benefits of transit infrastructure improvements on operations and passenger experience. The five recommendations are described next and summarized
- Three monitoring activities are recommended to be reviewed every year to inform the

- Opportunities for corridor improvements identified in **Section 3.5** can be further reviewed through the ongoing MiWay Five service plan. The ongoing service plan process can also identify other corridors that are viable for increased service levels. The implementation of the next MiWay Five service plan should be considered when maintaining the prioritization list for MiExpress stops.
- 3. Update terminal operational challenges with the implementation of any service changes resulting from the MiWay Five Service plan, the Metrolinx 2041 RTP, or the completion of the ongoing terminal changes identified in Section 4.3 or Appendix O. Once complete, the terminal prioritization lists should be updated.
 - As the timing of new terminals and stations can vary over time, route end reviews should be repeated as terminal changes are implemented to identify new opportunities to resolve challenges while maintaining connectivity.
 - For terminals outside MiWay's jurisdiction, MiWay should continue to be _ involved in the planning process to identify MiWay's needs early in the planning stages and as designs develop. As described in Section 5.4.

5.3.2 Every Five Years

One monitoring activity is recommended to be reviewed every five years, in tandem with the service planning process.

- 4. Update the MIGP in tandem with MiWay's five-year service planning process to determine where service expansion may be constrained by infrastructure.
 - The service planning process also provides up-to-date data on _ ridership, a necessary input for measuring corridor operations.
 - The service changes recommended in the next MiWay Five may result _ in new or changed MiExpress corridors, and new or changed issues and needs at MiWay terminals.
 - Consideration should be made for reviewing high-performance MiLocal routes, as identified in the service planning process, in future iterations of the MIGP. The MiLocal network currently includes 72 routes, consisting of four service types: core routes, local routes, community routes, and feeder/shuttle routes. The core routes, which operate on major arterial roads and provide higher frequencies (between 10 and 20 minutes) during the peak period, are potential candidates for infrastructure investment following investment in the MiExpress network.

5.3.3 On-going

One monitoring activity is recommended to be reviewed after the implementation of each of the improvement projects identified in this first MIGP.

terminal footprint improvements.

Conduct a before-and-after comparison, based on the new data collected under monitoring activities 1, 2 and 3 (described above). To the extent possible, quantifying the cost and benefits of transit infrastructure investments will assist in future decision-making.

5. Monitor and track the cost of construction of infrastructure implementation. By comparing actual costs to the cost estimates provided here, MiWay will be in a better position to budget and request for funding for future on-street and within the

5.3.4 Monitoring Program Summary

Collecting and measuring baseline data, combined with a regular monitoring and maintenance program, is an important step in tracking the benefits of investing in transit infrastructure. The recommended monitoring activities will provide MiWay with a framework for measuring the effect infrastructure improvements have on MiExpress corridor operations and MiWay terminal operations. The recommended monitoring program is summarized in Exhibit 5-3.

Monitoring Activity	Stakeholders Involved (if External to MiWay)	Data Required
Annually	•	
Update Stop Infrastructure and Amenity Deficiency List with regular maintenance activities or capital improvements	City of Mississauga Active Transportation	Planned capital improvements for MiExpress corridors (Including in- boulevard improvements)
Collect corridor-segment operations data and update list based on total passenger minutes of delay	City of Mississauga Traffic Signal Staff	Ridership data; Actual travel time between stops
Update terminal operational issues with the implementation of any service changes	Other transit agencies (Metrolinx, TTC, Brampton Transit, Oakville Transit)	MiWay 5 service changes; Service updates by other transit agencies
Every Five Years	•	
Update the MIGP, in tandem with MiWay's service plans		Ridership data; Actual travel time between stops; Stop and terminal infrastructure and amenity inventories
Ongoing Until Completion		
Monitor and track the costs of implementing the MIGP		Construction costs and schedules

Exhibit 5-3: Summary of Recommended Monitoring Activities

Coordinating with Other Transit Agencies 5.4

MiExpress stops and terminals serviced by MiWay outside Mississauga will require coordination with other transit agencies for improvement. Coordinating implementation with Metrolinx and other municipal transit service providers will further maximize benefits for MiWay service. MiWay should continue to monitor changes at stops and terminals they service in other jurisdictions to identify opportunities to address operational challenges.

In the development of the MIGP, consultation with other transit service providers (identified as external stakeholders) occurred to identify planned service changes and opportunities for coordination on infrastructure improvements. Consultation summaries are included in Appendix O, and specific coordination opportunities that overlap with the MIGP priorities are discussed in this section.

The Metrolinx 2041 RTP identifies a long-term Frequent Rapid Transit Network which includes Derry Road, Erin Mills Parkway and Dixie Road as priority bus corridors (described in Appendix A). The implementation of stop and corridor-segment improvements is an opportunity integrate MiExpress improvements with opportunities at the regional level.

Anticipated changes have been discussed in detail Sections 3.5 and 4.3, and screened in the terminal prioritization process (Section 4.5). Additional consideration will also be needed for changes to stops and terminal outside MiWay's jurisdiction identified during external stakeholder consultation. Notable changes identified include:

- Toronto, to be coordinated with the TTC;
- the Finch West LRT, to be coordinated with the TTC;
- Station, to be coordinated with Metrolinx and TTC.

MiWay should continue to monitor these changes for opportunities to coordinate improvements with the MiWay service planning process, planned capital works and other City processes.

The application of red paint to indicate bus-only lanes within the City of

Potential changes to the Humber College terminal due to the development of

Plans to refresh bus stop guidelines and policies in Brampton; and

Opportunities to improve connections between services at Long Branch GO

The Next MIGP 6

This first MiWay Infrastructure Growth Plan (MIGP) provides a traceable, data-driven, and repeatable process to invest in transit infrastructure. These investments will accommodate the transit service improvements approved in the MiWay Five (2015) service plan. The MIGP also identifies where investment in on-street and off-street locations will most benefit transit operations and the passenger experience. The MIGP is designed to maximize the benefit of transit service investments, facilitate route connections and create a more reliable transit network. The MIGP recommends an investment strategy for transit infrastructure over the next five to 10 years that supports a transit-oriented city and minimizes throw-away costs.

Collecting and measuring baseline data, combined with a regular monitoring and maintenance program, is an important step in tracking the benefits of investing in transit infrastructure. The recommended monitoring activities will provide MiWay with a framework for measuring the effect infrastructure improvements have on MiExpress corridor operations and MiWay terminal operations.

Updating the MIGP in tandem with MiWay's five-year service-planning process is recommended. MiWay is currently in the process of developing a service plan for the next five years (2021 to 2025). The next MIGP should be developed with the output of MiWay's five-year service planning process, which will determine where service expansion may be constrained by infrastructure.

The next MIGP can build on the three main objectives of this first MIGP:

- Develops a stop and terminal classification system with supporting standard designs to support a consistent "look and feel" for MiWay stops and terminals:
- Identifies and prioritizes transit priority applications at MiExpress stops where such treatments will have the greatest benefit; and
- Identifies and prioritizes terminal needs in response to changing local, express, and rapid transit networks.

The next MIGP may expand on the four (4) types of stops and four (4) types of terminals developed to further enhance a consistent look and feel for MiWay stops and terminals. Transit design considerations are evolving, and the next MIGP may include additional design considerations for MiWay's transit infrastructure.

The next MIGP should also consider opportunities to address the issues and needs of high-performance MiLocal routes, as identified in the service planning process. Opportunities to address issues and needs of MiLocal routes can build on those identified for this MIGP, including improving stop identification, providing consistent amenities, improving stop access and placement, and improving on-road infrastructure. This framework for investment in transit infrastructure for the MiExpress network and MiWay terminals identified in this MIGP is a starting point for the next MIGP. In addition to reviewing and confirming the elements listed above, the next MIGP will provide new opportunities, to:

- identified in this MIGP:
- network:
- with terminal improvements; and
- changing local needs.

The next iteration of the MIGP should consider the recommendations of the MiWay Five Service Plan to maximize the benefits of transit investments, facilitate route connections, and create a more reliable transit network.

Review the impact implementing the MIGP has on the issues and needs

Review maintenance procedures and frequencies for MiExpress stops;

Apply the framework for investment in transit infrastructure to the MiLocal

Review opportunities to improve on-street stops at terminals in combination

Update the priority lists based on the MiWay Five service updates and









SEPTEMBER 2020

Appendix A Background Review Memorandum





IBI GROUP 7th Floor – 55 St. Clair Avenue West Toronto ON M4V 2Y7 Canada tel 416 596 1930 fax 416 596 0644 ibigroup.com

Memorandum

Subject	Background Review - Infrastructure Growth Plan		
cc	Bruce Mori		
	Josephine Macharia		
From	Margaret Parkhill, Dave Forsey,	Project No	117569
To/Attention	Alice Ho, City of Mississauga	Date	November 20, 2018

1 Introduction

MiWay's Infrastructure Growth Plan (MIGP) will develop a strategy to help effectively allocate the City of Mississauga's investments in transit infrastructure. The study will identify the requirements for transit priority measures, the operational needs for new and improved terminals, and recommend an investment strategy.

In order to allocate transit resources effectively, it is necessary to understand the policies and plans that guide growth and transportation in the City of Mississauga. This memorandum provides a review of those policies, plans and projects, as well as the operating context of MiWay to identify the challenges and opportunities which will frame the key directions of the study.

The memorandum is divided into the following sections:

- **Section 2** summarizes the existing policies and plans in the City of Mississauga that identify directions for transit infrastructure investment;
- **Section 3** reviews the operating context and the impact of population and employment growth and capital investment on the system; and,
- **Section 4** brings it all together and identifies key directions for the MIGP based on the challenges and opportunities of the Mississauga context.

2 Policy Framework

This section summarizes the existing policies and plans that guide growth in Mississauga and identify directions for transit infrastructure investment.

2.1 Overview of Relevant Documents

The Mississauga **Strategic Plan** (2009) is the long-term vision for the city, which is implemented through various policies, plans and projects. The Strategic Plan provides a framework to achieve the long-term vision that identifies five "Pillars for Change" illustrated in Exhibit 2-1.

Developing a transit-oriented city is one of the strategic pillars for change, which can only be achieved by recognizing the relationship between land use and transportation. Transit Oriented Development (TOD) can be challenging to implement in any urban context, and this applies to Mississauga where development patterns have largely been auto-oriented.





Source: Mississauga Strategic Plan

As the city reaches its outward limits, generally the Strategic Plan and other policies (identified in Exhibit 2-2) will direct growth to areas supported by existing and planned infrastructure. The development of the MIGP will be informed by these policies, which dictate the urban structure and how it will change, providing the foundation for infrastructure investments. The overall policy and planning framework reviewed as part of this summary is illustrated in Exhibit 2-2.

The relationship of the MIGP within the existing policy framework is proposed in Exhibit 2-2.

Exhibit 2-2: Policy and Planning Framework for Infrastructure Growth



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Land use policies are directed by the Mississauga's **Official Plan** (2015) (MOP), and transportation policies and decisions are directed by the **Transportation Master Plan** (under development) (Mississauga Moves). Linked to these two city-wide policies are:

- **Local Area Plans** for land use, providing a more extensive planning framework in "character areas" as identified by the MOP; and,
- Various plans and strategies that direct investment for the supply of transportation infrastructure for different modes, and outline strategies to manage transportation demand in the city.

The five plans that set the stage for the MIGP: the MOP, Mississauga Moves, MiWay Five, the Metrolinx Regional Transportation Plan (2018), and the Cycling Master Plan (2018) are summarized next.

- The **MOP** has various policies that encourage transit-supportive development, and identifies transportation investment as playing a role in implementing the plan. These include policies supporting the implementation of transit priority measures, ensuring adequate infrastructure for development, and giving preference to urban forms that encourage transit and active transportation.
- **Mississauga Moves**, is currently in its second phase of development. When completed, the Transportation Master Plan will provide a city-wide vision and implementation strategy for the transportation network. Mississauga Moves will also link to existing plans, including MiWay Five (described below), the Cycling Master Plan (which identifies the city's long term cycling network), and the Transportation Demand (TDM) Strategy which identifies physical and policy measures to manage transportation demand.
- MiWay Five is a service plan from 2016-2020 that aims to improve the transit network, service quality, reliability, and delivery by identifying service standards and network changes to set the stage for doubling the city's transit mode from 11% to 22% split by 2049. The service plan also identifies opportunities to improve transit infrastructure to support the planned increase in service. MiWay Five includes an extensive redesign of the system towards a grid network, which concentrates services where they can be most productive, defines corridors that may require infrastructure improvements. The proposed corridors for improvement are illustrated in Exhibit 2-3. The MIGP will focus on the corridors recommended for service enhancements in MiWay Five to determine operational deficiencies that can be addressed by the study.

Exhibit 2-3: Proposed 2020 High Frequency Corridors



Source: MiWay Five

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- Metrolinx Regional Transportation Plan (RTP) is the Greater Toronto and Hamilton Area's (GTHA) multi-modal long-range transportation plan. The plan emphasizes an integrated transportation system focused on meeting the needs of its users, and on optimizing the region's rapid transit network. Policies and plans at the regional level have local impacts which will be considered in the MIGP. In Mississauga, the RTP identifies several rapid transit connections of regional significance, including Hurontario Light Rail Transit (LRT) and Dundas Connects. The RTP also identifies "Priority Bus" corridors that improve transit service reliability by implementing priority measures and station and stop improvements. Illustrated in Exhibit 2-4, the Priority Bus corridors identified in Mississauga include:
 - Derry Road;
 - Airport Road;
 - Erin Mills Parkway/Mississauga Road;
 - Dixie Road;
 - Lakeshore Road;
 - Eglinton Avenue West; and,
 - Britannia Road/Matheson Boulevard East.

The priority measures proposed include options such as queue jumps, wider stop spacing and all-door boarding. The Priority Bus corridors are a more flexible and less capital-intensive measure than Bus Rapid Transit (BRT) and LRT and can provide transit improvements as an interim measure to implementing more capital-intensive options, such as BRT, LRT and subways.

Exhibit 2-4: Metrolinx RTP Priority Bus Corridors



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• The Cycling Master Plan (2018) (CMP) identifies connecting to transit as a priority action to reduce the auto mode share in Mississauga (currently at 79%). Improved cycling connections are an opportunity to increase the catchment area of transit, particularly for higher order transit services. In addition, secure bicycle parking at stations and stops is an attractive feature to attract cyclists to the transit system. These considerations will influence the development of standard design drawings and guidelines for transit terminals and on-street bus infrastructure as the MIGP progresses. In addition, as several of the proposed cycling facilities are along transit corridors, there is an opportunity to coordinate implementation.

These plans are the foundation of project planning, including major station area plans, municipal infrastructure projects, land use and development, and corridor improvement projects. As the City undertakes various transformative projects that will impact the effectiveness of MiWay operations, the Infrastructure Growth Plan will provide guidance for setting priorities for investment, cognizant of the need to coordinate and align improvements.

2.2 Consolidated Directions for Transit Improvements

The MIGP needs to align with the city's policy framework, programs and planned development. Highlighted below are consolidated policy directions from the background review that will be used to identify key directions for the development of the MIGP.

2.2.1 Targeted Growth Areas

Mississauga has reached the limits of its outward growth, and there are few opportunities to widen or build new roads. Without transit infrastructure improvements, the expected increase in density will constrain the capacity of the existing road network.

The Strategic Plan and the MOP require that growth be directed to locations where it can be supported by resources and infrastructure in a sustainable manner. As such, a network of corridors appropriate for growth and compact, mixed-use, and transit-friendly development are identified (Exhibit 2-5). These include most major arterials, such as Winston Churchill Boulevard, Eglinton Avenue and Lakeshore Road. Among those corridors, Dundas Street and Hurontario Street are further distinguished as intensification corridors, meaning they have significant development potential.

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Exhibit 2-5: MOP Corridors That Support High Levels of Transit Use and Mobility Options

Source: Mississauga Official Plan

Although growth is encouraged in corridors, the MOP limits the addition of through lanes on existing roads unless subject to special study (see inset). There is an exception for roads widened to accommodate transit, cycling, pedestrian facilities, or goods movement in Employment Areas.

One of the key strategies to improve service identified in MiWay Five is the transition towards a grid route network, comprised of high frequency services operating along major transit corridors and MOP 8.3.1.5: Roads may be widened to accommodate transit, cycling and pedestrian facilities and to provide additional through lanes in Employment Areas if deemed essential to goods movement. Elsewhere, additional through lanes on existing roads will be considered on an exceptional basis only and will be subject to special study.

fed by local services. The service plan recommends investing in higher service levels along these transit corridors, which are consistent with those identified in the MOP. At full implementation of MiWay Five, the highest frequency corridors (Hurontario, Dundas and the Transitway) would have 5-minute or better service, while the remaining corridors would have 6 to 15 minute service. With the exception of those operating on the Transitway, many of the routes on the transit corridors identified in the plan currently operate in mixed traffic. Without accompanying infrastructure improvements, as service levels increase, the benefits of the service improvements will be limited by the capacity of those corridors.

The RTP's Priority Bus corridors identified in Mississauga align with MiWay Five's major transit corridors. The RTP recommends priority features that can be explored in the MIGP's Infrastructure Direction, including signal priority, stop and station enhancements to improve service and customer experience, and protection from mixed traffic.

The CMP identifies a primary and secondary network of cycling routes. Many of the primary cycling routes coincide with major transit corridors. Increased cycling connectivity is an opportunity for transit, particularly at the first and last mile. The process of selecting appropriate cycling facilities is an opportunity for internal coordination to ensure adequate integration of both modes.

The development of the MIGP is an opportunity to increase the capacity of the constrained road network, even as the city continues to grow. By improving transit infrastructure, Mississauga can prioritize the efficient movement of people on its roadways.

2.2.2 A Network of Connected Nodes

Travel in Mississauga is currently dominated by the car, with a mode share of 79% (including auto passengers) according to the 2016 Transportation Tomorrow Survey. To promote other modes, the MOP and MiWay Five both identify the importance of developing a network of connected nodes (including transit hubs and higher-order stations). Both plans also recognize the value in promoting transit as a priority for moving people.

Nodes are targets for intensification and are subject to local area plans and development guidelines. The MOP envisions nodes developing into pedestrian- and transit-friendly activity places and community gathering spaces. It identifies a hierarchy between nodes: major nodes and community nodes. The RTP identifies the potential to develop a mix of land uses and to expand transit services at regional nodes. Municipalities can work with Metrolinx to identify which of their community nodes are of regional significance. Additionally, the CMP's primary routes are intended to provide direct connections between key destinations, including major nodes, community nodes, and major transit station areas. The nodes are illustrated in Exhibit 2-6.

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Source: Mississauga Official Plan

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The City Centre is identified in Downtown 21 Master Plan as the location with the most potential for high-density TOD in the city. The area is one of two major nodes in the MOP, and the RTP designates it as an "Anchor Hub." As the intersection of the Hurontario LRT and the Transitway, as well as a link to the regional transit system, the entire area will be within a 5-minute walk of higher-order transit once all the planned projects and MiWay service improvements are completed. The MOP also identifies community nodes including: Clarkson Village, Lakeview, and Port Credit. Each of these areas is associated with a local area plan, has significant development potential and is a hubs connecting to the regional transit system.

Transit hubs are connection points in the transit system, typically facilitating transfers to regional or inter-municipal transit systems. MiWay Five makes a distinction between hubs: major terminals and minor terminals/transfer facilities. Major terminals are typically located at major destinations or provide connections to higher order or regional transit. Minor terminals often serve as transfer points. MiWay Five identifies the need for direct connections between major hubs, and more express services to key destinations. It also recommends several specific improvements to terminals and hubs, including increased capacity and enhanced customer amenities. Some terminals and hubs identified in MiWay Five as needing improvements are the City Centre Terminal, the University of Toronto Mississauga Campus, and South Common Mall.

As the system moves toward a grid, new terminals will be required to facilitate transfer activities. Existing terminals may change with the introduction of new routes. This will have an impact on operational costs and the system's efficiency.

The MIGP will explore the function of the existing hubs and the role they play in improving mobility for users. It provides an opportunity to evaluate terminal locations, identify design guidelines and develop a strategy to prioritize investment.

2.2.3 Multi-Modal Integration

The grid network proposed in MiWay Five targets direct, high frequency services operating on corridors and connecting to key destinations. This repositioning of services trades off coverage for frequency and directness. It allows the system to concentrate resources where they are most productive and allows for more dispersed travel pattern on the system compared to a radial design. The grid network may also result in higher access distances for some users. To support the new transit network, there will be an increased need for compact, pedestrian-oriented development. The City already recognizes the need for improved multi-modal connections to transit, including walking and cycling. The RTP also identifies multi-modal integration as an opportunity to optimize the transit system, particularly at the first and last mile. This includes consideration for universal, barrier-free access.

Sidewalks are a key element and are required to meet the provincial guidelines for a fully accessible transit system. As part of the MOP policy to build a multi-modal city, the City has a sidewalk construction program aiming for a fully accessible sidewalk network to all transit stops. MiWay Five also identifies specific improvements for stops, including:

- Better accommodation for transit user access, egress and transfer activities;
- Improved safety features for waiting transit users (e.g. better lighting, eliminating unprotected crossings); and,
- The addition of transit shelter and amenities to make the transit system more attractive.

Improved cycling connections to transit are an opportunity to increase the catchment area of transit – particularly for higher-order transit services. Secure bicycle parking could be included at stations and stops to attract cyclists to the system. Mississauga's CMP identifies connecting to transit as a priority action for the plan. Several of the proposed cycling facilities are along transit corridors identified for frequency improvements, which facilitates multi-modal integration and creates an opportunity to coordinate the implementation of transit and cycling infrastructure.

As the MIGP progresses, accommodating barrier-free multi-modal passenger access to the transit system will influence the development of terminal and stop design guidelines, as well as the selection of terminal locations.

3 Operating Context

The operating context in Mississauga has a significant impact on the efficacy of the system. Prior to 2015, the "legacy" MiWay network was designed to serve the low density suburban built form, but is evolving to accommodate the population and employment growth. MiWay Five provides the template to shift the existing network to better serve changing travel needs. To implement MiWay Five however, it is necessary to understand the existing operations, trends in population and employment, and planned infrastructure improvements, particularly those affecting transit. All of these factors will have an impact on the MIGP, as they will determine how the system will accommodate growth and change, and where that investment can have the highest impact.

3.1 Existing MiWay Network and Operations

MiWay service is comprised of two complementary service layers: MiExpress and MiLocal, based on the type of service offered. MiWay also provides School Routes from September to June to supplement existing service for school entry and dismissal.

Nine MiExpress routes currently provide express service along major corridors which can support higher-order transit service:

- three routes operating primarily in a reserved right-of-way (the Transitway);
- two routes operating limited-stop services on the intensification corridors (Hurontario and Dundas); and,
- four weekday peak-period commuter services.

MiLocal routes provide connections to local destinations and neighbourhood mobility by serving all trip types. They also connect to MiExpress routes, regional services, and intermunicipal services. MiLocal is comprised of 4 types of services:

- 25 core routes (with an additional 10 branches) operating primarily along major arterial roads, with a longer service span (hours of service) and higher peak period frequency;
- 8 local routes (with one additional branch), supplementing the core routes and providing higher neighbourhood coverage, with a shorter span of service and moderate frequency;
- 8 community routes (with 2 additional branches), serving short trips between neighbourhoods and supplementing the local and core services, with limited spans and low frequencies; and,

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 14 feeder/shuttle routes providing peak period service for specific travel markets, such as regional commuters.

Since the approval of the plan, MiWay has been implementing changes annually, including revising routes to make them more direct, introducing new express routes (such as the Airport Express, connecting the west end of the city to the airport via the Transitway), and integrating more local routes with the Transitway to feed the express routes. MiWay Five is planned to be fully implemented by 2020. As the MiWay Five improvements are implemented, main corridors will have more frequent and direct routes and the hierarchy in the service layers are becoming more apparent. Users of the system will be able to reach more destinations faster, but may require additional transfers. This may result in an increase in dwell times for some stops as more connections will be possible.

MIGP will consider stop and terminal design that takes into account this increase in transfer activity in order to reduce the impact additional transfers may have on dwell time. This may require exploring additional priority measures at stops with high passenger activity, such as level all-door boarding and off-board fare payment.

3.2 Population and Employment Trends

Mississauga is Ontario's third largest municipality, with a population of 744,590 according to 2016 estimates. By 2051, the population is expected to grow another 26%. From the City's incorporation until 2006, the city's population has grown an average of 20% with each census. Initially developed as a primarily suburban bedroom community, the city grew outward in a low density pattern until it exhausted its land supply. As the city's population grew, so did its employment – Mississauga had 476,880 workers employed within the City in 2016, a number expected to increase 23% by 2051.

Exhibit 3-1 illustrates the forecasted change in population by traffic zone. The population is expected to grow throughout the city, but it is evident from the map that some areas will experience more significant growth than others. Specifically, Hurontario and Dundas will continue to experience increases in population, as will the Lakeshore corridor. The neighbourhoods adjacent to Streetsville GO Station and University of Toronto Mississauga will also experience significant growth. These areas are subject to local area plans, and have been identified for transit improvements in MiWay Five.

Similarly, Exhibit 3-2 illustrates the forecasted employment growth by travel demand model zones. In this map, the concentration of growth along the Hurontario corridor emerges distinctively. Ninth Line, areas adjacent to the airport, and the eastern end of Lakeshore will also experience high growth in employment.

Exhibit 3-1: Change in Population by Travel Demand Model Zone, 2016 - 2051



J/117569_MiWayGroPlan\5.0 Design (Work) Phase\0 - GIS\ArcGISPro\117569_MiWayGroPlan\TTM 117569 - MyWayGroPlan\TTM 117569 - MyWayGroPlan.aprx



Exhibit 3-2: Change in Employment by Travel Demand Model Zone, 2016 - 2051

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These maps illustrate where a majority of the growth is to be expected in the city, and are useful for planning the prioritization of infrastructure. As noted previously, future population and employment growth will not follow historical development patterns in Mississauga. Rather, future growth will be upward, in the form of intensification.

The MOP identifies character areas in the city that can accommodate infill or intensification. Due to the existing stable development, intensification areas are subject to extensive planning to ensure new development is compatible with existing uses. These include zoning by-law amendments that provide design guidelines, such as Ward 1 Infill Housing and Malton Infill Housing, and planning projects to engage the community in the process, such as Imagining Ward 3.

In 2010, the City acquired 400 acres along Ninth Line from the Town of Milton, giving it the last remaining greenfield area that can be developed. The City created Shaping Ninth Line, a transitoriented medium density plan for the area. When developed, the area will be adjacent to the existing Mississauga Transitway, and the potential 407 Transitway, as shown in Exhibit 3-2.

The MIGP will take into account the forecasted changes in population and employment, and how these will impact transit operations. As specific areas are targeted for growth by various city policies, the demand for land will increase in those places, as will the demand for services. For transit, this will include on-street operations as well as off-street terminal needs.

3.3 Ten-Year Capital Works Plan

The City's 2018 Ten-Year Capital Works Plan has nearly a billion dollars' worth of projects, 84% of which are funded through development charges, gas taxes, and various other municipal funding streams. Approximately 21% of all the projects over the next 10 years are identified in the capital plan as having a positive impact on transit. Exhibit 3-3 illustrates the approved projects over the next ten years, and the dollar-value of projects that will improve transit.



Exhibit 3-3: Total Cost of Ten Year Capital Works Projects and Cost of Projects with a Transit Impact

The projects included in the plan range from intersection improvements, to corridor master plans and cycling network implementation programs. Exhibit 3-4 illustrates the transit-supportive

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Capital Plan projects that have funding identified for their design or construction. Some projects identified in the plan are city-wide, and as such are not mapped. These include line items for engineering studies, the implementation of Mississauga Moves, and property acquisition, which will benefit MiWay's transition to a grid system by providing the land needed for terminals and off-street transfers. Transit operations will also benefit from other multi-year city-wide projects identified in the Capital Plan, such as the road characterization and complete streets guidelines, the intersection capital program, and the traffic calming program. Appendix A contains the full list of these projects, listed by their first year of funding.

Three projects identified in the Capital Plan will have the most transformative impact on MiWay operations, specifically:

- City Centre Transitway and Terminal Connection;
- Square One Drive Environmental Assessment; and,
- Burnhampthorpe Road Environmental Assessment.

These projects and their timelines will be taken into account when developing the MIGP.

Exhibit 3-4: Transit Supportive Ten-Year Capital Works Projects



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10/12/2018

3.4 Planned Transit Improvements

In addition to the planned capital projects, three major transit corridor plans have been approved, and are underway: Hurontario LRT, Dundas Connects, and Lakeshore Connecting Communities.

- The **Hurontario LRT** is a north-south transit line connecting Port Credit GO to Brampton, along Mississauga's primary intensification corridor. The project is slated for completion in 2022, and is a partnership between the City of Mississauga, City of Brampton, and Metrolinx. The need for rapid transit along the corridor was identified in the Metrolinx RTP, and its previous iteration, The Big Move. The LRT will be a key connector within Mississauga, providing links to the City Centre, the Transitway, and intersecting at Dundas Street – another intensification corridor. In addition, it is a major regional link, with connections to regional transit and downtown Brampton, and crossing four major east-west highways and regional roads. The MIGP will play a role in ensuring the MiWay network is integrated with the Hurontario LRT to ensure connections are seamless.
- **Dundas Connects (2018)** is a master plan for Dundas Street, an intensification corridor running east-west through the city of Mississauga, and a gateway into neighbouring municipalities. The Metrolinx RTP identifies the corridor as suitable for Bus Rapid Transit (BRT) due to its regional significance, and the study is led by the Mississauga City Council. The Council approved Dundas Connects Master Plan identifies deficiencies in the corridor. These include peak period delays at most intersections, with the Hurontario and Dixie intersections experiencing delays throughout the day. Signal timings in the corridor are ineffective, causing queues which can be challenging for buses re-entering traffic from bus bays. The heavy volume of transit users along the corridor and at specific high volume stops are also a challenge for MiWay operations. Another challenge along the corridor is connecting to regional and inter-municipal transit services. The MIGP can consider the recommendations of Dundas Connects to address these deficiencies in preparation for integrating with the future BRT.
- Lakeshore Connecting Communities is a corridor study for Lakeshore Road, which is an east-west corridor connecting three community nodes in the south of Mississauga (Clarkson, Port Credit, and Lakeview). Each of these communities is subject to local area plans as they are targeted for growth. The goal of the study is to ensure that the common corridor shared by these communities can accommodate all modes and meets the expected travel demand efficiently as the area intensifies. For transit, the study is recommending a phased approach, beginning with prioritizing the existing routes in the corridor, then introducing dedicated transit right-of-ways, and eventually connecting to the TTC corridor on the east. While this study is ongoing, the development of the MIGP will take into account the emerging directions.

Other transformative transit projects that will have an impact on MiWay operations include:

 Lakeshore West and Kitchener GO Regional Express Rail (RER) projects, which will provide bi-directional 15-minute regional rail service all day at their full implementation;

- Milton GO Line improvements, which will feature more frequent rush hour service, increasing trips by a projected 30% over the next five years;
- Pearson Transit Hub, a regional transit centre improving transit connections to the airport area (a major employment hub) which is planned for completion in the next decade; and,
- 407 Transitway, a planned BRT corridor on the Highway 407 that will connect the GTHA and will run along the western edge of Mississauga, providing links to the Ninth Line lands.

Exhibit 3-5 illustrates these major projects, overlaid on the existing transit system for context. The development of the MIGP will take these projects under consideration.

Exhibit 3-5: Planned Major Transit Improvements



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3.5 New Mobility

Transportation technology is constantly evolving and significantly changing the way we move. If adequately planned for, the shift toward new and shared mobility options can complement transit, and in many ways reduce operating costs.

Shared ride options such as Uber and Lyft are becoming a common first and last mile mode, and can reduce parking requirements at higher order transit stations. Bike-share and car-share services provide alternatives to personal vehicle ownership. Combined with the advent of connected and autonomous vehicles, there is an evident shift from personally-owned modes toward mobility as a service. Transit plays an important role in this system, as it provides an efficient mode for the mass movement of people. If transit service is not efficient and direct, individual modes and shared rides will attract riders from the transit system and contribute to congestion.

MiWay's investment into frequent and direct services can complement the suite of mobility options becoming available. By planning to improve the efficiency of the transit system through various priority measures, transit can become more competitive and efficient, facilitating integration with new mobility options in the long term. The MIGP is an opportunity to identify a process for infrastructure investment that is adaptable, even as technology changes how we move.

4 Key Findings and Directions

The main challenges and opportunities emerging from this review provide the key directions for the MIGP to address:

- **Transportation network capacity limits**: There are few opportunities to build new roads. As such, the city is directing growth toward corridors that can accommodate intensification. The process of intensification will have an impact on the capacity of the existing transportation network. The role of the MIGP is to identify effective opportunities for improving transportation system capacity through transit improvements.
- **Right-of-way constraints**: MiWay is in the process of developing a grid transit network with higher frequency service in the main corridors, as recommended in MiWay Five. Given the City's structure, these roads serve various competing priorities. Without transit infrastructure improvements, transit service improvements may result in increased travel time and reliability issues, particularly during peak periods. The MIGP will review travel time along transit corridors and prioritize locations for improvement. These may include changes to bus stop locations, intersections, or traffic signals. For corridors serving multiple transit routes, the allocation of right-of-way space to transit– whether at peak periods or throughout the day – can improve service performance and transit visibility.
- **Terminal operations**: As the transit system moves toward a grid network, there will be an increase in on-street transfers and operations may change. Terminals serve a variety of functions, including regional and inter-municipal connections, transfers between different MiWay routes and end-of-line operational requirements. Currently, MiWay has no formal system for classifying terminals. The MIGP is an opportunity to develop a common typology for terminals that takes into account their hierarchy based on their role in the network, their functional requirements, existing

and future passenger usage, and surroundings. This typology can be used to develop context-sensitive design guidelines and inform the prioritization of infrastructure investment.

- **Multimodal integration at stops and terminals**: Stops and terminals serve as gateways to the transit system. Access and egress at stops and terminals should be direct and barrier-free, and the design should facilitate safe and efficient circulation and transfers. The existing MiWay Transit Standard Drawings can be updated to address additional passenger access and egress needs at high activity stops and terminals to reduce dwell times and improve transit service reliability. Improved accessibility can also attract riders. There are ongoing programs to implement cycling facilities in the city, and improve sidewalk connections to transit. These programs are an opportunity for coordination in the implementation of the MIGP.
- Land availability: Changes to the configuration of existing transit terminals and the increased need for on-street transfers as the system transitions towards a grid network may necessitate land acquisition. This is particularly challenging when terminals are located at shopping centres and other private land, or when terminals are shared across different jurisdictions, as is the case with several transportation hubs in Mississauga. The cost and availability of developable land poses an additional challenge for building new terminals at optimal locations, without impact to existing uses. Due to the scarcity of land, a high demand for the available land is inevitable. MIGP will consider the feasibility of terminal expansion or relocation, which may require compromises.
- Accommodating growth and change: To adequately plan for future infrastructure needs, the MIGP will need to be flexible and adaptable. Considerations should be made for the impacts shifting growth patterns and the timing of planned transit improvements. These changes will have an impact on the development of the implementation plan. The MIGP can feature a phased implementation strategy that includes a performance monitoring framework to be applied with each progressive phase. By providing a process for investing in transit infrastructure that can be replicated, it is possible to accommodate to the changes expected in the City of Mississauga.
- **New mobility**: As technology evolves, it is imperative for transit investment to optimize existing infrastructure and leverage the advantage transit has in moving people efficiently and integrate transit with active transportation. The impacts of new and shared mobility will be considered with the development of the MIGP to identify a process for infrastructure investment that is adaptable to changes in the transportation system.
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Transit Supportive Ten-Year Capital Works Projects

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Projects are listed by first year of funding, include a description, and the related activity the funding is provided for. Projects that are listed as "Not Committed" on in the "Pre Planning" stage are further distinguished.

Project Name	Project Description	Activity
First Year of Funding: 2018		
City Entrance Signs	City Entrance Signs	EA/Design/Construct
2019		
Intersection Capital Program	Funding to improve operation deficiencies of intersections throughout the City	Construct
Preliminary Engineering Studies	Preliminary Engineering Studies	Study
Traffic Calming Program	Traffic Calming Program	Install
Property Acquisition	Property Acquisition	Acquire
Cycling Program (Structures)	Cycling Coordinated with Structure Rehabilitation	Install
Road Characterization and Complete Streets Guidelines	A background study to the Official Plan Review to assess traffic and place making functions of roads and deliver complete street guidelines	Study
Dundas Road Improvements Study and Design	Dundas Road West Road Improvements Study and Design	Study
Ninth Line Widening - Eglinton Avenue West to Derry Road West	Ninth Line Widening - Eglinton Avenue West to Derry Road West	EA/Design
Clarkson Road/Lakeshore Road Intersection	Clarkson Road/Lakeshore Road Intersection	EA/Design/Construct
2020	Γ	
Second Line over Hwy. 401- Active Transportation bridge pier	Second Line over Hwy. 401- Active Transportation bridge pier	Construct
Intersection Capital Program	Funding to improve operation deficiencies of intersections throughout the City	Construct
Preliminary Engineering Studies	Preliminary Engineering Studies	Study
Courtneypark Drive East / Highway 410 Interchange	Courtneypark Drive East / Highway 410 Interchange	Construct
Traffic Calming Program	Traffic Calming Program	Install
Credit River AT Bridge along northside of QEW	Credit River AT Bridge along northside of QEW	Construct
Cycling Program (Structures)	Cycling Coordinated with Structure Rehabilitation	Install
Transportation Master Plan	A placeholder to set aside funds in future years for the implementation of action items/recommendations of the master plan	Study

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		Undertake transportation master plans for key corridors in the City such as Derry Road, Erin Mills	
	Corridor Transportation Master Plans	Avenue	Study
		Undertake an assessment of the multi-modal network in key areas of the City such as Meadowvale Business Park, Airport/Northeast	
	Local Network Studies	area	Study
	2021		
	Topflight Drive to Hurontario Street/Hwy. 407	Topflight Drive to Hurontario Street/Hwy. 407	EA/Design
	Preliminary Engineering Studies	Preliminary Engineering Studies	Study
	The Exchange - Burnhamthorpe Road West to City Centre Drive	The Exchange - Burnhamthorpe Road West to City Centre Drive	Construct
	Courtneypark Drive East Widening - Kennedy Road to Dixie Road - Design	Courtneypark Drive East Widening - Kennedy Road to Dixie Road - Design	Design
	Burnhamthorpe Rd W - Ninth Line to Loyalist Drive	Burnhamthorpe Rd W - Ninth Line to Loyalist Dr	Construct
	Kateson Drive - 125m of Prologis Blvd to Madill Blvd	Kateson Drive - 125m of Prologis Blvd to Madill Blvd Extension	Construct
	Traffic Calming Program	Traffic Calming Program	Install
	Stavebank AT Bridge across QEW	Stavebank AT Bridge across QEW. From Stavebank Road N to Stavebank Road S	Construct
ľ	Property Acquisition	Property Acquisition	Acquire
	Creekbank Road Extension North Limit of Creekbank to South of Hwy, 401	Creekbank Road Extension - North Limit of Creekbank to South of Hwy, 401	Construct
	Webb Dr - Confederation Parkway to Duke of York Boulevard - Retrofit	Webb Dr - Confederation Parkway to Duke of York Boulevard - Retrofit	Construct
	Intersection Capital Program	Funding to improve operation deficiencies of intersections throughout the City	Construct
	Cycling Program (Structures)	Cycling Coordinated with Structure Rehabilitation	Install
	Drew Road Grade Separation - Rail	Drew Road Grade Separation - Rail	Construct
	2022		
ļ	Traffic Calming Program	Traffic Calming Program	Install
	Burnhamthorpe Road West from East	Burnhamthorpe Road West from East Living Arts Drive to Mavis Road	Construct
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The Exchange (Baif Road)	The Exchange (Baif Road)	
Burnhamthorne Road West to Webb	Burnhamthorne Road West to	
Drive	Webb Drive	Construct
	Funding to improve operation	Conditati
	deficiencies of intersections	
Intersection Capital Program	throughout the City	Construct
Preliminary Engineering Studies	Preliminary Engineering Studies	Study
Sheridan Park Drive - West Leg to East	Sheridan Park Drive - West Leg to	
Leg of Speakman Drive	East Leg of Speakman Drive	Construct
Property Acquisition	Property Acquisition	Acquire
	Cycling Coordinated with Structure	
Cycling Program (Structures)	Rehabilitation	Install
2023		
Preliminary Engineering Studies	Preliminary Engineering Studies	Study
Traffic Calming Program	Traffic Calming Program	Install
	Cycling Coordinated with Structure	
Cycling Program (Structures)	Rehabilitation	Install
Cycling Program - New MUT Bridge	Cycling Coordinated with Structure	
Over Little Etobicoke Creek Tributary	Rehabilitation	Install
Edwards Boulevard from North of	Edwards Boulevard from North of	
Topflight Drive to Hurontario Street/Hwy.	Topflight Drive to Hurontario	
407	Street/Hwy. 407	Construct
	Funding to improve operation	
Internetion Consider Dreamons	deficiencies of intersections	Construct
Intersection Capital Program		Construct
Property Acquisition	Property Acquisition	Acquire
Square One Drive - Amacon Driveway to	Square One Drive - Amacon	
Rathburn Road West	Driveway to Rathburn Road West	Construct
2024		
Preliminary Engineering Studies	Preliminary Engineering Studies	Study
Traffic Calming Program	Traffic Calming Program	Install
	Drew Road - from Torbram Road	
Drew Road - from Torbram Road to	to Airport Road (excluding rail	
Airport Road (excluding rail structure)	structure)	Construct
Square One Drive E - Hurontario St to	Square One Drive E - Hurontario	
Rathburn Rd E	St to Rathburn Rd E	Construct
	Funding to improve operation	
Interneting Consider December	deficiencies of intersections	Ormetrust
Intersection Capital Program	Throughout the City	Construct
2025		
	Cycling Coordinated with Structure	
Cycling Program (Structures)	Rehabilitation	Install

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	Funding to improve operation	
Intersection Capital Program	deficiencies of intersections	Construct
I raffic Calming Program	I raffic Calming Program	Install
Droliminon / Engine gring Chudieg	Dualizzing a Carging studies	Chudu
Preliminary Engineering Studies	Preliminary Engineering Studies	Study
Cycling Program (Structures)	Cycling Coordinated with Structure	Install
	Highway 403 - Northern	Install
Highway 403 - Northern Distribution	Distribution Road: Hurontario	
Road: Hurontario Street to Mavis Road	Street to Mavis Road	Design
Property Acquisition (Northern		
Distribution Road Network Properties)	Property Acquisition	Acquire
Mississauga City Centre Transitway and		
Terminal Connection	Pre-Planning Placeholder	Design/Construct
2026		
	Creekbank Road Extension -	
Creekbank Road Extension - Highway	Ramp - Highway 401 to Enterprise	
to Enterprise Road	Road	Design/Construct
Property Acquisition	Property Acquisition	Acquire
Traffic Calming Program	Traffic Calming Program	Install
		motan
Preliminary Engineering Studies	Preliminary Engineering Studies	Study
Cvcling Program (Structures)	Cycling Coordinated with Structure Rehabilitation	Install
	Funding to improve operation	
	deficiencies of intersections	
Intersection Capital Program	throughout the City	Construct
2027		T
Traffic Calming Program	Traffic Calming Program	Install
Preliminary Engineering Studies	Preliminary Engineering Studies	Study
Traffic Calming Program	Traffic Calming Program	Install
Property Acquisition	Property Acquisition	Acquire
	Cycling Coordinated with Structure	
Cycling Program (Structures)	Rehabilitation	Install
List a 400 Northan Distribution	Highway 403 - Northern	
Highway 403 - Northern Distribution	Distribution Road: Hurontario	Construct
	Funding to improve operation	
	deficiencies of intersections	
Intersection Capital Program	throughout the City	Construct
2028		

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Intersection Capital Program	Funding to improve operation deficiencies of intersections throughout the City	Construct								
Cycling Program (Structures)	Cycling Coordinated with Structure Rehabilitation	Install								
Preliminary Engineering Studies	Preliminary Engineering Studies	Study								
Highway 403 - Northern Distribution Road: Westbound Offramp to Northern Distribution Road	Highway 403 - Northern Distribution Road: Westbound Offramp to Northern Distribution Road	Construct								
Indicates projects listed in the plan as "Not	Indicates projects listed in the plan as "Not Committed"									
Indicates project identified in the plan as in the "Pre Planning" stage										



In







SEPTEMBER 2020

Appendix B MiExpress Corridor Summary Maps and Tables

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EASTRO

Notes:

Data was collected for stop infrastructure between October 30 and November 9, 2018, using a combination of technology-assisted data recording on tablets and manual data recording. The field data collection for MiExpress stops and corridors covered 163 MiExpress stops on all the in-scope MiExpress routes:

- 1010/101A Dundas Express
- 104 Derry Express
- 107 Malton Express
- 108 Meadowvale Business Park Express
- 109 Meadowvale Express
- 110 University Express
- 185 Dixie Express

Map of the stops, express route corridors, terminals, and stations reviewed as part of the scope of the study included in Appendix.

Tables of MiExpress stops and associated infrastructure, by route, where infrastructure differs from other MiExpress stops. Default attributes and infrastructure are assumed to include:

- Placement within 120 metres of intersection, near- or far-side;
- One or more passenger access connections between the stop and the sidewalk;
- One premium stop marker mounted to a premium stop pole;
- One MiWay shelter, including a bench, source of lighting, and map panel;
- One Region of Peel waste receptacle (bin) in any style; and
- No schedule panel.

No symbol in a cell indicates that the stop matches the default described above, while a symbol indicates how the attribute or infrastructure differs from the default. The symbol legend is provided at the end of the table.

Rows are shaded orange where one or more attributes or pieces of infrastructure are missing



MiWay Infrastructure Growth Plan

MiWay Terminal & Stations, MiExpress Routes & Stops



Route 101/101A

Stop Infrastructure

Stop	top Infrastructure									
No.	Name	Placement	Pass. Access	Pole/Sign	Shelter	Bench	Waste Bin	Lighting	Map Panel	Schedule
310	Bloor St W at Green Lanes*						Т			
501	Dundas St at Woodchester Dr						✓			✓
535	Dundas St W east of Erin Mills Pky				\checkmark	✓	~		✓	\checkmark
548	Dundas St W at Winston Churchill Blvd									
644	Dundas St at Wolfedale Rd									
645	Dundas St at Mavis Rd									
748	Dundas St at Confederation Pky				\checkmark	\checkmark			\checkmark	
749	Dundas St at Hurontario St				\checkmark	\checkmark			\checkmark	
811	Dundas St at Aukland Rd*				Т	Т	Т	Т	Х	
815	Dundas St at Billingham Rd*				Т	Х	Т	Т	Х	
831	Dundas St east of Dixie Rd						Х			
855	Dundas St at Cawthra Rd									
858	Dundas St at Tomken Rd									✓
862	Dundas St at Dixie Rd				\checkmark	\checkmark			\checkmark	\checkmark
866	Dundas St at Wharton Way			!						
875	Dundas St at Wharton Way								Х	
1002	Dundas at Winston Churchill				Х	Х	Х	Х	Х	
1033	South Millway at Fifth Line West									
1037	Dundas St east of Erin Mills Pky									✓
1039	South Millway at Fifth Line W			!						
1189	Dundas St at Hurontario St						\checkmark			✓
1190	Dundas St at Confederation Pky						\checkmark			
1194	Dundas St at Mavis Rd									
1195	Dundas St at Wolfedale Rd									
1283	Dundas St at Cawthra Rd									
1354	Dundas St at Dixie Rd						Х			
1377	Dundas St west of Dixie Rd				\checkmark	\checkmark		\checkmark		\checkmark
1381	Dundas St at Tomken Rd							\checkmark	Х	\checkmark

Stop			Infrastructure									
No.	Name	Placement	Pass. Access	Pole/Sign	Shelter	Bench	Waste Bin	Lighting	Map Panel	Schedule		
1660	Dundas St W at Vega Blvd						Х					
1661	Laird Rd west of Ridgeway Dr						Х			\checkmark		
1666	Dundas St at Woodchester Dr						Х			\checkmark		
9001	Dundas St at Billingham Rd*				Т	Т	Т	Т	Х			
9007	Dundas St at Aukland Rd*				Х	Х	Т	Х	Х			
Notes:	 ✓ Additional Infrastructure ! Different Infr T Toronto Infrastructure * Stop located 	astruc in the	ture City o	(of Tor	K M onto	lissing	g Infra	struct	ure			

Summary Charts

Municipality



Stop Placement



On-Road Infrastructure



Typical Stop Infrastructure



Stop ID 1033 - South Millway at Fifth Line West

Route 104

Stop Infrastructure

Stop		Infra	astru	ictur	е					
No.	Name	Placement	Pass. Access	Pole/Sign	Shelter	Bench	Waste Bin	Lighting	Map Panel	Schedule
327	Derry Rd at Torbram Rd									
328	Derry Rd at Bramalea Rd						Х			
802	Derry Rd at Dixie Rd									\checkmark
2108	Derry Rd at Argentia Rd						\checkmark			
2134	Derry Rd at Argentia Rd		Х				Х			
2395	Derry Rd at McLaughlin Rd				\checkmark	✓	✓	✓	\checkmark	
2497	Derry Rd at Hurontario St						\checkmark			\checkmark
2498	Derry Rd at Kennedy Rd									
2499	Derry Rd at Kennedy Rd									
2507	Derry Rd at Dixie Rd									
2514	Derry Rd at Tomken Rd									
2516	Derry Rd at Columbus Rd									
2546	Derry Rd at Cardiff Blvd		-		-					
2548	Derry Rd at Tomken Rd				Х	Х	Х	Х	Х	
2553	Derry Rd at Bramalea Rd						Х			
2556	Derry Rd at Hurontario St									\checkmark
2559	Derry Rd at McLaughlin Rd									
2603	Derry Rd at Cattrick St				Х	Х	Х	Х	Х	
2607	Derry Rd at Airport Rd				Х	Х		Х	Х	
2770	Derry Rd at Airport Rd									
2800	Goreway Dr north of Derry Rd						\checkmark		Х	
3117	Financial Dr at 6897 Financial Dr	!					Х			
3279	Goreway Dr at Derry Rd								Х	
3363	Derry Rd at Mavis Rd				Х	Х	Х	Х	Х	
3364	Derry Rd at Mavis Rd				Х	Х	Х	Х	Х	
6880	Financial Dr south of Syntex Crt	!			✓	✓		\checkmark	\checkmark	\checkmark
Notes:	 Additional Intrastructure ! Different Infra 	astruc	ture)	ĸΝ	lissing	g Infra	struct	ure	

Summary Charts



Stop Placement



On-Road Infrastructure



Typical Stop Infrastructure



Stop ID 2556 - Derry Rd at Hurontario St

Route 107

Stop Infrastructure

Stop	Stop			Infrastructure								
No	Name	Placement	Pass. Access	Pole/Sign	Shelter	Bench	Waste Bin	Lighting	Map Panel	Schedule		
1396	Northwest Dr at American Dr						Х					
1397	American Dr at Northam Dr						Х					
1407	Goreway Dr at Nashua Dr			!	Х	Х	Х	Х	Х			
1853	Goreway Dr at Nashua Dr			!	Х	Х	Х	Х	Х			
2198	Carlingview Dr at Dixon Rd*				Х	Х	Х	Х	Х			
2210	Carlingview Dr at Dixon Rd*				Т	Т	Х	Т	Х			
2211	Campus Rd at Bresler Dr				Х	Х	Х	Х	Х			
2214	Campus Rd at Bresler Dr						Х					
2218	American Dr at Viscount Rd						Х					
2230	Viscount Rd at American Dr						Х					
2800	Goreway Dr north of Derry Rd						~		Х			
2904	Renforth Dr at Convair Dr*			!	Х	Х	Х	Х	Х			
2905	Renforth Dr at Convair Dr			!			Х					
2968	American Dr at Northam Dr						Х					
2985	Northwest Dr at American Dr						Х					
3279	Goreway Dr at Derry Rd								Х			
3301	Carlingview Dr at Renforth Dr*				Х	Х	Х	Х	Х			
9970	Carlingview Dr north of International Blvd*				Х	Х	Х	Х	Х			
Notes:	 ✓ Additional Infrastructure ! Different Infra T Toronto Infrastructure * Stop located 	astruc in the	ture City o	(of Tor	K N onto	lissing	g Infra	struct	ure			

Summary Charts



On-Road Infrastructure



Stop Placement



Typical Stop Infrastructure



Stop ID 2218 - American Dr at Viscount Rd

Route 109

Stop Infrastructure

Stop	ор				Infrastructure								
No.	Name	Placement	Pass. Access	Pole/Sign	Shelter	Bench	Waste Bin	Lighting	Map Panel	Schedule			
310	Bloor St W at Green Lanes*						Т						
772	Winston Churchill Blvd at Eglinton Ave W			!									
773	Winston Churchill Blvd at Erin Centre Blvd			!									
774	Winston Churchill Blvd at Thomas St												
811	Dundas St at Aukland Rd*				Т	Т	Т	Т	Х				
815	Dundas St at Billingham Rd*				Т	Х	Т	Т	Х				
1767	Winston Churchill Blvd at Battleford Rd			!	Х	Х	Х	Х	Х				
1783	Winston Churchill Blvd at Battleford Rd			!									
1788	Winston Churchill Blvd at Thomas St												
1790	Winston Churchill Blvd at Erin Centre Blvd			!									
3086	Winston Churchill Blvd at Britannia Rd												
3515	Winston Churchill Blvd at Britannia Rd												
4512	Winston Churchill Blvd at Eglinton Ave						✓						
9001	Dundas St at Billingham Rd*				Т	Т	Т	Т	Х				
9007	Dundas St at Aukland Rd*				Х	Х	Т	Х	Х				
Notes:	 ✓ Additional Infrastructure ! Different Infra T Toronto Infrastructure * Stop located 	astruc in the	ture City (ز of Tor	K N onto	lissinę	g Infra	struct	ure				

Summary Charts



Stop Placement



On-Road Infrastructure



Typical Stop Infrastructure



Stop ID 3086 - Winston Churchill Blvd at Britannia Rd

Route 110

Stop Infrastructure

Stop		Infrastructure									
No.	Name	Placement	Pass. Access	Pole/Sign	Shelter	Bench	Waste Bin	Lighting	Map Panel	Schedule	
104	Southdown Rd at Truscott Dr									\checkmark	
106	Southdown Rd at Bromsgrove Rd				Х	Х	Х	Х	Х		
245	Southdown Rd at Truscott Dr									\checkmark	
283	Southdown Rd at Truscott Dr										
526	Erin Mills Pky at Leanne Blvd									\checkmark	
535	Dundas St W east of Erin Mills Pky				~	✓	✓		~	✓	
545	Erin Mills Pky south of Dundas St W						✓			✓	
566	Erin Mills Pky at Fowler Dr						✓			✓	
1717	Erin Mills Pky at Folkway Dr						Х			~	
1720	Erin Mills Pky at Folkway Dr						Х			✓	
Notes:	✓ Additional Infrastructure ! Different Infrastructure X Missing Infrastructure										

Summary Charts



Stop Placement



On-Road Infrastructure



Typical Stop Infrastructure



Stop ID 283 - Southdown Rd at Truscott Dr

Route 185

Stop Infrastructure

Stop		Infrastructure								
No.	Name	Placement	Pass. Access	Pole/Sign	Shelter	Bench	Waste Bin	Lighting	Map Panel	Schedule
1065	Dixie Rd at Mid-Way Blvd			!	Х	Х	Х	Х	Х	
2004	Dixie Rd at Matheson Blvd			✓						
2008	Dixie Rd at Eglinton Ave			\checkmark						
2041	Dixie Rd at Matheson Blvd			!						
2045	Dixie Rd at Eglinton Ave			~						
2502	Dixie Rd at Meyerside Dr									
2503	Dixie Rd at Courtneypark Dr			!			✓			
2520	Dixie Rd at Courtneypark Dr			~						
2521	Dixie Rd at Meyerside Dr			~			\checkmark			
2606	Dixie Rd at Britannia Rd			>						
2623	Dixie Rd at Derry Rd			!					Х	
2632	Dixie Rd at Drew Rd			!			Х			
2637	Dixie Rd at Britannia Rd			!			Х			
5011	Dixie Rd at Drew Rd			!	Х	Х	Х	Х	Х	
5012	Dixie Rd at Clark Blvd**			В	В	В	Х	В	Х	
5013	Dixie Rd at Balmoral Dr**			В	В	В	В	В	Х	
5014	Dixie Rd at Steeles Ave**			В	В	В	Х	В	Х	
5015	Dixie Rd at Derry Rd			!			Х			
5019	Dixie Rd at Steeles Ave**			В	В	В	Х	В	Х	
5020	Dixie Rd at Balmoral Dr**			В	В	В	В	В	Х	
5021	Dixie Rd at Clark Blvd**			В	Х	В	В	Х	Х	
5023	Dixie Rd at Mid-Way Blvd			!	Х	Х	Х	Х	Х	
Notes:	 ✓ Additional Infrastructure B Brampton Infrastructure ** Stop located 	astruc in the	ture City (ز of Bra	K M mptor	lissinę 1	g Infra	struct	ure	

Summary Charts



On-Road Infrastructure



Typical Stop Infrastructure



Stop ID 2606 - Dixie Rd at Britannia Rd









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Appendix C Two-Page Terminal Summary Reports



Notes:

Data was collected for terminal infrastructure between October 30 and November 9, 2018, using a combination of technology-assisted data recording on tablets and manual data recording. Field data was collected for 19 MiWay terminals, 11 Transitway stations, and 11 GO stations with MiWay infrastructure. Field data was supplemented with land use data from the City of Mississauga.

Terminals and stations reviewed:

MiWay Terminals	Transitway Stations	GO Stations
Airport Terminal 1 ⁽³⁾	Cawthra	Clarkson GO
Airport Terminal 3 ⁽³⁾	Central Parkway	Cooksville GO
Bramalea Terminal ⁽¹⁾	Dixie	Dixie GO
Brampton Gateway ^(1,3)	Erin Mills	Erindale GO
City Centre Transit Terminal (3)	Etobicoke Creek	Kipling Bus Terminal (2)
Credit Valley Hospital	Orbitor	Lisgar GO
Dixie Outlet Mall	Renforth	Long Branch GO ⁽²⁾
Dundas/ESR/Glengarry	Spectrum	Malton GO
Erin Mills Town Centre	Tahoe	Meadowvale GO
Humber College North Campus ⁽²⁾	Tomken	Port Credit GO
Hurontario & 407 Park and Ride (1)	Winston Churchill	Streetsville GO
Islington Subway Transit Terminal (2, 3)		
Meadowvale Town Centre Transit Terminal		
Sheridan Centre		
Sheridan College (1)		
Sherway Gardens ⁽²⁾		
South Common Centre		
Trillium Health Centre		
University of Toronto Mississauga (UTM)		
Viscount Station		
Westwood Square Transit Terminal		
Woodbine Centre Terminal ^(2, 3)		

Notes: (1) Located in the City of Brampton

(2) Located in the City of Toronto

(3) Out of scope for further study in the MIGP

- Summary data and photographs are accurate as of October 2018
- Stop locations are accurate as of October 2018
- Route numbers associated with stops are from MiWay Terminal & Station Maps (available online), with accuracy dates noted

1 - Airport Terminal 1

MiWay Terminal in the City of Mississauga

MiWay Route Numbers: 7, 100

Other Transit Providers: Brampton Transit, GO Bus, TTC, UP Express

This terminal is located at Toronto Pearson International Airport Terminal 1 and consists of five parallel bus stops on two covered platforms. Two bus stops serve MiWay routes.



Land Use

- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial / Retail
- General Employment

- Mixed Use
- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural









2 - Airport Terminal 3

MiWay Terminal in the City of Mississauga

Coordinates: 43.685747, -79.619344

MiWay Route Numbers: 100

Other Transit Providers: TTC

This terminal is located at Toronto Pearson International Airport Terminal 3 and consists of two parallel bus stops on one platform. One bus stop serves MiWay routes.



Land Use

- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial / Retail
- General Employment

- Mixed Use
- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural





3 - Bramalea Transit Terminal

MiWay Terminal in the City of Brampton

Coordinates: 43.718928, -79.721007

MiWay Route Numbers: 185

Other Transit Providers: Brampton Transit, GO Bus

High Density Residential

Commercial / Retail

General Employment

This terminal is located adjacent to Bramalea City Centre, near Queen Street E and Dixie Road, and consists of 18 bus bays on two covered island platforms. One bus bay serves MiWay routes.



- Recreation / Green Spac
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural









4 - Cawthra Station

Transitway Station in the City of Mississauga

Coordinates: 43.617354, -79.627888

MiWay Route Numbers: 100, 107, 109

Other Transit Providers: None

This Transitway Station is located near Eastgate Parkway and Cawthra Road, and consists of two bus stops on two parallel, covered platforms. Two bus stops serve MiWay routes.



- Medium Density Residential Recreation / Green Space
 - Infrastructure / Utility
 - Extraction Area / Industrial
 - Agricultural

High Density Residential

Commercial / Retail

General Employment








5 - Central Parkway Station

Transitway Station in the City of Mississauga

Coordinates: 43.607988, -79.635861

MiWay Route Numbers: 10, 53, 100, 107, 109

Other Transit Providers: None

This Transitway Station is located near Rathburn Road E and Central Parkway E, and consists of two bus stops on two parallel, covered platforms. Two bus stops serve MiWay routes.



- Low Density Residential
- Medium Density Residential
- **High Density Residential**
- Commercial / Retail
- General Employment

- Mixed Use
- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural











Central Parkway

6 - Clarkson GO

GO Station in the City of Mississauga

Coordinates: 43.512794, -79.633142

MiWay Route Numbers: 13, 14, 14A, 23, 29, 45, 45A, 110

Other Transit Providers: GO Bus, GO Train, Oakville Transit

This GO Station is located on the Lakeshore West line near Lakeshore Road W and Southdown Road, and includes seven bus bays on a loop platform. Five bus bays serve MiWay routes.



- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial / Retail
- General Employment

- Mixed Use
- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural











Clarkson GO

7 - Cooksville GO

GO Station in the City of Mississauga

Coordinates: 43.581678, -79.624015

MiWay Route Numbers: 28, 91

Other Transit Providers: GO Bus, GO Train

This GO Station is located on the Milton line near Dundas Street W and Hurontario Street, and includes one bus platform. One bus stop serves MiWay routes.



- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial / Retail
- General Employment

- Mixed Use
- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural







8 - Credit Valley Hospital

MiWay Terminal in the City of Mississauga

Coordinates: 43.558612, -79.703828

MiWay Route Numbers: 34, 35, 35A, 46, 48, 67

Other Transit Providers: GO Bus

This terminal is located at Credit Valley Hospital, near Eglinton Avenue W and Erin Mills Parkway. It consists of seven on-street bus stops around the hospital property, all serving MiWay routes.



- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial / Retail
- General Employment

- Mixed Use
- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural













Credit Valley Hospital

9 - Dixie GO

GO Station in the City of Mississauga

Coordinates: 43.607791, -79.581723

MiWay Route Numbers: 5

Other Transit Providers: GO Train

This GO Station is located on the Milton line near Queensway E and Dixie Road. Two on-street bus stops serve MiWay routes.



- Low Density Residential
- Medium Density Residential
- **High Density Residential**
- Commercial / Retail
- General Employment

- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural



10 - Dixie Outlet Mall

MiWay Terminal in the City of Mississauga

Coordinates: 43.593778, -79.565552

MiWay Route Numbers: 4, 5

Other Transit Providers: None

This terminal is located adjacent to Dixie Outlet Mall, near the Queen Elizabeth Way and Dixie Road. It consists of two parallel bus stops on one platform, all serving MiWay routes.







Source: Google Maps (August, 2018)



11 - Dixie Station

Transitway Station in the City of Mississauga Coordinates: 43.629953, -79.614726

MiWay Route Numbers: 5, 73, 74, 100, 107, 109, 185

Other Transit Providers: GO Bus

This Transitway Station is located near Eastgate Parkway and Dixie Road, and consists of four bus stops on two parallel, covered platforms. Two bus stops serve MiWay routes.













12 - Dundas/ESR/Glengarry

MiWay Terminal in the City of Mississauga

Coordinates: 43.557187, -79.643058

MiWay Route Numbers: 1, 1C, 4, 6, 38, 101, 101A

Other Transit Providers: None

This terminal is located at the intersection of Dundas Street W, Erindale Station Road, and Glengarry Road. It consists of four on-street bus stops around the intersection, all serving MiWay routes.













Dundas/ESR/Glengarry

13 - Erindale GO

GO Station in the City of Mississauga

Coordinates: 43.567724, -79.668359

MiWay Route Numbers: 9, 20, 37, 38

Other Transit Providers: GO Bus, GO Train

This GO Station is located on the Milton line near Burnhamthorpe Road W and Creditview Road, and includes three bus bays on a loop platform. Two bus bays and four on-street bus stops serve MiWay routes.



- Extraction Area / Industrial
 - Agricultural

General Employment











Erindale GO

14 - Erin Mills Station

Transitway Station in the City of Mississauga

Coordinates: 43.552256, -79.700187

MiWay Route Numbers: 29, 46, 48, 100, 109, 110

Other Transit Providers: GO Bus

This Transitway Station is located near Highway 403 and Erin Mills Road, and consists of eight bus stops on two parallel, covered platforms. Four bus stops serve MiWay routes.











Erin Mills

15 - Erin Mills Town Centre

MiWay Terminal in the City of Mississauga

Coordinates: 43.560552, -79.710892

MiWay Route Numbers: 13, 34, 46, 48, 49

Other Transit Providers: None

This terminal is located adjacent to Erin Mills Town Centre, near Eglinton Ave W and Erin Mills Parkway. It consists of three bus stops on two parallel platforms, all serving MiWay routes.



- Extraction Area / Industrial
 - Agricultural

General Employment











Erin Mills Town Centre

16 - Etobicoke Creek Station

Transitway Station in the City of Mississauga

Coordinates: 43.644651, -79.611217

MiWay Route Numbers: 87, 100, 107, 109

Other Transit Providers: None

This Transitway Station is located near Eglinton Avenue E and Tahoe Boulevard, and consists of two bus stops on two parallel, covered platforms. Two bus stops serve MiWay routes.













Etobicoke Creek

17 - Humber College

MiWay Terminal in the City of Toronto

MiWay Route Numbers: 22, 107

Other Transit Providers: Brampton Transit, GO Bus, TTC, YRT

This terminal is located on Humber College North Campus, near Humber College Boulevard and Highway 27, and consists of ten bus bays on three platforms. Two bus bays serve MiWay routes.



- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial / Retail
- General Employment

- Mixed Use
- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural











Humber College

18 - Hurontario & 407

MiWay Terminal in the City of Brampton

MiWay Route Numbers: 19, 53

Other Transit Providers: Brampton Transit, GO Bus

High Density Residential

Commercial / Retail

General Employment

This terminal is located south of Highway 407 and east of Hurontario Street, and consists of four bus bays on one island platform. One bus bay serves MiWay routes.



- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural







19 - Kipling GO

GO Station in the City of Toronto

Coordinates: 43.638567, -79.538065

MiWay Route Numbers: 1, 1C, 3, 11, 11A, 11B, 20, 26, 35, 35A, 57, 70, 76, 101, 101A, 108,

Other Transit Providers: GO Train, TTC

This GO Station is located on the Milton line near Dundas Street W and Kipling Avenue. Four on-street MiWay stops serve this station.



- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial / Retail
- General Employment

- Mixed Use
- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural







20 - Lisgar GO

GO Station in the City of Mississauga

MiWay Route Numbers: 32, 38

Other Transit Providers: Brampton Transit, GO Train, GO Bus

This GO Station is located on the Milton line near Argentia Road and Winston Churchill Boulevard, and includes six bus bays on a loop platform. One bus bay serves MiWay routes.







Lisgar GO

21 - Long Branch GO

GO Station in the City of Toronto

MiWay Route Numbers: 5, 23

Other Transit Providers: GO Train, TTC

This GO Station is located on the Lakeshore West line near Lakeshore Boulevard W and Browns Line, and includes an off-street bus loop. One bus stop serves MiWay routes.







22 - Malton GO

GO Station in the City of Mississauga

Coordinates: 43.706575, -79.639151

MiWay Route Numbers: 12, 30, 42

Other Transit Providers: Brampton Transit, GO Bus, GO Train

This GO Station is located on the Kitchener line near Derry Road E and Airport Road, and includes an off-street bus loop. One off-street bus stop and three on-street bus stops serve MiWay routes.



- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial / Retail
- General Employment

- Mixed Use
- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural






23 - Meadowvale GO

GO Station in the City of Mississauga

MiWay Route Numbers: 44, 64, 90

Other Transit Providers: GO Bus, GO Train

This GO Station is located on the Milton line near Derry Road W and Millcreek Drive, and includes an off-street bus loop. One bus stop serves MiWay routes.







24 - Meadowvale Town Centre

MiWay Terminal in the City of Mississauga

Coordinates: 43.583518, -79.758728

MiWay Route Numbers: 10, 13, 38, 39, 42, 43, 44, 45, 45A, 46, 48, 57, 87, 90, 104, 109

Other Transit Providers: None

This terminal is located adjacent to Meadowvale Town Centre, near Aquitaine Avenue and Winston Churchill Boulevard. It consists of ten bus bays on one loop platform, all serving MiWay routes.



- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial / Retail
- General Employment

- Mixed Use
- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural











Meadowvale Town Centre

25 - Orbitor Station

Transitway Station in the City of Mississauga

Coordinates: 43.656628, -79.598028

MiWay Route Numbers: 87, 100, 107, 109

Other Transit Providers: None

This Transitway Station is located near Eglinton Avenue W and Orbitor Drive, and consists of two bus stops on two parallel, covered platforms. Two bus stops serve MiWay routes.



- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial / Retail
- General Employment

- Mixed Use
- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural











Orbitor

26 - Port Credit GO

GO Station in the City of Mississauga

MiWay Route Numbers: 8, 14, 14A, 19, 23, 103

Other Transit Providers: GO Bus, GO Train

This GO Station is located on the Lakeshore West line near Lakeshore Road W and Hurontario Street, and includes five bus bays on a semi-sawtooth platform. Five bus bays serve MiWay routes.



- Low Density Residential
- Medium Density Residential
- **High Density Residential**
- Commercial / Retail
- General Employment

- Mixed Use
- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural









Port Credit GO

27 - Renforth Station

Transitway Station in the City of Mississauga

Coordinates: 43.663401, -79.590977

MiWay Route Numbers: 7, 24, 35, 35A, 39, 43, 74, 87, 100, 107, 109

Other Transit Providers: GO Bus, TTC

This Transitway Station is located near Eglinton Avenue W and Commerce Boulevard, and consists of eight bus stops on two parallel, covered platforms. Nine stops (seven on-street) serve MiWay routes.



- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial / Retail
- General Employment

- Mixed Use
- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural











Renforth

28 - Sheridan Centre

MiWay Terminal in the City of Mississauga

Coordinates: 43.530022, -79.651600

MiWay Route Numbers: 13, 23, 29, 71

Other Transit Providers: None

This terminal is located adjacent to Sheridan Centre, near the Queen Elizabeth Way and Erin Mills Parkway. It consists of five bus bays on one platform, all serving MiWay routes.



- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial / Retail
- General Employment

- Mixed Use
- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural





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Sheridan Centre

29 - Sheridan College

MiWay Terminal in the City of Brampton

Coordinates: 43.656719, -79.741003

MiWay Route Numbers: 61A, 66

Other Transit Providers: Brampton Transit

This terminal is located on Sheridan College Davis Campus, near Steeles Ave W and McLaughlin Road, and consists of four bus bays on one platform. Two bus bays serve MiWay routes.



- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial / Retail
- General Employment

- Mixed Use
- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural







30 - Sherway Gardens

MiWay Terminal in the City of Toronto

Coordinates: 43.610001, -79.558247

MiWay Route Numbers: 4

Other Transit Providers: TTC

This terminal is located adjacent to Sherway Gardens, near The Queensway and The West Mall, and consists of four bus bays on two platforms. One bus bay serves MiWay routes.



- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial / Retail
- General Employment

- Mixed Use
- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural









Sherway Gardens

31 - South Common Centre

MiWay Terminal in the City of Mississauga

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Coordinates: 43.543500, -79.684105
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MiWay Route Numbers: 1C, 13, 26, 29, 36, 48, 101, 110, 310, 347

Other Transit Providers: Oakville Transit

This terminal is located adjacent to South Common Centre, near Burnhamthorpe Road W and Erin Mills Parkway. It consists of 12 bus bays on two platforms, all serving MiWay routes.



- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial / Retail
- General Employment

- Mixed Use
- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural











South Common Centre

32 - Spectrum Station

Transitway Station in the City of Mississauga

Coordinates: 43.649564, -79.606007

MiWay Route Numbers: 87, 100, 107, 109

Other Transit Providers: None

This Transitway Station is located near Eglinton Avenue W and Spectrum Way, and consists of two bus stops on two parallel, covered platforms. Two bus stops serve MiWay routes.













Spectrum

33 - Streetsville GO

GO Station in the City of Mississauga

MiWay Route Numbers: 9, 49A, 67

Other Transit Providers: GO Bus, GO Train

This GO Station is located on the Milton line near Thomas Street and Queen Street S, and includes an off-street bus loop. One bus stop serves MiWay routes.



- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial / Retail
- General Employment

- Mixed Use
- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural







34 - Tahoe Station

Transitway Station in the City of Mississauga

Coordinates: 43.638749, -79.610114

MiWay Route Numbers: 87, 100, 107, 109

Other Transit Providers: None

This Transitway Station is located near Tahoe Boulevard and Eastgate Parkway, and consists of two bus stops on two parallel, covered platforms. Two bus stops serve MiWay routes.



- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial / Retail
- General Employment

- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural











Tahoe

35 - Tomken Station

Transitway Station in the City of Mississauga

Coordinates: 43.621440, -79.623820

MiWay Route Numbers: 51, 100, 107, 109

Other Transit Providers: None

This Transitway Station is located near Eastgate Parkway and Tomken Road, and consists of wto bus stops on two parallel, covered platforms. Two bus stops serve MiWay routes.













Tomken

36 - Trillium Health Centre

MiWay Terminal in the City of Mississauga

Coordinates: 43.572150, -79.609367

MiWay Route Numbers: 4, 19A, 19B, 28

Other Transit Providers: None

This terminal is located at Trillium Health Centre, near Queensway W and Hurontario Street. It consists of two on-street bus stops and one bus bay, all serving MiWay routes.



- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial / Retail
- General Employment

- Mixed Use
- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural











Trillium Health Centre

37 - University of Toronto Mississauga

MiWay Terminal in the City of Mississauga

Coordinates: 43.547836, -79.663661

MiWay Route Numbers: 1C, 44, 101, 101A, 110

Other Transit Providers: None

This terminal is located on the University of Toronto Mississauga campus, near Dundas Street W and Mississauga Road. It consists of three parallel bus bays on one platform, all serving MiWay routes.



- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial / Retail
- General Employment

- Mixed Use
- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural











University of Toronto Mississauga

MiWay Terminal in the City of Mississauga

MiWay Route Numbers: 24, 107

Other Transit Providers: None

This terminal is located adjacent to Viscount Station (used by the LINK Train), near Highway 409 and Viscount Road. It consists of two parallel bus bays on one platform, all serving MiWay routes.



- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial / Retail
- General Employment

- Mixed Use
- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural



39 - Westwood Square

MiWay Terminal in the City of Mississauga

Coordinates: 43.721601, -79.640552

MiWay Route Numbers: 7, 11, 11A, 11B, 12, 15, 16, 22, 24, 30, 42, 104, 107

Other Transit Providers: Brampton Transit, TTC

This terminal is located adjacent to Westwood Square, near Morning Star Drive and Goreway Drive, consisting of fifteen bus bays on three island platforms. Ten bus bays serve MiWay routes.



- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial / Retail
- General Employment

- Mixed Use
- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural











Westwood Square

40 - Winston Churchill Station

Transitway Station in the City of Mississauga

Coordinates: 43.542129, -79.712079

MiWay Route Numbers: 36, 45, 45A, 100, 109

Other Transit Providers: GO Bus

This Transitway Station is located near Highway 403 and Winston Churchill Boulevard, and consists of eight bus stops on two parallel, covered platforms. Four bus stops serve MiWay routes.



- High Density Residential Minimum Infrastructure / Utility
 - Extraction Area / Industrial
 - Agricultural

Commercial / Retail

General Employment










Winston Churchill

41 - Woodbine Centre

MiWay Terminal in the City of Toronto

Coordinates: 43.719658, -79.602602

MiWay Route Numbers: 30

Other Transit Providers: TTC

This terminal is located adjacent to Woodbine Mall and Casino Woodbine, near Rexdale Boulevard and Highway 27, consisting of two bus bays on one platform. One bus bay serves MiWay routes.



Land Use

- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial / Retail
- General Employment

- Mixed Use
- Institutional
- Recreation / Green Space
- Infrastructure / Utility
- Extraction Area / Industrial
 - Agricultural









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SEPTEMBER 2020

Appendix D MiExpress Route Operational Summary Slides

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Notes:

The field survey for MiExpress route operational data was conducted between October 9 and October 12, 2018, inclusive.

Data was recorded between 3:30 p.m. and 6:30 p.m. each day to capture p.m. peak conditions using GPS data logger devices and a log sheet to record the route number, bus number, the time the bus departed the first stop, and the time the bus arrived at the last stop. Data collected included location coordinates, current speed, and elapsed travel time in one-second increments. Multiple runs were collected for each in-scope MiExpress route.

Data collection summary:

Route	Date (2018)	Time	Direction	Successful Runs
101 Dundas Express	October 16 th to 19 th	3:30 p.m. to	EB	6
		6:30 p.m.	WB	5
101A Dundas Express	October 17 th to 19 th	3:30 p.m. to	EB	8
		6:30 p.m.	WB	8
104 Derry Express	October 9 th to 12 th and	3:30 p.m. to	EB	8
	October 17 th to 18 th	6:30 p.m.	WB	8
107 Malton Express	October 9 th to 12 th	3:30 p.m. to	NB	9
		6:30 p.m.	SB	8
108 Meadowvale Business Express	October 16 th to 17 th	3:30 p.m. to 6:30 p.m.	SB	8
109 Meadowvale	October 15 th to 19 th	3:30 p.m. to	NB	8
Express (West Section)		6:30 p.m.	SB	8
109 Meadowvale	October 15 th to 19 th	3:30 p.m. to	NB	8
Express (East Section)		6:30 p.m.	SB	6
110 University Express	October 9 th to 12 th	3:30 p.m. to	NB	8
		6:30 p.m.	SB	8
185 Dixie Express	October 9 th to 12 th	3:30 p.m. to	NB	7
		6:30 p.m.	SB	6

MiWay Travel Time Analysis Route 101



IBI GROUP MiWay January 21, 2019

Agenda

- Route 101 Dundas Express Overview
- Analysis Results

MiWay Infrastructure Growth Plan January 21, 2019 2

Route 101 – Dundas Express

- 22 kilometres (between South Common Centre and Islington Subway Station)
- 57 signalized intersections eastbound and 51 signalized intersections westbound
- 16 bus stops eastbound and 18 bus stops westbound



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Data Collection – Route 101

- Surveys were conducted from October 16th to October 19th between 3:30 PM and 6:30 PM
- Data was successfully recorded for 6 EB runs and 5 WB runs
 - Due to the length of the route and the loop serving the University of Toronto Mississauga campus on the west side, only 2 EB and 3 WB runs were collected in the same trip (South Common Centre to Islington Station). The remainder of the runs were collected as segments.
 - The section of Route 101 from Renforth Station to Mabelle Avenue had 6 EB runs successfully used for analysis. A route diversion between Mabelle Avenue and Islington Subway Station prevented one run from being used in the analysis for that section of the route.

MiWay Infrastructure Growth Plan January 21, 2019

Route 101 EB Average **Boardings + Alightings PM Peak Period**, 2016

*Note: Boardings, Alightings, and Load were averaged separately and may not sum. Averages are per individual trips. Blank areas are where no APC data was available

Stop Name	Timepoint Y/N	Average Boardings	Average Alightings	Average Load*
SOUTH COMMON CENTRE BUS TERMINAL PLATFORM B	YES	2	4	2
SOUTH MILLWAY at FIFTH LINE WEST	YES	2	1	8
DUNDAS ST W east of ERIN MILLS PKY	YES	2	0	11
UNIVERSITY of TORONTO at MISSISSAUGA CAMPUS	YES	9	1	20
DUNDAS ST at GLENGARRY RD	YES	2	3	26
DUNDAS ST at WOLFEDALE RD	NO	1	1	25
DUNDAS ST at MAVIS RD	YES	1	1	25
DUNDAS ST at CONFEDERATION PKY	NO	2	2	26
DUNDAS ST at HURONTARIO ST	YES	9	6	28
DUNDAS ST at CAWTHRA RD	YES	1	2	27
DUNDAS ST at TOMKEN RD	YES	3	3	28
DUNDAS ST at DIXIE RD	YES	3	5	26
DUNDAS ST east of DIXIE RD	NO	1	1	27
DUNDAS ST at WHARTON WAY	NO			25
DUNDAS ST at BILLINGHAM RD	YES	0	5	22
DUNDAS ST at AUKLAND RD	YES	0	10	13
ISLINGTON SUBWAY DROP OFF	YES	0	13	0
ISLINGTON SUBWAY BUS TERMINAL PLATFORM E	YES	6	0	6

MiWay Infrastructure Growth Plan

January 21, 2019

Route 101 WB Average **Boardings + Alightings PM Peak Period**, 2016

*Note: Boardings, Alightings, and Load were averaged separately and may not sum. Averages are per individual trips. Blank areas are where no APC data was available

Stop Name	Timepoint Y/N	Average Boardings	Average Alightings	Average Load*
ISLINGTON SUBWAY BUS TERMINAL PLATFORM E	YES	6	0	6
BLOOR ST W at GREEN LANES	NO	3	0	20
DUNDAS ST at AUKLAND RD	NO	3	0	23
DUNDAS ST at BILLINGHAM RD	YES	3	0	26
DUNDAS ST at WHARTON WAY	NO			26
DUNDAS ST at DIXIE RD	YES	3	1	27
DUNDAS ST west of DIXIE RD	NO	8	2	33
DUNDAS ST at TOMKEN RD	YES	7	2	38
DUNDAS ST at CAWTHRA RD	YES	2	2	39
DUNDAS ST at HURONTARIO ST	YES	9	20	27
DUNDAS ST at CONFEDERATION PKY	NO	2	4	26
DUNDAS ST at MAVIS RD	YES	1	3	24
DUNDAS ST at WOLFEDALE RD	NO	0	3	21
DUNDAS ST at ERINDALE STATION RD	YES	1	9	12
UNIVERSITY of TORONTO at MISSISSAUGA CAMPUS	YES	2	2	12
DUNDAS ST east of ERIN MILLS PKY	YES	1	2	10
SOUTH MILLWAY at FIFTH LINE W	YES	1	2	11
SOUTH COMMON CENTRE BUS TERMINAL PLATFORM B	YES	2	4	2

MiWay Infrastructure Growth Plan

January 21, 2019

Processing Outputs by Stop - Eastbound

Stop Name	Timepoint Y/N	Average Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Operational Delay (mm:ss)	Total Delay (mm:ss)	Average Load	Operational Passenger Delay (hh:mm)	Total Passenger Delay (hh:mm)
SOUTH MILLWAY at FIFTH LINE WEST	YES	05:09	01:28	01:25	00:09	02:47	02:56	8	00:21	00:23
DUNDAS ST W east of ERIN MILLS PKY	YES	03:24	01:31	00:57	00:00	02:29	02:29	11	00:27	00:27
UNIVERSITY of TORONTO at MISSISSAUGA CAMPUS	YES	05:13	01:42	01:04	00:04	02:46	02:50	20	00:53	00:55
DUNDAS ST at GLENGARRY RD	YES	07:46	02:38	01:24	00:15	04:03	04:18	26	01:43	01:49
DUNDAS ST at WOLFEDALE RD	NO	01:26	00:16	00:14	00:07	00:29	00:36	25	00:12	00:15
DUNDAS ST at MAVIS RD	YES	01:58	00:53	00:32	00:08	01:24	01:32	25	00:35	00:38
DUNDAS ST at CONFEDERATION PKY	NO	03:11	00:40	00:19	00:19	00:59	01:18	26	00:25	00:33
DUNDAS ST at HURONTARIO ST	YES	02:25	01:02	00:21	00:33	01:23	01:56	28	00:39	00:54
DUNDAS ST at CAWTHRA RD	YES	04:00	01:01	00:43	00:10	01:44	01:54	27	00:47	00:51
DUNDAS ST at TOMKEN RD	YES	02:07	00:25	00:28	00:16	00:53	01:09	28	00:24	00:32
DUNDAS ST at DIXIE RD	YES	04:00	01:27	00:57	00:21	02:23	02:44	26	01:01	01:10
DUNDAS ST east of DIXIE RD	NO	00:33	00:00	00:08	00:20	00:08	00:28	27	00:03	00:12
DUNDAS ST at WHARTON WAY	NO	03:10	01:13	00:29	00:10	01:43	01:52	25	00:42	00:46
DUNDAS ST at BILLINGHAM RD	YES	04:41	01:12	00:38	00:25	01:50	02:14	22	00:41	00:50
DUNDAS ST at AUKLAND RD	YES	04:06	00:47	01:41	00:21	02:27	02:48	13	00:31	00:35
ISLINGTON SUBWAY DROP OFF	YES	06:10	02:31	00:59	00:00	03:17	03:17	0	00:00	00:00

Highlighted values:

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- Total delays **over** three minutes, or
- Passengerminute delays of over 60 minutes

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MiWay Infrastructure Growth Plan

January 21, 2019

Processing Outputs by Stop - Westbound

Stop Name	Timepoint Y/N	Average Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Operational Delay (mm:ss)	Total Delay (mm:ss)	Average Load	Operational Passenger Delay (hh:mm)	Total Passenger Delay (hh:mm)
DUNDAS ST at AUKLAND RD	NO	06:27	01:26	03:38	00:11	05:05	05:16	23	01:56	02:00
DUNDAS ST at BILLINGHAM RD	YES	03:17	00:51	00:54	00:12	01:45	01:57	26	00:45	00:50
DUNDAS ST at WHARTON WAY	NO	03:51	00:50	00:28	00:10	01:19	01:29	26	00:34	00:39
DUNDAS ST at DIXIE RD	YES	03:20	00:37	01:09	00:13	01:46	01:59	27	00:47	00:53
DUNDAS ST west of DIXIE RD	NO	00:43	00:00	00:05	00:30	00:05	00:36	33	00:02	00:19
DUNDAS ST at TOMKEN RD	YES	02:56	00:50	00:22	00:31	01:12	01:43	38	00:45	01:05
DUNDAS ST at CAWTHRA RD	YES	01:58	00:33	00:20	00:12	00:53	01:05	39	00:34	00:42
DUNDAS ST at HURONTARIO ST	YES	04:44	00:52	00:54	00:42	01:46	02:28	27	00:48	01:07
DUNDAS ST at CONFEDERATION PKY	NO	01:51	00:34	00:33	00:15	01:07	01:22	26	00:28	00:35
DUNDAS ST at MAVIS RD	YES	02:52	00:46	00:17	00:10	01:03	01:12	24	00:24	00:28
DUNDAS ST at WOLFEDALE RD	NO	01:11	00:28	00:07	00:11	00:35	00:46	21	00:12	00:15
DUNDAS ST at ERINDALE STATION RD	YES	01:14	00:04	00:09	00:04	00:13	00:17	12	00:02	00:03
UNIVERSITY of TORONTO at MISSISSAUGA CAMPUS	YES	09:46	02:10	03:50	00:03	06:00	06:02	12	01:13	01:14
DUNDAS ST east of ERIN MILLS PKY	YES	04:49	01:55	00:42	00:10	02:37	02:47	10	00:27	00:28
SOUTH MILLWAY at FIFTH LINE W	YES	02:10	00:27	00:31	00:21	00:58	01:20	11	00:10	00:14
SOUTH COMMON CENTRE BUS TERMINAL PLATFORM B	YES	02:22	01:00	00:09	00:00	01:00	01:00	2	00:01	00:01

Highlighted values:

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- Total delays **over** three minutes, or
- Passengerminute delays of over 60 minutes

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MiWay Infrastructure Growth Plan



Corridor Level Results



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Eastbound Delay Approaching Intersection Map

 There are four areas highlighted in red with high signal delay



Westbound Delay Approaching Intersection Map

- Majority of the total delay is attributed to signal delay
- Highest congestion delay is reported between Aukland Road to Dixie Road and between Robinson Street and South Common Centre



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Eastbound Passenger-Minutes Delay between Stops



Legend

Operational Passenger Delay (hh:mm)
Total Passenger Delay (hh:mm)

January 21, 2019

Westbound Passenger-Minutes Delay between Stops



Legend

Operational Passenger Delay (hh:mm)

January 21, 2019

Total Passenger Delay (hh:mm)

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Eastbound – Mean Speeds and Standard Deviation Approaching Intersections



Westbound – Mean Speeds and Standard Deviation Approaching Intersections



Eastbound Average Delay Approaching Intersections



Westbound Average Delay Approaching Intersections



Time Space Diagram - Eastbound



Time Space Diagram - Westbound



Time Space Diagram - Eastbound



Time Space Diagram - Westbound







Trip Times by Start Time

- Eastbound and westbound trips adhere closely to scheduled times
- Low number of complete runs impacted the sample size of average recorded runs .
- Scheduled times were calculated by taking the average runtimes for all trips that started within each 30 minute interval. Data . obtained from MiWay GTFS

01:00

00:45

00:15

00:00

Average Recorded Travel Time

Time (hh:mm) 00:30



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MiWay Infrastructure Growth Plan

January 21, 2019

MiWay Travel Time Analysis Route 101A



IBI GROUP MiWay January 21, 2019

Agenda

- Route 101A Dundas Express Overview
- Analysis Results

MiWay Infrastructure Growth Plan January 21, 2019 2

Route 101A – Dundas Express

- 3 kilometres (between Laird Road at Ridgeway Drive and Erin Mills Parkway)
- 7 signalized intersections in both directions
- 3 bus stops eastbound and 4 bus stops westbound



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Data Collection – Route 101A

- Surveys were conducted from October 17th to October 19^{th,} between 3:30 PM and 6:30 PM;
- Data was successfully recorded for 8 EB runs and 8 WB runs.

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Route 101A EB

Average Boardings + Alightings PM Peak Period, 2016

*Note: Boardings, Alightings, and Load were averaged separately and may not sum. Averages are per individual trips.

Stop Name	Timepoint Y/N	Average Boardings	Average Alightings	Average Load*
LAIRD RD west of RIDGEWAY DR	YES	2	1	2
DUNDAS ST W at WINSTON CHURCHILL BLVD	YES	5	0	10
DUNDAS ST at WOODCHESTER DR	NO	2	0	11



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Route 101A WB

Average Boardings + Alightings PM Peak Period, 2016

*Note: Boardings, Alightings, and Load were averaged separately and may not sum. Averages are per individual trips.

Stop Name	Timepoint Y/N	Average Boardings	Average Alightings	Average Load*
DUNDAS ST at WOODCHESTER DR	NO	0	3	6
DUNDAS ST at WINSTON CHURCHILL BLVD	YES	0	2	4
DUNDAS ST W at VEGA BLVD	NO	1	1	4
LAIRD RD west of RIDGEWAY DR	YES	2	1	2

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MiWay Infrastructure Growth Plan

January 21, 2019

Processing Outputs by Stop - Eastbound

Stop Name	Timepoint Y/N	Average Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Operational Delay (mm:ss)	Total Delay (mm:ss)	Average Load	Operational Passenger Delay (hh:mm)	Total Passenger Delay (hh:mm)
DUNDAS ST at WOODCHESTER DR	NO	02:54	01:07	00:30	00:00	01:37	01:37	6	00:09	00:09
DUNDAS ST W at WINSTON CHURCHILL BLVD	YES	04:41	02:11	00:51	00:24	03:02	03:27	10	00:29	00:33
DUNDAS ST at WOODCHESTER DR	NO	01:37	00:34	00:10	00:15	00:44	00:59	11	00:08	00:10
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Highlighted values:

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- Total delays **over** three minutes, or
- Passengerminute delays of over 60 minutes

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MiWay Infrastructure Growth Plan

January 21, 2019

Processing Outputs by Stop - Westbound

Stop Name	Timepoint Y/N	Average Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Operationa Delay (mm:ss)	Total Delay (mm:ss)	Average Load	Operational Passenger Delay (hh:mm)	Total Passenger Delay (hh:mm)
DUNDAS ST at WOODCHESTER DR	NO	01:50	00:07	00:11	00:09	00:18	00:27	6	00:01	00:02
DUNDAS ST at WINSTON CHURCHILL BLVD	YES	02:35	00:57	00:53	00:08	01:50	01:59	4	00:07	00:07
DUNDAS ST W at VEGA BLVD	NO	02:14	00:39	00:28	00:06	01:07	01:14	4	00:04	00:04
LAIRD RD west of RIDGEWAY DR	YES	00:39	00:13	00:10	00:00	00:23	00:23	2	00:00	00:00
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Delay is lower in the westbound direction during the p.m. peak period

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January 21, 2019

Corridor Level Results

Direction	Average Travel Time (mm:ss)	Standard Deviation of Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Free Flow Time (mm:ss)
EB	09:09	01:48	03:53	01:31	00:39	03:05
WB	07:19	01:29	01:56	01:42	00:24	03:17


Eastbound Delay Approaching Intersection Map

 Majority of the total delay is attributed to signal delay reported throughout the corridor with the worst intersection being Winston Churchill Boulevard



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Westbound Delay Approaching Intersection Map

 Majority of the total delay is attributed to signal delay particularly at Winston Churchill Boulevard



Eastbound Passenger-Minutes Delay between Stops



Westbound Passenger-Minutes Delay between Stops



Eastbound – Mean Speeds and Standard Deviation Approaching Intersections



Westbound – Mean Speeds and Standard Deviation Approaching Intersections



Eastbound Average Delay Approaching Intersections



Westbound Average Delay Approaching Intersections



Time Space Diagram - Eastbound



Time Space Diagram - Westbound



Time Space Diagram - Eastbound



Time Space Diagram - Westbound





Trip Times by Start Time



Average Recorded Travel Time

- Eastbound trips times experience variability between 4:30 PM and 6:00 PM, and generally take longer than the scheduled time .
- Westbound trips times are generally consistent with little variability, and are closer to the scheduled time •
- Scheduled times were calculated by taking the average runtimes for all trips that started within each 30 minute interval. Data . obtained from MiWay GTFS



MiWay Travel Time Analysis Route 104



IBI GROUP MiWay January 18, 2019

Agenda

- Route 104 Derry Express Overview
- Analysis Results

MiWay Infrastructure Growth Plan January 18, 2019 2

Route 104 – Derry Express

- 22 kilometres (between Westwood Square and Meadowvale Town Centre)
- 43 signalized intersections eastbound and 44 signalized intersections westbound
- 15 bus stops eastbound and 15 bus stops westbound



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Data Collection – Route 104

- Surveys were conducted from October 9th to October 12th and October 17th to October 18th between 3:30 PM and 6:30 PM;
- Data was successfully recorded for 8 EB runs and 8 WB runs;
- No boarding/alighting data was provided, therefore dwell times at stops were assumed based on the size of the cross street the bus stop is located at (10 seconds for minor streets, 13 seconds for major streets), based on comparable bus stops in the MiWay network;
- No ridership data was provided, therefore no results will be shown for passenger-minutes delay.

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MiWay Infrastructure Growth Plan January 18, 2019

Processing Outputs by Stop - Eastbound

Timepoint Y/N	Average Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Operational Delay (mm:ss)	Total Delay (mm:ss)
YES	05:20	01:24	01:16	00:10	02:40	02:49
YES	04:02	01:13	00:44	00:22	01:58	02:20
YES	08:59	02:41	00:27	00:36	02:46	03:22
NO	02:24	01:21	00:23	00:13	01:44	01:57
YES	03:43	01:08	01:11	00:13	02:19	02:32
YES	03:19	00:54	01:00	00:13	01:54	02:07
YES	03:03	01:07	00:22	00:17	01:30	01:46
NO	01:31	00:22	00:19	00:10	00:41	00:51
YES	01:56	00:48	00:28	00:13	01:17	01:30
YES	01:55	00:16	00:18	00:10	00:35	00:45
NO	04:32	00:26	01:57	00:10	02:23	02:33
YES	03:25	00:50	01:39	00:13	02:29	02:42
YES	04:06	01:47	00:20	00:21	02:07	02:28
YES	03:52	01:31	01:14	00:00	02:45	02:45
	Timepoint YES YES NO YES YES YES NO YES YES NO YES YES YES	Timepoint Y/NAverage travel Time (mmss)YES05:20YES04:02YES03:59NO02:24YES03:43YES03:19YES03:03YES03:03YES01:31YES01:55YES01:55YES03:25YES03:25YES04:06YES03:52	Average Travel Time (mm:ss) Signal Delay (mm:ss) YES 05:20 01:24 YES 04:02 01:13 YES 08:59 02:41 YES 08:59 02:41 YES 03:43 01:24 YES 03:43 01:21 YES 03:43 01:08 YES 03:31 01:07 YES 03:03 01:07 YES 03:03 00:22 YES 01:56 00:48 YES 01:55 00:16 YES 03:22 00:26 YES 03:25 00:50 YES 03:25 00:50 YES 04:06 01:47 YES 03:52 01:31	Timepoint Y(N Average massing Signal Delay (mm:ss) Congestion Delay (mm:ss) YES 05:20 01:24 01:16 YES 04:02 01:13 00:44 YES 08:59 02:41 00:27 NO 02:24 01:21 00:23 YES 03:43 01:08 01:11 YES 03:43 01:08 01:11 YES 03:19 00:54 01:00 YES 03:03 01:07 00:22 NO 01:31 00:22 00:19 YES 01:56 00:48 00:28 YES 01:55 00:16 00:18 NO 04:32 00:20 01:57 YES 03:25 00:50 01:39 YES 04:06 01:47 00:20 YES 03:52 01:31 01:14	Timepoint Y/N Average Imm:se) Signal Delay Delay (mm:se) Congestion Delay (mm:se) Dwell Time (mm:se) YES 05:20 01:24 01:16 00:10 YES 04:02 01:13 00:44 00:22 YES 04:02 01:13 00:44 00:22 YES 08:59 02:41 00:27 00:36 NO 02:24 01:21 00:23 00:13 YES 03:43 01:08 01:11 00:13 YES 03:43 01:07 00:22 00:13 YES 03:30 01:07 00:22 00:17 NO 01:31 00:22 00:19 00:10 YES 01:56 00:48 00:28 00:13 YES 01:55 00:16 00:18 00:10 YES 03:25 00:50 01:39 00:13 YES 04:06 01:47 00:20 00:21 YES 03:52 01:31 01:14 00:00	Timepoint Y(N Average massing Signal Delay (mm:ss) Congestion Delay (mm:ss) Dwell Time (mm:ss) Operational Delay (mm:ss) YES 05:20 01:24 01:16 00:10 02:40 YES 04:02 01:13 00:44 00:22 01:58 YES 08:59 02:41 00:27 00:36 02:46 NO 02:24 01:21 00:23 00:13 01:44 YES 03:43 01:08 01:11 00:13 02:19 YES 03:43 01:08 01:11 00:13 01:54 YES 03:03 01:07 00:22 00:17 01:30 YES 03:03 01:07 00:22 00:10 00:41 YES 01:56 00:48 00:28 00:13 01:17 YES 01:55 00:16 00:18 00:10 02:23 NO 04:32 00:26 01:57 00:10 02:23 YES 04:06 01:47 00:20

Highlighted values:

 Total delays over three minutes

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MiWay Infrastructure Growth Plan

January 18, 2019

Processing Outputs by Stop - Westbound

Stop Name	Timepoint Y/N	Average Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Operational Delay (mm:ss)	Total Delay (mm:ss)
GOREWAY DR at DERRY RD	YES	04:17	01:32	01:14	00:13	02:45	02:59
DERRY RD at AIRPORT RD	YES	05:43	02:38	01:11	00:17	03:49	04:07
DERRY RD at TORBRAM RD	NO	02:48	00:59	00:17	00:13	01:16	01:29
DERRY RD at BRAMALEA RD	YES	02:26	00:42	00:20	00:10	01:02	01:12
DERRY RD at DIXIE RD	YES	04:42	01:32	01:34	00:17	03:06	03:23
DERRY RD at CARDIFF BLVD	YES	01:08	00:33	00:08	00:10	00:41	00:51
DERRY RD at TOMKEN RD	YES	04:59	01:12	02:49	00:13	04:00	04:14
DERRY RD at KENNEDY RD	YES	03:26	01:06	00:56	00:13	02:02	02:15
DERRY RD at HURONTARIO ST	YES	04:21	01:37	01:03	00:26	02:39	03:05
DERRY RD at MCLAUGHLIN RD	YES	04:41	01:29	01:52	00:13	03:21	03:34
DERRY RD at MAVIS RD	YES	02:13	00:45	00:43	00:13	01:28	01:41
FINANCIAL DR at 6897 FINANCIAL DR	YES	06:33	01:02	00:30	00:31	01:21	01:52
DERRY RD at ARGENTIA RD	YES	05:30	01:52	01:46	00:10	03:38	03:48
MEADOWVALE TOWN CENTRE BUS TERMINAL PLATFORM H	YES	05:04	01:08	01:26	00:00	02:34	02:34

Highlighted values:

 Total delays over three minutes

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MiWay Infrastructure Growth Plan



Corridor Level Results

Direction	Average Travel Time (mm:ss)	Standard Deviation of Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Free Flow Time (mm:ss)
EB	52:07	04:59	15:50	12:22	03:22	20:34
WB	57:52	04:54	18:07	15:47	03:21	20:37

Eastbound

Westbound



Eastbound Delay Approaching Intersection Map

 Most total delay is reported between the Highway 410 ramps and John Watt Boulevard / Envoy Drive and between Cattrick Street and Goreway Drive



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Westbound Delay Approaching Intersection Map

 The highest signal delay is reported between Dixie Road and Argentia Road



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Eastbound – Mean Speeds and Standard Deviation Approaching Intersections



Westbound – Mean Speeds and Standard Deviation Approaching Intersections



Eastbound Average Delay Approaching Intersections



Westbound Average Delay Approaching Intersections



Time Space Diagram - Eastbound



Time Space Diagram - Westbound



Time Space Diagram - Eastbound



Time Space Diagram - Westbound





Trip Times by Start Time



- Northbound trip times are fairly consistent, and are similar to scheduled times
- Southbound trip times are fairly consistent, and are shorter than scheduled times
- Scheduled times were calculated by taking the average runtimes for all trips that started within each 30 minute interval. Data obtained from MiWay GTFS



MiWay Infrastructure Growth Plan January 18, 2019

MiWay Travel Time Analysis Route 107



IBI GROUP MiWay January 18, 2018

Agenda

- Route 107 Malton Express Overview
- Analysis Results

MiWay Infrastructure Growth Plan January 18, 2018 2

Route 107 – Malton Express

- 15 kilometres (only from Renforth Drive to Humber College Campus)
- 26 signalized intersections northbound and 28 signalized intersections southbound
- 13 bus stops northbound and 14 bus stops southbound



IBI IBI GROUP

Data Collection – Route 107

- Surveys were conducted from October 9th to October 12^{th,} between 3:30 PM and 6:30 PM;
- Data was successfully recorded for 9 NB runs and 8 SB runs.
- Three northbound runs and 5 southbound runs were excluded between Humberwood Boulevard and Humber College Boulevard because of:
 - A route diversion; or
 - Unusually high travel times observed along this segment for data collected on October 11th.

MiWay Infrastructure Growth Plan January 18, 2018 4

Route 107 NB Average Boardings + Alightings PM Peak Period, 2016

Note: Boardings, Alightings, and Load were averaged separately and may not sum. Averages are per individual trips. Blank areas are where no APC data was available

Stop Name	Timepoint Y/N	Average Boardings	Average Alightings	Average Load*
RENFORTH DR at CONVAIR DR	NO	0	0	14
CARLINGVIEW DR north of INTERNATIONAL BLVD	NO	0	0	14
CARLINGVIEW DR at DIXON RD	YES	2	1	18
CAMPUS RD at BRESLER DR	NO	0	0	18
VISCOUNT STATION	YES	0	1	17
AMERICAN DR at VISCOUNT RD	NO	0	0	18
AMERICAN DR at NORTHAM DR	NO	1	0	19
NORTHWEST DR at AMERICAN DR	YES	1	0	20
GOREWAY DR at NASHUA DR	NO			19
GOREWAY DR north of DERRY RD	NO	1	2	19
WESTWOOD SQUARE BUS TERMINAL PLATFORM K	YES	2	16	11
HUMBER COLLEGE NORTH CAMPUS PLATFORM 1	YES	7	2	7

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MiWay Infrastructure Growth Plan

January 18, 2018
Route 107 SB Average Boardings + Alightings PM Peak Period, 2016

Note: Boardings, Alightings, and Load were averaged separately and may not sum. Averages are per individual trips. Blank areas are where no APC data was available

Stop Name	Timepoint Y/N	Average Boardings	Average Alightings	Average Load*
HUMBER COLLEGE NORTH CAMPUS PLATFORM 1	YES	7	2	7
WESTWOOD SQUARE BUS TERMINAL PLATFORM G	YES	3	2	15
GOREWAY DR at DERRY RD	NO	2	0	18
GOREWAY DR at NASHUA DR	NO			18
NORTHWEST DR at AMERICAN DR	YES	1	0	19
AMERICAN DR at NORTHAM DR	NO	2	0	20
VISCOUNT RD at AMERICAN DR	NO	2	0	22
VISCOUNT STATION	YES	1	0	22
CAMPUS RD at BRESLER DR	NO	2	0	24
CARLINGVIEW DR at DIXON RD	YES	3	1	26
CARLINGVIEW DR at METEOR DR	NO	1	0	27
CARLINGVIEW DR at RENFORTH DR	NO	0	0	12
RENFORTH DR at CONVAIR DR	NO	1	0	13

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MiWay Infrastructure Growth Plan

January 18, 2018

Processing Outputs by Stop - Northbound

Stop Name	Timepoint Y/N	Average Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Operational Delay (mm:ss)	Total Delay (mm:ss)	Average Load	Operational Passenger Delay (hh:mm)	Total Passenger Delay (hh:mm)
RENFORTH DR at CONVAIR DR	NO	03:07	00:59	00:44	00:03	01:43	01:46	14	00:23	00:24
CARLINGVIEW DR north of INTERNATIONAL BLVD	NO	02:42	00:49	01:06	00:00	01:55	01:55	14	00:27	00:27
CARLINGVIEW DR at DIXON RD	YES	01:55	00:38	00:08	00:00	00:46	00:46	18	00:13	00:13
CAMPUS RD at BRESLER DR	NO	02:33	00:33	00:23	00:05	00:56	01:01	18	00:16	00:18
VISCOUNT STATION	YES	02:21	00:31	00:29	00:21	01:00	01:21	17	00:17	00:23
AMERICAN DR at VISCOUNT RD	NO	01:38	00:40	00:27	00:01	01:06	01:07	18	00:19	00:19
AMERICAN DR at NORTHAM DR	NO	01:02	00:00	00:07	00:17	00:07	00:24	19	00:02	00:07
NORTHWEST DR at AMERICAN DR	YES	01:17	00:00	00:05	00:32	00:05	00:38	20	00:01	00:12
GOREWAY DR at NASHUA DR	NO	02:56	00:38	00:21	00:10	00:59	01:09	19	00:18	00:22
GOREWAY DR north of DERRY RD	NO	02:40	00:46	00:37	00:19	01:23	01:42	19	00:25	00:31
WESTWOOD SQUARE BUS TERMINAL PLATFORM K	YES	05:34	01:34	02:12	00:37	03:46	04:23	11	00:40	00:47
HUMBER COLLEGE NORTH CAMPUS PLATFORM 1	YES	08:48	01:47	01:24	00:00	03:09	03:09	7	00:23	00:23
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Highlighted values:

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- Total delays over three minutes, or
- Passengerminute delays of over 60 minutes

January 18, 2018

Processing Outputs by Stop - Southbound

Stop Name	Timepoint Y/N	Average Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Operational Delay (mm:ss)	Total Delay (mm:ss)	Average Load	Operational Passenger Delay (hh:mm)	Total Passenger Delay (hh:mm)
WESTWOOD SQUARE BUS TERMINAL PLATFORM G	YES	12:16	03:38	01:58	00:16	04:58	05:14	15	01:15	01:19
GOREWAY DR at DERRY RD	NO	04:12	01:34	01:08	00:09	02:42	02:51	18	00:47	00:49
GOREWAY DR at NASHUA DR	NO	01:18	00:11	00:06	00:10	00:17	00:27	18	00:05	00:08
NORTHWEST DR at AMERICAN DR	YES	02:09	00:00	00:14	00:09	00:14	00:23	19	00:04	00:07
AMERICAN DR at NORTHAM DR	NO	01:15	00:00	00:00	00:32	00:00	00:32	20	00:00	00:10
VISCOUNT RD at AMERICAN DR	NO	01:18	00:20	00:14	00:05	00:35	00:40	22	00:12	00:14
VISCOUNT STATION	YES	01:46	00:21	00:25	00:26	00:46	01:12	22	00:17	00:26
CAMPUS RD at BRESLER DR	NO	02:04	00:29	00:20	00:11	00:48	00:59	24	00:19	00:24
CARLINGVIEW DR at DIXON RD	YES	02:56	00:38	00:32	00:13	01:11	01:24	26	00:30	00:36
CARLINGVIEW DR at METEOR DR	NO	00:48	00:00	00:03	00:05	00:03	00:08	27	00:01	00:03
CARLINGVIEW DR at RENFORTH DR	NO	01:11	00:04	00:35	00:04	00:39	00:43	12	00:07	00:08
RENFORTH DR at CONVAIR DR	NO	02:01	00:39	00:32	00:05	01:11	01:17	13	00:15	00:16
RENFORTH STATION WEST PLATFORM 1	YES	02:39	00:32	00:53	00:00	01:25	01:25	28	00:39	00:39
		MiWa	y Infras	tructur	e Grow	th Plan				

Highlighted values:

- Total delays over three minutes, or
- Passengerminute delays of over 60 minutes

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January 18, 2018

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Corridor Level Results

Direction	Average Travel Time (mm:ss)	Standard Deviation of Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Free Flow Time (mm:ss)
NB	35:48	03:31	08:56	08:01	02:27	16:23
SB	35:52	02:49	08:27	07:25	02:25	17:35

Northbound

Southbound



Northbound Delay Approaching Intersection Map

 The highest congestion delay is reported between Derry Road East and Humberline Drive / Humber College Boulevard



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Southbound Delay Approaching Intersection Map

 The highest total delay is reported between Humberline Drive / Humber College Boulevard and Derry Road and near the Highway 401 interchanges



Northbound Passenger-Minutes Delay between Stops



Legend Operational Passenger Delay Total Passenger Delay

Southbound Passenger-Minutes Delay between Stops



Legend Operational Passenger Delay Total Passenger Delay

January 18, 2018 **13**

Northbound – Mean Speeds and Standard Deviation Approaching Intersections



Southbound – Mean Speeds and Standard Deviation Approaching Intersections



Northbound Average Delay Approaching Intersections



Southbound Average Delay Approaching Intersections



Time Space Diagram - Northbound



Time Space Diagram - Southbound



Time Space Diagram - Northbound



Time Space Diagram - Southbound





- Southbound trip times adhere closely with scheduled times
- Scheduled times were calculated by taking the average runtimes for all trips that started within each 30 minute interval. Data obtained from MiWay GTFS



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MiWay Infrastructure Growth Plan

January 18, 2018

MiWay Travel Time Analysis Route 108



IBI GROUP MiWay January 18, 2019

Agenda

- Route 108 Meadowvale Business Express Overview
- Analysis Results

MiWay Infrastructure Growth Plan January 18, 2019 2

Route 108 – Meadowvale Business Express

- Southbound only during the survey period
- 8 kilometres
- 16 signalized intersections
- 24 bus stops



MiWay Infrastructure Growth Plan January 18, 2019

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Data Collection – Route 108

- Surveys were conducted from October 16 to October 17 between 3:30 p.m. and 6:30 p.m.
- Data was successfully recorded for 8 SB runs.

MiWay Infrastructure Growth Plan January 18, 2019 4

Route 108 SB Average Boardings + Alightings PM Peak Period, 2016

Note: Boardings, Alightings, and Load were averaged separately and may not sum. Averages are per individual trips.

Stop Name	Timepoint Y/N	Average Boardings	Average Alightings	Average Load*
ARGENTIA RD at CAMPOBELLO RD	YES	0	0	0
ARGENTIA RD west of CAMPOBELLO RD	NO	0	0	1
ARGENTIA RD at 1705 ARGENTIA RD	NO	0	0	1
ARGENTIA RD at KITIMAT RD	NO	1	0	1
ARGENTIA RD at MISSISSAUGA RD	YES	3	0	4
ARGENTIA RD at CENTURY AVE	NO	2	0	5
ARGENTIA RD at TURNER VALLEY RD	NO	2	0	7
ARGENTIA RD west of TURNER VALLEY RD	NO	1	0	8
ARGENTIA RD at 2283 ARGENTIA RD	NO	1	0	8
ARGENTIA RD at CENTURY AVE	NO	3	0	12
ARGENTIA RD at DERRY RD	NO	3	0	15
SYNTEX DR at DERRY RD	YES	0	0	15
SYNTEX DR at MEADOWVALE BLVD	NO	3	1	17
MEADOWVALE BLVD at WEST CREDIT AVE	NO	1	0	18
MEADOWVALE BLVD east of WEST CREDIT BLVD	NO	2	1	19
MEADOWVALE BLVD at MISSISSAUGA RD	YES	2	0	21
MEADOWVALE BLVD at FINANCIAL DR	NO	0	1	20
FINANCIAL DR at DERRY RD	NO	3	0	24
FINANCIAL DR south of SYNTEX CRT	YES	6	1	29
FINANCIAL DR at 6768 FINANCIAL DR	NO	2	0	31
FINANCIAL DR at 6696 FINANCIAL DR	NO	1	0	32
FINANCIAL DR at 6660 FINANCIAL DR	YES	1	0	32
CREDITVIEW RD at DERRY RD	NO	2	0	34
DERRY RD west of MEADOWVALE BLVD	NO	0	0	34
MISSISSAUGA RD at DUPONT MEADOW PLACE	NO	8	0	43

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MiWay Infrastructure Growth Plan

January 18, 2019

Processing Outputs by Stop – Southbound Part 1

Stop Name	Timepoint Y/N	Average Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Operational Delay (mm:ss)	Total Delay (mm:ss)	Average Load	Operational Passenger Delay (hh:mm)	Total Passenger Delay (hh:mm)
ARGENTIA RD west of CAMPOBELLO RD	NO	00:40	00:03	00:11	00:10	00:14	00:24	1	00:00	00:00
ARGENTIA RD at 1705 ARGENTIA RD	NO	00:16	00:00	00:06	00:02	00:06	00:07	1	00:00	00:00
ARGENTIA RD at MISSISSAUGA RD	YES	03:42	01:42	00:49	00:11	02:44	02:55	4	00:10	00:10
ARGENTIA RD at CENTURY AVE	NO	00:36	00:07	00:07	80:00	00:14	00:22	5	00:01	00:01
ARGENTIA RD at TURNER VALLEY RD	NO	00:52	00:15	00:17	80:00	00:32	00:41	7	00:03	00:04
ARGENTIA RD west of TURNER VALLEY RD	NO	00:42	00:00	00:09	00:13	00:09	00:22	8	00:01	00:02
ARGENTIA RD at 2283 ARGENTIA RD	NO	00:25	00:00	00:06	00:04	00:06	00:10	8	00:00	00:01
ARGENTIA RD at CENTURY AVE	NO	00:40	00:00	00:05	00:13	00:05	00:17	12	00:00	00:03
ARGENTIA RD at DERRY RD	NO	01:21	00:06	00:42	00:13	00:48	01:00	15	00:11	00:14
SYNTEX DR at DERRY RD	YES	02:29	00:28	01:25	00:06	01:53	01:59	15	00:28	00:29
SYNTEX DR at MEADOWVALE BLVD	NO	00:29	00:00	00:03	00:13	00:03	00:16	17	00:00	00:04
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Delays are below 3 minutes across the entire route

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The stop with the highest total delay is Argentina Road at Mississauga Road

IBI IBI GROUP

MiWay Infrastructure Growth Plan

January 18, 2019

Processing Outputs by Stop – Southbound Part 2

Stop Name	Timepoint Y/N	Average Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Operational Delay (mm:ss)	Total Delay (mm:ss)	Average Load	Operational Passenger Delay (hh:mm)	Total Passenger Delay (hh:mm)
MEADOWVALE BLVD at WEST CREDIT AVE	NO	00:52	00:12	00:14	00:06	00:26	00:32	18	00:07	00:09
MEADOWVALE BLVD east of WEST CREDIT BLVD	NO	00:15	00:00	00:03	00:02	00:03	00:05	19	00:01	00:01
MEADOWVALE BLVD at MISSISSAUGA RD	YES	01:07	00:29	00:11	00:08	00:40	00:48	21	00:13	00:16
MEADOWVALE BLVD at FINANCIAL DR	NO	00:54	00:15	00:10	00:05	00:25	00:30	20	00:08	00:10
FINANCIAL DR at DERRY RD	NO	01:13	00:24	00:11	00:13	00:35	00:47	24	00:13	00:18
FINANCIAL DR south of SYNTEX CRT	YES	01:59	00:22	00:18	00:48	00:40	01:28	29	00:19	00:41
FINANCIAL DR at 6768 FINANCIAL DR	NO	00:38	00:00	00:02	00:14	00:02	00:15	31	00:00	00:07
FINANCIAL DR at 6696 FINANCIAL DR	NO	00:28	00:00	00:03	00:08	00:03	00:11	32	00:01	00:05
FINANCIAL DR at 6660 FINANCIAL DR	YES	00:23	00:00	00:05	00:07	00:05	00:12	32	00:02	00:06
CREDITVIEW RD at DERRY RD	NO	01:20	00:00	00:06	00:40	00:06	00:46	34	00:03	00:26
DERRY RD west of MEADOWVALE BLVD	NO	00:59	00:15	00:25	00:00	00:40	00:40	34	00:22	00:22
MISSISSAUGA RD at DUPONT MEADOW PLACE	NO	02:21	01:20	00:23	00:00	01:43	01:43	43	01:13	01:13

Delays are below 3 minutes across the entire route

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The stop with the highest total delay is Financial Drive south of Syntex Court

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MiWay Infrastructure Growth Plan

January 18, 2019

Corridor Level Results



Southbound Delay Approaching Intersection Map

- Majority of the total delay is attributed to both types of delay
- The highest delay can be found at Syntex Drive / Derry Road, Mississauga Road, and Derry Road / Financial Drive



MiWay Infrastructure Growth Plan January 18, 2019 9

Southbound Passenger-Minutes Delay between Stops



Southbound – Mean Speeds and Standard Deviation Approaching Intersections



Southbound Average Delay Approaching Intersections



Time Space Diagram - Southbound



Time Space Diagram - Southbound





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Trip Times by Start Time

- Southbound trips are longest
 between 5-5:30 PM, but
 generally adhere to scheduled
 times
- Scheduled times were calculated by taking the average runtimes for all trips that started within each 30 minute interval. Data obtained from MiWay GTFS

MiWay Infrastructure Growth Plan

January 18, 2019

MiWay Travel Time Analysis Route 109



IBI GROUP MiWay January 18, 2019

Agenda

- Route 109 Meadowvale Express Overview
- Analysis Results

MiWay Infrastructure Growth Plan January 18, 2019 2

East Section Route 109 – Meadowvale Express

- 11 kilometres (between Renforth Station and Islington Station)
- 7 signalized intersections northbound and 13 southbound
- 5 bus stops northbound and southbound





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West Section Route 109 – Meadowvale Express

- 6 kilometres (between Winston Churchill Station and Meadowvale Town Centre)
- 16 signalized intersections
- 7 bus stops northbound and southbound





IBI IBI GROUP
Data Collection – Route 109 (West Section)

- Surveys were conducted from October 15th to October 19^{th,} between 3:30 PM and 6:30 PM;
- Data was successfully recorded for 8 NB runs and 8 SB runs.

MiWay Infrastructure Growth Plan January 18, 2019

Data Collection – Route 109 (East Section)

- Surveys were conducted from October 15th to October 19^{th,} between 3:30 PM and 6:30 PM;
- Data was successfully recorded for 8 NB runs and 6 SB runs.

MiWay Infrastructure Growth Plan January 18, 2019

East Section Route 109 NB

Average Boardings + Alightings PM Peak Period, 2016

Note: Boardings, Alightings, and Load were averaged separately and may not sum. Averages are per individual trips.

Stop Name		Timepoint Y/N	Average Boardings	Average Alightings	Average Load*	•
ISLINGTON SUBWAY B	YES 5		1	5		
BLOOR ST W at GREEN	LANES	NO	2	0	17	
DUNDAS ST at AUKLAN	NO 2		0	19		
DUNDAS ST at BILLING	YES	1	0	20		
	MiWay Infrastructure	n Ja	nuary 18, 2	019	7	

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East Section Route 109 SB

Average Boardings + Alightings PM Peak Period, 2016

Note: Boardings, Alightings, and Load were averaged separately and may not sum. Averages are per individual trips.

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Stop Name	Timepoint Y/N	Average Boardings	Average Alightings	Average Load*				
DUNDAS ST at BILLINGHAM RD	YES	0	1	24				
DUNDAS ST at AUKLAND RD	NO	1	7	17				
ISLINGTON SUBWAY DROP OFF	YES	0	14	3				
ISLINGTON SUBWAY BUS TERMINAL PLATFORM A	YES	5	1	5				
MiWay Infrastructure Growth Plan January 18, 2019								

East Section Route 109 NB

Average Boardings + Alightings PM Peak Period, 2016

Note: Boardings, Alightings, and Load were averaged separately and may not sum. Averages are per individual trips.

Stop Name	Timepoint Y/N	Average Boardings	Average Alightings	Average Load*
WINSTON CHURCHILL STATION WEST PLATFORM 4	YES	Note:	Blank	
WINSTON CHURCHILL BLVD at EGLINTON AVE	NO	results areas	are where	24
WINSTON CHURCHILL BLVD at ERIN CENTRE BLVD	YES	no AP was co	C data llected	24
WINSTON CHURCHILL BLVD at THOMAS ST	NO	1	5	24
WINSTON CHURCHILL BLVD at BRITANNIA RD	YES	0	3	20
WINSTON CHURCHILL BLVD at BATTLEFORD RD	NO	0	3	17
MEADOWVALE TOWN CENTRE DROP OFF	YES	0	17	0
MiWay Infrastructure	e Growth Pla	n Ja	nuary 18, 2	019

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West Section Route 109 SB

Average Boardings + Alightings PM Peak Period, 2016

Note: Boardings, Alightings, and Load were averaged separately and may not sum. Averages are per individual trips. Blank areas are where no APC data was available.

Stop Name	Timepoint Y/N	Average Boardings	Average Alightings	Average Load*				
MEADOWVALE TOWN CENTRE BUS TERMINAL PLATFORM J	YES	7	0	7				
WINSTON CHURCHILL BLVD at BATTLEFORD RD	NO	2	0	16				
WINSTON CHURCHILL BLVD at BRITANNIA RD	YES	2	0	18				
WINSTON CHURCHILL BLVD at THOMAS ST	NO	3	1	19				
WINSTON CHURCHILL BLVD at ERIN CENTRE BLVD	YES			19				
WINSTON CHURCHILL BLVD at EGLINTON AVE	NO			19				
WINSTON CHURCHILL STATION EAST PLATFORM 6	YES							
MiWay Infrastructure Growth Plan January 18, 2019								

East Section Processing Outputs by Stop – Northbound

Stop Name	Timepoint Y/N	Average Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Operational Delay (mm:ss)	Total Delay (mm:ss)	Average Load	Operational Passenger Delay (hh:mm)	Total Passenger Delay (hh:mm)
DUNDAS ST at AUKLAND RD	NO	05:35	00:55	03:20	00:09	04:16	04:24	19	01:20	01:23
DUNDAS ST at BILLINGHAM RD	YES	02:50	00:40	00:44	00:05	01:24	01:29	20	00:27	00:29
RENFORTH STATION WEST PLATFORM 1	YES	06:47	00:46	00:00	00:00	00:18	00:18			
B IBI GROUP	MiWay	/ Infrast	tructure	Growt	h Plan					

Highlighted values:

- Total delays over three minutes
 - Passengerminute delays of over 60 minutes

Note: Blank results are areas where no APC data was collected there these metrics cannot be calculated

January 18, 2019

East Section Processing Outputs by Stop – Southbound

Stop Name	Timepoint Y/N	Average Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Operational Delay (mm:ss)	Total Delay (mm:ss)	Average Load	Operational Passenger Delay (hh:mm)	Total Passenger Delay (hh:mm)
DUNDAS ST at BILLINGHAM RD	YES	09:27	01:06	00:13	00:12	01:19	01:31	24	00:31	00:36
DUNDAS ST at AUKLAND RD	NO	04:08	01:40	00:51	00:17	02:31	02:49	17	00:43	00:48
ISLINGTON SUBWAY DROP OFF	YES	05:39	02:07	00:49	00:00	02:45	02:45	3	00:09	00:09
3I IBI GROUP						MiWay Infrastructure Growth Plan				

Delay is significantly lower in the southbound direction during the p.m. peak period

January 18, 2019

West Section Processing Outputs by Stop – Northbound

	Stop Name	Timepoint Y/N	Average Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Operational Delay (mm:ss)	Total Delay (mm:ss)	Average Load	Operational Passenger Delay (hh:mm)	Total Passenger Delay (hh:mm)
	WINSTON CHURCHILL BLVD at EGLINTON AVE	NO	04:25	01:56	01:22	00:13	03:18	03:31	24	01:17	01:22
	WINSTON CHURCHILL BLVD at ERIN CENTRE BLVD	YES	01:15	00:13	00:19	00:10	00:32	00:42	24	00:12	00:16
	WINSTON CHURCHILL BLVD at THOMAS ST	NO	02:20	00:49	00:12	00:15	01:00	01:16	24	00:23	00:29
	WINSTON CHURCHILL BLVD at BRITANNIA RD	YES	02:52	00:58	00:41	00:10	01:39	01:50	20	00:33	00:37
	WINSTON CHURCHILL BLVD at BATTLEFORD RD	NO	02:05	00:15	00:16	00:09	00:31	00:40	17	00:09	00:11
	MEADOWVALE TOWN CENTRE DROP OFF	YES	01:31	00:04	00:34	00:00	00:38	00:38	0	00:00	00:00
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Highlighted values:

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- Total delays over three minutes
- Passengerminute delays of over 60 minutes

January 18, 2019

West Section Processing Outputs by Stop – Southbound

	Stop Name	Timepoint Y/N	Average Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Operational Delay (mm:ss)	Total Delay (mm:ss)	Average Load	Operational Passenger Delay (hh:mm)	Total Passenger Delay (hh:mm)
	WINSTON CHURCHILL BLVD at BATTLEFORD RD	NO	03:29	01:23	00:54	00:08	02:17	02:25	16	00:35	00:37
	WINSTON CHURCHILL BLVD at BRITANNIA RD	YES	03:43	01:05	00:47	00:11	01:53	02:04	18	00:33	00:36
	WINSTON CHURCHILL BLVD at THOMAS ST	NO	01:52	00:14	00:15	00:13	00:29	00:42	19	00:09	00:13
	WINSTON CHURCHILL BLVD at ERIN CENTRE BLVD	YES	02:23	00:29	00:41	00:10	01:10	01:19	19	00:22	00:25
	WINSTON CHURCHILL BLVD at EGLINTON AVE	NO	01:41	00:25	00:31	00:13	00:56	01:09	19	00:18	00:22
	WINSTON CHURCHILL STATION EAST PLATFORM 6	YES	01:31	00:22	00:27	00:00	00:49	00:49			
ī							MiWa	av Infra	structu	re Grow	th Plar

Delay is significantly lower in the southbound direction during the p.m. peak period

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Note: Blank results are areas where no APC data was collected so these metrics cannot be calculated

MiWay Infrastructure Growth Plan

January 18, 2019

East Section Corridor Level Results

Direction	Average Travel Time (mm:ss)	Standard Deviation of Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Free Flow Time (mm:ss)
NB	15:12	01:44	02:21	04:20	00:14	08:17
SB	19:03	01:50	04:54	03:30	00:29	10:10

Northbound

Southbound

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West Section Corridor Level Results

Direction	Average Travel Time (mm:ss)	Standard Deviation of Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Free Flow Time (mm:ss)
NB	14:27	01:15	04:15	03:24	00:58	05:50
SB	14:40	01:31	03:59	03:34	00:55	06:12

Northbound

Southbound



East Section Northbound Delay Approaching Intersection Map

- Majority of the total delay is attributed to congestion delay
- Most of the congestion delay can be found at Aukland Road



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East Section Southbound Delay Approaching Intersection Map

 Most of the total delay can be found at Aukland Road and Burnamthorpe Road



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West Section Northbound Delay Approaching Intersection Map

 Most of the delay can be found at Britannia Road, Eglinton Avenue, and Highway 403 Off-Ramp



West Section Southbound Delay Approaching Intersection Map

 Most of the delay can be found at Aquitaine Avenue, Britannia Road, Erin Centre Boulevard, and Eglinton Avenue



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East Section Northbound Passenger-Minutes Delay between Stops



East Section Southbound Passenger-Minutes Delay between Stops



West Section Northbound Passenger-Minutes Delay between Stops



West Section Southbound Passenger-Minutes Delay between Stops



East Section Northbound – Mean Speeds and Standard Deviation Approaching Intersections



East Section Southbound – Mean Speeds and Standard Deviation Approaching Intersections



West Section Northbound – Mean Speeds and Standard Deviation Approaching Intersections



West Section Southbound – Mean Speeds and Standard Deviation Approaching Intersections



East Section Northbound Average Delay Approaching Intersections



East Section Southbound Average Delay Approaching Intersections



West Section Northbound Average Delay Approaching Intersections



West Section Southbound Average Delay Approaching Intersections



Time Space Diagram – East Section Northbound



Time Space Diagram – East Section Southbound



Time Space Diagram – East Section Northbound



Time Space Diagram - East Section Southbound



Time Space Diagram – West Section Northbound



Time Space Diagram - West Section Southbound



Time Space Diagram - West Section Northbound



Time Space Diagram - West Section Southbound


Trip Times by Start Time – East MIWAY ROUTE 109 Southbound Northbound 3:30 - 4:00 4:00 - 4:30 4:30 - 5:00 5:00 - 5:30 5:30 - 6:00 6:00 - 6:30 3:30 - 4:00 4:00 - 4:30 4:30 - 5:00 5:00 - 5:30 5:30 - 6:00 6:00 - 6:30 00:28 00:28 00:21 00:21 Time (hh:mm) Time (hh:mm) 00:14 00:14 00:07 00:07 00:00 00:00 Average Schedule Travel Time Average Recorded Travel Time

- Northbound trip times are consistent, and run faster than the scheduled time
- Southbound trip times are faster than the scheduled time, but follows a similar profile to the scheduled times
- Scheduled times were calculated by taking the average runtimes for all trips that started within each 30 minute interval. Data obtained from MiWay GTFS





- Southbound trip times are less consistent than northbound, but generally run faster than scheduled trip times
- Scheduled times were calculated by taking the average runtimes for all trips that started within each 30 minute interval. Data obtained from MiWay GTFS



MiWay Travel Time Analysis Route 110



IBI GROUP MiWay January 18, 2019

Agenda

- Route 110 University Express Overview
- Analysis Results

MiWay Infrastructure Growth Plan January 18, 2019 2

Route 110 – University Express

- 16 kilometres
- 25 signalized intersections northbound and 28 signalized intersections southbound
- 8 bus stops northbound and 9 bus stops southbound



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Data Collection – Route 110

- Surveys were conducted from October 9 to October 12 between 3:30 p.m. and 6:30 p.m.
- Data was successfully recorded for 8 NB runs and 8 SB runs.

MiWay Infrastructure Growth Plan January 18, 2019 4

Route 110 NB Average Boardings + Alightings PM Peak Period, 2016

*Note: Boardings, Alightings, and Load were averaged separately and may not sum. Averages are per individual trips.

Stop Name	Timepoint Y/N	Average Boardings	Average Alightings	Average Load*
SOUTHDOWN RD at HARTLAND DR	NO	0	0	7
SOUTHDOWN RD at TRUSCOTT DR	NO	2	0	9
ERIN MILLS PKY at FOWLER DR	YES	4	1	11
DUNDAS ST W east of ERIN MILLS PKY	YES	1	2	11
UNIVERSITY of TORONTO at MISSISSAUGA CAMPUS	YES	30	2	34
SOUTH COMMON CENTRE BUS TERMINAL PLATFORM C	YES	5	5	35
ERIN MILLS PKY at FOLKWAY DR	YES	1	1	35
		-		

MiWay Infrastructure Growth Plan

January 18, 2019

Route 110 SB Average **Boardings + Alightings PM Peak Period**, 2016

*Note: Boardings, Alightings, and Load were averaged separately and may not sum. Averages are per individual trips. Blank areas are where no APC data was available.

Stop Name	Timepoint Y/N	Average Boardings	Average Alightings	Average Load*
ERIN MILLS STATION EAST PLATFORM 6	YES			
ERIN MILLS PKY at FOLKWAY DR	YES	0	1	24
SOUTH COMMON CENTRE BUS TERMINAL PLATFORM H	YES	2	8	17
UNIVERSITY of TORONTO at MISSISSAUGA CAMPUS	YES	5	8	9
ERIN MILLS PKY south of DUNDAS ST W	YES	1	1	13
ERIN MILLS PKY at LEANNE BLVD	YES	0	3	11
SOUTHDOWN RD at TRUSCOTT DR	NO	0	2	9
SOUTHDOWN RD at BROMSGROVE RD	NO	0	1	8
MiWay Infrastr	th Plan	January 1	8, 2019	

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Processing Outputs by Stop - Northbound

Stop Name	Timepoint Y/N	Average Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Operational Delay (mm:ss)	Total Delay (mm:ss)	Average Load	Operational Passenger Delay (hh:mm)	Total Passenger Delay (hh:mm)
SOUTHDOWN RD at HARTLAND DR	NO	00:36	00:09	00:05	00:05	00:14	00:19	7	00:01	00:02
SOUTHDOWN RD at TRUSCOTT DR	NO	02:17	00:39	00:45	00:10	01:25	01:34	9	00:12	00:13
ERIN MILLS PKY at FOWLER DR	YES	04:12	01:50	00:51	00:16	02:41	02:56	11	00:30	00:33
DUNDAS ST W east of ERIN MILLS PKY	YES	04:02	01:23	00:55	00:19	02:18	02:37	11	00:24	00:28
UNIVERSITY of TORONTO at MISSISSAUGA CAMPUS	YES	05:00	01:42	00:58	00:00	02:40	02:40	34	01:32	01:32
SOUTH COMMON CENTRE BUS TERMINAL PLATFORM C	YES	07:24	01:33	01:23	00:53	02:55	03:48	35	01:41	02:11
ERIN MILLS PKY at FOLKWAY DR	YES	04:09	01:30	01:22	00:07	02:52	02:59	35	01:39	01:43
ERIN MILLS STATION WEST PLATFORM 4	YES	03:14	01:34	00:40	00:00	02:14	02:14			

Highlighted values:

- Total delays over three minutes
- Passengerminute delays of over 60 minutes

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Note: Blank results are areas where no APC data was collected therefore results cannot be calculated

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MiWay Infrastructure Growth Plan

January 18, 2019

Processing Outputs by Stop - Southbound

Stop Name	Timepoint Y/N	Average Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Operational Delay (mm:ss)	Total Delay (mm:ss)	Average Load	Operational Passenger Delay (hh:mm)	Total Passenger Delay (hh:mm)
ERIN MILLS PKY at FOLKWAY DR	YES	02:30	00:44	00:37	00:06	01:20	01:26	24	00:32	00:34
SOUTH COMMON CENTRE BUS TERMINAL PLATFORM H	YES	07:30	00:30	04:15	01:38	04:45	06:23	17	01:22	01:51
UNIVERSITY of TORONTO at MISSISSAUGA CAMPUS	YES	07:02	01:37	01:44	00:00	03:21	03:21	9	00:29	00:29
ERIN MILLS PKY south of DUNDAS ST W	YES	07:36	02:15	01:09	00:10	03:24	03:34	13	00:45	00:48
ERIN MILLS PKY at LEANNE BLVD	YES	02:44	01:09	00:13	00:10	01:22	01:32	11	00:15	00:17
SOUTHDOWN RD at TRUSCOTT DR	NO	03:39	01:31	00:26	00:23	01:57	02:20	9	00:18	00:21
SOUTHDOWN RD at BROMSGROVE RD	NO	01:02	00:21	00:00	00:05	00:21	00:27	8	00:02	00:03
CLARKSON GO STATION PLATFORM 9	YES	00:24	00:00	00:06	00:00	00:06	00:06			

Highlighted values:

- Total delays over three minutes
- Passengerminute delays of over 60 minutes

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Note: Blank results are areas where no APC data was collected therefore results cannot be calculated

MiWay Infrastructure Growth Plan

January 18, 2019

Corridor Level Results

Direction	Average Travel Time (mm:ss)	Standard Deviation of Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Free Flow Time (mm:ss)
NB	30:54	01:55	10:20	06:59	01:48	11:47
SB	32:29	02:13	08:07	08:30	02:31	13:20

Northbound

Southbound



Northbound Delay Approaching Intersection Map

- Majority of the total delay is attributed to both types of delay
- There are three different sections of high delay



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Southbound Delay Approaching Intersection Map

- Majority of the total delay is attributed to congestion Delay
- Highest congestion delay is reported at South Millway / Erin Mills Parkway



Northbound Passenger-Minutes Delay between Stops



Southbound Passenger-Minutes Delay between Stops



January 18, 2019

Northbound – Mean Speeds and Standard Deviation Approaching Intersections



Southbound – Mean Speeds and Standard Deviation Approaching Intersections



Northbound Average Delay Approaching Intersections



Southbound Average Delay Approaching Intersections



Time Space Diagram - Northbound



Time Space Diagram - Southbound



Time Space Diagram - Northbound



Time Space Diagram - Southbound





Northbound and southbound trip times are fairly consistent, and run faster than the scheduled time

Scheduled times were calculated by taking the average runtimes for all trips that started within each 30 minute interval. Data ٠ obtained from MiWay GTFS



MiWay Infrastructure Growth Plan January 18, 2019

MiWay Travel Time Analysis Route 185



IBI GROUP MiWay January 18, 2019

Agenda

- Data Collection
- Data Processing
- Route 185 Dixie Road Overview
- Analysis Results
- Next Steps

MiWay Infrastructure Growth Plan January 18, 2019

Data Collection

- Surveys conducted October 9 to October 12, 3:30 p.m. to 6:30 p.m.
- Surveyors provided with two GPS devices and a log to record bus and departure time
- GPS data provides travel time, speed, and location in 1 second increments
- Two types of Points of Interest (POI) are identified in GIS using typical 25 metre geo-fence around stops (yellow) and intersections (blue)



MiWay Infrastructure Growth Plan January 18, 2019 3

Data Processing

- Actual travel time is measured in the field
- Free flow travel time is calculated for each trip:
 - Between two POI using GPS point closest to each POI
 - Calculated by dividing the distance between two POIs by the posted speed limit
- Total delay = Actual travel time Free flow travel time

MiWay Infrastructure Growth Plan January 18, 2019

Data Processing

- Signal delay is measured, starting when the vehicle first drops below 5 km/hr approaching an intersection, until it clears the intersection
- Since measured signal delay may include dwell time, we calculate and subtract dwell time per stop based on ridership.
- Passenger service time is not delay





MiWay Infrastructure Growth Plan January 18, 2019 5

Data Processing

Dwell time calculated based on ridership at each stop, using TCRP 165, Transit Capacity and Quality of Service Manual, 3rd Edition

	Average Passenge	r Service Time (s/p)
Situation	Observed Range	Suggested Default
BOARDING		
No fare payment	1.75-2.5	1.75
Visual inspection (paper transfer/flash pass/mobile phone)	1.6-2.6	2.0
Single ticket or token into farebox	2 9_5 1	3.0
Exact change into farebox	3.1-8.4	4.5
Mechanical ticket validator	3.5-4.0	4.0
Magnetic stripe card	3 7-6 5	5.0
Smart card	2.5-3.2	2.75
ALIGHTING		
Front door	1.4-3.6	2.5
Rear door	1.2-2.2	1.75
Rear door with smart card check-out	3.4-4.0	3.5
Sources: Jaiswal (2), TCQSM 2nd Edition (5), Milkovits (6), Diaz TCQSM 2nd and 3rd Editions. Note: Add 0.5 s/p to boarding times when standees are press for motor coaches).	and Hinebaugh (7), addi ent. Add 0.5 s/p for nor	tional research for the -level boarding (1.0 s/p

Boarding time: combination of \bullet 2.8 s/p for 64% Presto use 4.5 s/p for 36% exact change

- Alighting time: 1.8 s/p
- Door open/close time: 3.5 s/p
- Dwell time is subtracted from • signal delay if there is a stop POI near a signal POI.

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Data Processing

- Congestion Delay = Total Delay Signal Delay Dwell time (if at a stop)
 - Time travelling less than free flow, excluding stops and signals
- **Operational Delay** = Total Delay Dwell Time
 - Time travelling less than free flow, including signals and excluding stops
- Total Passenger-minutes Delay = Average Load * Total Delay
- Operational Passenger-minutes Delay = Average Load * Operational Delay

Note: Time spent at timing points has not been excluded from delay.

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Performance Measures from Data Processing

- Total Delay
- Operational Delay
- Signal Delay
- Congestion Delay
- Total Passenger-minutes Delay
- Operational Passenger-minutes Delay
- Travel Time and Speed
- Travel Time Variability

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Route 185 – Dixie Road

- 14 kilometres
- 30 signalized intersections
- 11 bus stops per direction



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Data Collection – Route 185

- Trips were recorded during the PM peak period
- Data was successfully recorded for 7 NB runs and 6 SB runs

MiWay Infrastructure Growth Plan January 18, 2019 10

Route 185 NB Average **Boardings + Alightings PM Peak Period**, 2016

*Note: Boardings, Alightings, and Load were averaged separately and may not sum. Averages are per individual trips.

Stop Name	Timepoint Y/N	Average Boardings	Average Alightings	Average Load*
DIXIE STATION EAST PLATFORM A	YES	2	3	2
DIXIE RD at EGLINTON AVE	YES	9	0	14
DIXIE RD at MATHESON BLVD	YES	8	0	21
DIXIE RD at BRITANNIA RD	YES	4	0	25
DIXIE RD at MEYERSIDE DR	NO	5	0	30
DIXIE RD at COURTNEYPARK DR	YES	2	0	32
DIXIE RD at MID-WAY BLVD	NO	2	0	34
DIXIE RD at DERRY RD	YES	3	2	35
DIXIE RD at DREW RD	NO	1	0	36
DIXIE RD at STEELES AVE	YES	2	6	31
DIXIE RD at BALMORAL DR	NO	1	1	31
DIXIE RD at CLARK BLVD	NO	0	9	23
BRAMALEA TRANSIT TERMINAL	YES	3	10	3
BRAMALEA TRANSIT TERMINAL	YES	3	10	3

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Route 185 SB Average Boardings + Alightings PM Peak Period, 2016

*Note: Boardings, Alightings, and Load were averaged separately and may not sum. Averages are per individual trips.

Stop Name	Timepoint Y/N	Average Boardings	Average Alightings	Average Load*
BRAMALEA TRANSIT TERMINAL	YES	3	10	3
DIXIE RD at CLARK BLVD	NO	1	0	6
DIXIE RD at BALMORAL DR	NO	1	0	7
DIXIE RD at STEELES AVE	YES	1	1	8
DIXIE RD at DREW RD	NO	1	0	8
DIXIE RD at DERRY RD	YES	1	0	9
DIXIE RD at MID-WAY BLVD	NO	0	0	9
DIXIE RD at COURTNEYPARK DR	YES	1	1	10
DIXIE RD at MEYERSIDE DR	NO	2	1	11
DIXIE RD at BRITANNIA RD	YES	2	0	12
DIXIE RD at MATHESON BLVD	YES	1	1	12
DIXIE RD at EGLINTON AVE	YES	0	5	8
DIXIE STATION WEST PLATFORM B	YES	0	2	6
	1		1	1

MiWay Infrastructure Growth Plan

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Processing Outputs by Stop - Northbound

Stop Name	Timepoint Y/N	Average Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Operational Delay (mm:ss)	Total Delay (mm:ss)	Average Load	Operational Passenger Delay (hh:mm)	Total Passenger Delay (hh:mm)
DIXIE RD at EGLINTON AVE	YES	03:48	01:17	01:07	00:28	02:23	02:51	14	00:32	00:39
DIXIE RD at MATHESON BLVD	YES	02:26	00:09	00:55	00:26	01:04	01:30	21	00:22	00:31
DIXIE RD at BRITANNIA RD	YES	04:35	01:11	01:27	00:14	02:38	02:52	25	01:05	01:11
DIXIE RD at MEYERSIDE DR	NO	02:16	00:19	01:00	00:17	01:19	01:37	30	00:38	00:47
DIXIE RD at COURTNEYPARK DR	YES	02:34	00:52	01:08	00:09	02:00	02:09	32	01:02	01:07
DIXIE RD at MID-WAY BLVD	NO	02:23	00:15	01:21	00:09	01:36	01:45	34	00:53	00:58
DIXIE RD at DERRY RD	YES	05:44	01:22	03:03	00:16	04:25	04:42	35	02:32	02:41
DIXIE RD at DREW RD	NO	04:17	01:36	01:50	00:07	03:26	03:33	36	02:02	02:07
DIXIE RD at STEELES AVE	YES	06:18	01:59	02:12	00:10	04:10	04:21	31	02:10	02:15
DIXIE RD at BALMORAL DR	NO	03:42	01:29	00:35	00:00	02:05	02:05	31	01:04	01:04
BRAMALEA TRANSIT TERMINAL	YES	06:47	01:47	02:30	00:00	04:17	04:17	3	00:13	00:13

Highlighted values:

- Total delays **over** three minutes, or
- Operational passenger-minute delays of over 60 minutes

MiWay Infrastructure Growth Plan

January 18, 2019

Processing Outputs by Stop - Southbound

Stop Name	Timepoint Y/N	Average Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Operational Delay (mm:ss)	Total Delay (mm:ss)	Average Load	Operational Passenger Delay (hh:mm)	Total Passenge Delay (hh:mm)
DIXIE RD at CLARK BLVD	NO	04:18	01:43	00:52	00:02	02:35	02:37	6	00:16	00:16
DIXIE RD at DREW RD	NO	09:12	03:14	01:38	00:05	04:52	04:58	8	00:40	00:41
DIXIE RD at DERRY RD	YES	02:14	00:48	00:32	00:07	01:19	01:26	9	00:11	00:12
DIXIE RD at MID-WAY BLVD	NO	01:53	00:38	00:14	00:05	00:52	00:57	9	00:07	00:08
DIXIE RD at COURTNEYPARK DR	YES	01:51	00:31	00:32	00:08	01:03	01:11	10	00:10	00:11
DIXIE RD at MEYERSIDE DR	NO	01:19	00:28	00:16	00:10	00:45	00:55	11	00:07	00:09
DIXIE RD at BRITANNIA RD	YES	01:22	00:20	00:18	00:00	00:38	00:38	12	00:07	00:07
DIXIE RD at MATHESON BLVD	YES	04:50	02:02	01:01	00:05	03:02	03:07	12	00:37	00:38
DIXIE RD at EGLINTON AVE	YES	02:16	00:49	00:23	00:13	01:12	01:25	8	00:09	00:11
DIXIE STATION WEST PLATFORM B	YES	02:06	00:31	00:39	00:00	01:10	01:10	6	00:07	00:07

Highlighted values:

 Total delays over three minutes

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Delay is significantly lower in the southbound direction during the PM peak period

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MiWay Infrastructure Growth Plan

January 18, 2019

Corridor Level Results

Direction	Average Travel Time (mm:ss)	Standard Deviation of Travel Time (mm:ss)	Signal Delay (mm:ss)	Congestion Delay (mm:ss)	Dwell Time (mm:ss)	Free Flow Time (mm:ss)
NB	45:08	09:11	12:15	17:08	02:17	13:27
SB	32:03	02:11	11:05	06:24	00:55	13:39



Southbound



Northbound Delay Approaching Intersection Map

- Majority of the total delay is attributed to congestion delay
- Most congestion delay is reported between Meyerside Drive and Drew Road



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Southbound Delay Approaching Intersection Map

- Majority of the total delay is attributed to signal delay
- Highest signal delay is reported between Drew Road and the Highway 401 Westbound Off-Ramp



Northbound Passenger-Minutes Delay between Stops



Legend Operational Passenger Delay Total Passenger Delay

Southbound Passenger-Minutes Delay between Stops



Northbound – Mean Speeds and Standard Deviation Approaching Intersections



Southbound – Mean Speeds and Standard Deviation Approaching Intersections



Northbound Average Delay Approaching Intersections



Southbound Average Delay Approaching Intersections



Time Space Diagram - Northbound



Time Space Diagram - Southbound



Time Space Diagram - Northbound



Time Space Diagram - Southbound





Scheduled times were calculated by taking the average runtimes for all trips that started within each 30 minute interval. Data . obtained from MiWay GTFS



January 18, 2019



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SEPTEMBER 2020

Appendix E Operational Challenges at MiWay Terminals and Stations and Route Ends

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FASTROUM

Review of Terminals and Stations

Terminal or Station	Bus Access	Bus Bay Capacity	Pedestrian Access	Driver Facilities	Layover Space
MiWay Terminals			•	•	
Airport Terminal 1, Airport Terminal 3	Buses must navigate circuitous airport access roads	Insufficient capacity for additional service on MiWay Routes 7 and 100	Pedestrians cross airport access roads between Terminals and platforms	-	Insufficient layover space for MiWay vehicles using the facility at peak times
Bramalea Terminal	Buses must navigate around Bramalea City Centre to access terminal; roads are often busy	Only one bus bay provided for MiWay, which is shared with Brampton Transit; no opportunities to increase service	-	-	Layover space is limited and shared with Brampton Transit; bus bay cannot be used for long layovers
Brampton Gateway Terminal	-	-	-	-	-
City Centre Transit Terminal	Buses must navigate around Square One to access terminal; roads are often busy	Facility is operating at capacity; no additional routes or service can be introduced	Pedestrians must cross Rathburn or other roads near mall to access terminal	-	Facility is operating at capacity; no additional routes or service can lay over here
Credit Valley Hospital	Some buses must navigate hospital access roads to reach the Terminal	Hospital does not want any more bus stops/bays on the property	Pedestrians must cross wide roads (Eglinton or Erin Mills) to transfer between stops	-	-
Dixie Outlet Mall	Buses drive through mall parking lot to access stops	Insufficient capacity for MiWay vehicles with the addition of Routes 51 and 185	Location in mall parking lot is not pedestrian friendly	Driver facilities are provided at restaurant, are shared with public	No dedicated layover space available
Dundas/ Erindale Station Road/ Glengarry	-	-	Pedestrians must cross intersection to transfer between some stops	Driver facilities are provided at restaurant, are shared with public	-
Erin Mills Town Centre	Buses must perform a series of tight turns to cross traffic and access the Terminal	-	Location in mall parking lot is not pedestrian friendly	-	-
Humber College	-	Facility is operating at capacity; no additional routes or service can be introduced	-	Driver facilities are provided at the college, but are not always available to operators	Facility is operating at capacity; no additional routes or service can lay over here
Hurontario & 407 Park and Ride	-	Only one bus bay provided for MiWay; no opportunities to increase service	-	-	Only one bus bay provided for MiWay; no opportunities to increase service
Islington Subway Station Bus Terminal	MiWay buses must approach facility from the north, restricting routing	Facility is operating at capacity; no additional routes or service can be introduced	-	-	Facility is operating at capacity; no additional routes or service can lay over here
Meadowvale Town Centre	Bus loop is only accessible by a long access road from Aquitaine Avenue	Facility is operating at capacity; no additional routes or service can be introduced	Bus loop is not easily accessible from major roads. Location behind mall is not pedestrian friendly	-	Facility is operating at capacity; no additional routes or service can lay over here

IBI GROUP APPENDIX E OPERATIONAL CHALLENGES AT MIWAY TERMINALS AND STATIONS AND ROUTE ENDS

Prepared for the City of Mississauga

Terminal or Station	Bus Access	Bus Bay Capacity	Pedestrian Access	Driver Facilities	Layover Space
MiWay Terminals					
Sheridan Centre	-	-	Terminal does not have direct access to Sheridan Centre mall	Driver facilities are provided at the mall, but are not always available to operators	-
Sheridan College	Buses must navigate into the college campus to reach the Terminal	Facility is operating at capacity; no additional routes or service can be introduced	-	Driver facilities are provided at the college, but are not always available to operators	Facility is operating at capacity; no additional routes or service can lay over here
Sherway Gardens	-	Only one bus bay provided for MiWay; no opportunities to increase service	Location across mall parking lot is not pedestrian friendly; pedestrians cross Sherway Gardens Road to transfer	Driver facilities are provided at the mall, but are not always available to operators	Only one bus bay provided for MiWay; no opportunities to increase service
South Common Centre	Buses must navigate circuitous roads around South Millway to enter or exit the Terminal	Facility is operating at capacity; no additional routes or service can be introduced	Pedestrians cross bus access roads due to split platform design. Location behind mall is not pedestrian friendly	Driver facilities are provided at the mall, but are not always available to operators	Facility is operating at capacity; no additional routes or service can lay over here
Trillium Health Centre	Some buses must navigate hospital access roads to reach the Terminal	Facility is operating at capacity; no additional routes or service can be introduced	-	-	No dedicated layover space available
University of Toronto Mississauga (UTM)	Buses must navigate into the university campus to reach the Terminal	Facility is operating at capacity; no additional routes or service can be introduced	-	-	Facility is operating at capacity; no additional routes or service can lay over here
Viscount Station	Buses must divert from Viscount Road to access bus loop in front of Viscount Station	Only one articulated bus bay (parallel). Loop design limits ability for additional bus stops.	Sidewalks are not provided on surrounding roads, limiting pedestrian access to adjacent facilities	No dedicated driver facilities are provided	No dedicated layover space in current configuration.
Westwood Square	Articulated buses cannot turn into facility; must use on-street bay	Only one articulated bay, many routes using this facility	Pedestrians cross bus access roads due to split platform design. Location beside mall is not pedestrian friendly	-	Insufficient layover space for MiWay vehicles using the facility at peak times
Transitway Stations					
Cawthra	Buses can only access the Station from the Transitway, not Cawthra or Eastgate	No bus bays available for non- Transitway service	Sidewalks are not provided on surrounding roads, limiting pedestrian access	No dedicated driver facilities are provided	No layover space available for non-Transitway service; Transitway service can only lay over on platforms
Central Parkway	Buses can only access the station from the Transitway, not Central Parkway	No bus bays available for non- Transitway service	-	No dedicated driver facilities are provided	No layover space available for non-Transitway service; Transitway service can only lay over on platforms
Dixie	-	Facility is operating at capacity; no additional routes or service can be introduced	-	-	Facility is operating at capacity; no additional routes or service can lay over here

IBI GROUP APPENDIX E OPERATIONAL CHALLENGES AT MIWAY TERMINALS AND STATIONS AND ROUTE ENDS

Prepared for the City of Mississauga

Terminal or Station	Bus Access	Bus Bay Capacity	Pedestrian Access	Driver Facilities	Layover Space
Transitway Stations					
Erin Mills	-	Facility is operating at capacity; no additional routes or service can be introduced	Pedestrians cross bus access roads due to split platform design. Location is not well connected to sidewalks	Dedicated driver facilities are no longer provided	Dedicated layover space is not usable due to ongoing community concerns
Etobicoke Creek	On-street routes are unable to access off-street platforms	-	-	No dedicated driver facilities are provided	On-street routes are unable to access off-street layover space
Orbitor	On-street routes are unable to access off-street platforms	-	-	No dedicated driver facilities are provided	On-street routes are unable to access off-street layover space
Renforth	-	Facility is operating at capacity; no additional routes or service can be introduced	Stops on Skymark and Commerce are not integrated with the Station	-	-
Spectrum	On-street routes are unable to access off-street platforms	-	-	No dedicated driver facilities are provided	On-street routes are unable to access off-street layover space
Tahoe	On-street routes are unable to access off-street platforms	-	-	No dedicated driver facilities are provided	On-street routes are unable to access off-street layover space
Tomken	On-street routes are unable to access off-street platforms	-	-	No dedicated driver facilities are provided	On-street routes are unable to access off-street layover space
Winston Churchill	-	Facility is operating at capacity; no additional routes or service can be introduced	Pedestrians cross bus access roads due to split platform design. Location is not well connected to sidewalks	-	-
GO Stations					
Clarkson GO	Traffic signals on Southdown Road result in traffic in front of bus access road	Facility is operating at capacity; no additional routes or service can be introduced	-	Operator restroom provided by GO Transit, has limited hours of service	Limited layover space available in bus loop
Cooksville GO	Buses must navigate through neighbourhood to reach GO Station	Single MiWay bus bay provides limited capacity	Pedestrians cross roads and parking lots to reach bus platform	No dedicated driver facilities are provided outside a.m. peak period (when GO ticket booth is open)	Single MiWay bus bay provides limited layover space
Dixie GO	-	-	GO Station platforms are far from sidewalks and current bus stops on Dixie	-	-
Erindale GO	Buses must navigate through circuitous neighbourhood roads to reach GO Station bus loop	-	-	-	-
Kipling GO	-	-	-	-	-
Lisgar GO	Buses must divert from Winston Churchill Boulevard to reach GO Station bus loop	Single MiWay bus bay provides limited capacity	-	Operator restroom provided by GO Transit, has limited hours of service	Single MiWay bus bay provides limited layover space

IBI GROUP APPENDIX E OPERATIONAL CHALLENGES AT MIWAY TERMINALS AND STATIONS AND ROUTE ENDS

Prepared for the City of Mississauga

Terminal or Station	Bus Access	Bus Bay Capacity	Pedestrian Access	Driver Facilities	Layover Space
GO Stations					
Long Branch GO	Traffic signals and streetcar conflicts on Lakeshore Boulevard present challenges	Facility is operating at capacity; no additional routes or service can be introduced	Pedestrians cross roads and parking lots to access GO Station platforms	-	Insufficient layover space for MiWay vehicles using the facility at peak times
Malton GO	Buses must divert from Derry Road to reach GO Station bus loop	Single MiWay bus bay provides limited capacity	Pedestrians cross roads and parking lots to reach bus loop or GO Station platforms	-	-
Meadowvale GO	Buses must navigate long access road to reach GO Station	Single MiWay bus bay provides limited capacity	Pedestrians cross roads and parking lots to reach bus loop	Operator restroom provided by GO Transit, has limited hours of service	-
Port Credit GO	Buses must navigate through neighbourhood to reach GO Station	-	-	Operator restroom provided by GO Transit, has limited hours of service	-
Streetsville GO	Buses must navigate long access road to reach GO Station	Single MiWay bus bay provides limited capacity	-	Operator restroom provided by GO Transit, has limited hours of service	-

•	•	-						
1 1 - 4 - 6 841847-	D - 1 -					AA4A		- 4 - 66
		⊨nae _ Com	niida trom	raviaw in Fahru	arv 14	2014 WARKENA	n with wilvy a	/ eratt
LISCOLIVIIVA	y iloute	Liius - Ooiii						Juan

Route Number and Name	Route End	2020 Location	Location Type	Notes
MiExpress Routes	•		1	
100 – Airport Express	East	Pearson Airport Terminal 3	Terminal	May wish to bring all three airport stops (T1, T3 Pearson Hub
	West	Winston Churchill (Transitway)	TW Station	No issues
101 – Dundas Express	East	Islington Subway Station*	Terminal	Will move to Kipling Hub
	West	South Common Centre	Terminal	Congestion issues at South Common centre
101A – Dundas Express	East	Islington Subway Station*	Terminal	Will move to Kipling Hub
	West	Laird/Ridgeway	On-Street	Lots of connections here, but on-street. This is ridership, only to turn around. Could benefit fro
102 – Sheridan Park Express	East	Islington Subway Station*	Terminal	Will move to Kipling Hub
	West	Bristol/Winston Park	On-Street	Could be anchored at a Laird/Ridgeway/Vega
104 – Derry Express	East	Westwood Square Terminal	Terminal	Cannot accommadate articulated buses in curr Pedestrian access is a challenge. Could move
	West	Meadowvale Town Centre Terminal	Terminal	Congestion issues. Many routes are terminal-c added because of MTC. Could shift to Meadow with high transfers.
107 – Malton Express	East	Humber College	Terminal	Terminal is already busy with TTC, YRT, MiWa
	West	Winston Churchill (Transitway)	TW Station	May set up as a through-service route with 110 Westwood via Transitway.
108 – Meadowvale Business Express	East	Islington Subway Station*	Terminal	Will move to Kipling Hub
	West	Argentia/Creditview	On-Street	No actual terminal here - opportunity for a facil not as MiExpress. Current anchor point is RBC
109 – Meadowvale Express	East	Islington Subway Station*	Terminal	Will move to Kipling Hub
	West	Meadowvale Town Centre Terminal	Terminal	Congestion issues - see Rt 104
110 – University Express	East	City Centre Transit Terminal	Terminal	Congestion issues, but redesign in progress. N 107 - see above.
	West	Clarkson GO Station	GO Station	Space constraints at terminal because of teard turns out of the bus loop.
185 – Dixie Express	North	Bramalea Terminal	Terminal	Ok as-is. May serve Dixie station on 407 Trans
	South	Dixie Outlet Mall	Terminal	Could move to Long Branch GO, but that static Congested due to infrastructure constraints. No affect route.

3, Viscount) into one central location, e.g.

a current gap. The on-street loop is not for om a facility.

facility, if one implemented.

rent facility - only at one on-street bay. to 407 TW station?

constrained, i.e. no extra buses can be wvale or Lisgar GO, but be careful of routes

ay, BT, GO…

0. Would go from Clarkson GO to

lity. Area needs to be served, but perhaps C towers.

May set up as a through-service route with

drop layout. Traffic lights are a constraint for

sitway?

on has space issues and turning issues. Iote that QEW interchange reconfig. will

Route Number and Name	Route End	2020 Location	Location Type	Notes
MiLocal Routes				
1 – Dundas	East	Islington Subway Station*	Terminal	Will move to Kipling Hub
	West	South Common Centre Terminal	Terminal	Congestion issues - see Rt 101
1C – Dundas-Collegeway	East	Islington Subway Station*	Terminal	Will move to Kipling Hub
	West	Laird/Ridgeway	On-Street	Could benefit from better infrastructure - see R South Common as well - operate more like 10 ²
3 – Bloor	East	Islington Subway Station*	Terminal	Will move to Kipling Hub
	West	City Centre Transit Terminal	Terminal	Congestion and space constraints - see Rt 110
4 – Sherway Gardens	East	Sherway Gardens	Terminal	OK as-is, mall and TTC transfers are a ridershi
	West	Dundas/Erindale Station	Terminal	Could use a proper facility in this area, but and down to Queensway loop. Likely to get pushba
5 – Dixie	North	Lorimar/Cardiff	On-Street	Trucks get in the way around this loop, present facilities were installed recently for drivers. Cou
	South	Long Branch GO Station	GO Station	Congestion issues - see Rt 185
6 – Credit Woodlands	North	City Centre Transit Terminal	Terminal	Congestion and space constraints - see Rt 110
	South	Dundas/Erindale Station	Terminal	Route lays over here, serves schools Keepir Dundas/ESR is important.
7 – Airport	North	Westwood Square Terminal	Terminal	Congestion issues - see Rt 104
	South	Renforth (Transitway)	TW Station	Already running into space issues with 2 bays local). Stops are only used for pick-up/drop-off facility.
8 – Cawthra	North	Cawthra (Transitway)	TW Station	Would need to reconfigure park&ride area, no as-is. No facilities to anchor route - may stay a
	South	Port Credit GO Station	GO Station	OK as-is, no challenges right now. Space will b
9 – Rathburn-Thomas	East	City Centre Transit Terminal	Terminal	Congestion and space constraints - see Rt 110
	West	Winston Churchill (Transitway)	TW Station	Likely to shift this route end and anchor at Con (see new route plan from MiWay)
10 – Bristol-Britannia	East	City Centre Transit Terminal	Terminal	Congestion and space constraints - see Rt 110
	West	Meadowvale Town Centre Terminal	Terminal	Congestion issues - see Rt 104
11 – Westwood	North	Westwood Square Terminal	Terminal	Congestion issues - see Rt 104. High ridership
	South	Islington Subway Station*	Terminal	Will move to Kipling Hub
12 - Malton GO	North	Westwood Square Terminal	Terminal	Likely to stay for the near term as a shuttle bet
	South	Malton GO Station	GO Station	Likely to stay for the near term as a shuttle bet
13 – Glen Erin	North	Meadowvale Town Centre Terminal	Terminal	Congestion issues - see Rt 104
	South	Clarkson GO Station	GO Station	Space constraints - see Rt 110
14 – Lorne Park	East	Sherway Gardens	Terminal	OK as-is, mall and TTC transfers are a ridershi
	West	Clarkson GO Station	GO Station	Space constraints - see Rt 110

Rt 101A. No point detouring this route to 1 and 101A.

ip draw

other alternative would be to bring the route ack from local residents.

nting challenges for transit. New washroom puld extend route up to 407 TW (Dixie).

ng service along roads leading to

each direction for MiWay (1 express, 1 f, layovers happen elsewhere outside

way for bus to turn around or lay over here at CCTT beyond 2020.

be freed up when 103 leaves for LRT.

mmunity Centre near Thomas & Ninth Line

on this route!

tween Malton GO and Westwood Square tween Malton GO and Westwood Square

ip draw

Route Number and Name	Route End	2020 Location	Location Type	Notes
MiLocal Routes				
15 – Drew	East	Westwood Square Terminal	Terminal	Congestion issues - see Rt 104
	West	Lorimar/Cardiff	On-Street	Need to keep connections to Derry (104/42), as versa. New driver washroom just constructed n
16 – Malton	Loop	Westwood Square Terminal	Terminal	Routing may change, but likely to stay anchore Rt 104
16A – Malton	Loop	Westwood Square Terminal	Terminal	Same as 16
19 – Hurontario	North	Britannia/Hurontario	On-Street	May remove variants of route 19 once LRT is e transitway (Hurontario PnR) once TW is complete
	South	Port Credit GO Station	GO Station	Not an issue. Based on ridership alone, may m Centre.
19A – Hurontario	North	Hwy 407 & Hurontario Park & Ride	Terminal	OK as-is
	South	Trillium Health Centre	Terminal	Could be space-constrained if more routes are now. Route 4 only provides on-street thru-servi
20 – Rathburn	East	Tahoe/Buckhorn	On-Street	At TD towers. This is a new turnaround, but co Many riders want to go to Islington (Kipling), so
	West	Erindale GO Station	GO Station	On-street service, not in bus loop. No terminal
22 – Finch	East	Etobicoke Hospital	Off-Street	Could end at Humber College or the hospital. S has high ridership - money maker.
	West	Westwood Square Terminal	Terminal	Congestion issues - see Rt 104
23 – Lakeshore	East	Long Branch GO Station	GO Station	Congestion issues - see Rt 185
	West	Clarkson GO Station	GO Station	Space constraints - see Rt 110. Lakeshore Cor opportunity for an end, but likely want to contin
25 – Traders Loop	Loop	Matheson/Hurontario	On-Street	OK as-is
26 – Burnhamthorpe	East	Islington Subway Station*	Terminal	Will move to Kipling Hub
	West	South Common Centre Terminal	Terminal	Loops at Collegeway/Glen Erin. Issue with curr wall for accessibility. No shelter.
28 – Confederation	North	City Centre Transit Terminal	Terminal	Congestion and space constraints - see Rt 110
	South	Trillium Health Centre	Terminal	Staying at Trillium as a local route alternative to serve GO station during peak hours. Is Trillium
29 – Park Royal / Homelands	North	Erin Mills (Transitway)	TW Station	Has facilities here (layover, driver washroom) b Construction issues put facilities too close to re service.
	South	Clarkson GO Station	GO Station	Layovers currently happen mid-route at South space constraints - see Rt 110. Loops @ Inver
32 - Lisgar GO	North	Lisgar GO Station	GO Station	OK as-is
	South	Trelawney/Mockingbird	On-Street	OK as-is

s Derry routes feed Drew route and vicenear here in park.

ed at Westwood. Congestion issues - see

established. This will likely just go to 407 lete.

nake more sense to end at Trillium Health

coming in. Space for 2-40 ft buses right ice.

buld be moved down to Fieldgate loop. In want to maintain a good connection.

capacity issues right now.

Should tie in with Routes 42 or 104. Route

nnecting Communities will provide another nue service to Clarkson.

rent bay at Terminal - too close to retaining

o 19 Hurontario and LRT. Also continues to a growing facility??

out cannot use due to public backlash. esidential. Need resolved before more

Common due to Erin Mills issues. Clarkson house for ridership.

Route Number and Name	Route End	2020 Location	Location Type	Notes
MiLocal Routes				
35 – Eglinton	East	Renforth (Transitway)	TW Station	Lack of space at Renforth. Could go to Kipling
	West	Winston Churchill (Transitway)	TW Station	Could send one variant to Winston Churchill Tr the new Community Centre.
36 – Colonial	North	Winston Churchill (Transitway)	TW Station	OK as-is
	South	South Common Centre Terminal	Terminal	Congestion issues - see Rt 101
38 – Creditview	North	Meadowvale Town Centre Terminal	Terminal	Could terminate at Meadowvale Business Park MTC. Another option is Lisgar GO, but ridershi
	South	Dundas/Erindale Station	Terminal	Could go to Erindale GO - good for service, but transfers at Dundas. Could also pull to Trillium options to consider.
39 – Britannia-Matheson	East	Renforth (Transitway)	TW Station	OK as-is
	West	Britannia/Ninth Line	On-Street	Bring down Ninth Line, anchor at Churchill Mea
42 – Derry	East	Westwood Square Terminal	Terminal	Congestion issues - see Rt 104
	West	Meadowvale Town Centre Terminal	Terminal	Congestion issues - see Rt 104
43 – Matheson-Argentia	East	Renforth (Transitway)	TW Station	Currently stops on Commerce, outside actual 1
	West	Meadowvale Town Centre Terminal	Terminal	Congestion issues - see Rt 104. Could split rou terminal?
44 – Mississauga Road	North	Meadowvale Town Centre Terminal	Terminal	Congestion issues - see Rt 104. High ridership Meadowvale.
	South	University of Toronto Mississauga	Terminal	Very tight space constraints at UTM. Artics, hig
45 – Winston Churchill	North	Meadowvale Town Centre Terminal	Terminal	Congestion issues - see Rt 104
	South	Clarkson GO Station	GO Station	Space constraints - see Rt 110
45A – Winston Churchill Speakman	North	Meadowvale Town Centre Terminal	Terminal	Congestion issues - see Rt 104
	South	Clarkson GO Station	GO Station	Space constraints - see Rt 110
46 – Osprey-Tenth Line	North	Meadowvale Town Centre Terminal	Terminal	Congestion issues - see Rt 104
	South	Erin Mills (Transitway)	TW Station	Same issues as Rt 29
48 – Erin Mills	North	Meadowvale Town Centre Terminal	Terminal	Congestion issues - see Rt 104
	South	South Common Centre Terminal	Terminal	Could anchor at Erin Mills Transitway, but curre
49 – McDowell-Streetsville GO	East	Streetsville GO Station	GO Station	OK as-is
	West	McDowell/Ninth Line	On-Street	May shift this route end loop to cover current R
50 – Lisgar-Churchill Meadows	North	Meadowvale Town Centre Terminal	Terminal	Congestion issues - see Rt 104. Could look at
	South	Winston Churchill (Transitway)	TW Station	OK as-is
51 – Tomken	North	Lorimar/Cardiff	On-Street	See Rt 5 Dixie. Could go to 407 Transitway Dix
	South	Dixie Outlet Mall	Terminal	OK as-is. Getting new bus bays on Dixie SB, w shift routing slightly.

(as currently does).

ransitway, another variant up Ninth line to

k if a facility available, or streamline to provide the provided the p

it may not be good for ridership. Want Health, or Queensway loop - lots of

adows Community Centre.

Transitway station. Not ideal for transfers. ute at Meadowvale Business Park

to and from UTM. Zig-zags up near

gh frequency routes...

ent issues - see Rt 29

Route 35 Eglinton loop at Ninth Line Lisgar GO based on ridership or transfers

xie station once ready.

vest side. Interchange reconstruction will

Route Number and Name	Route End	2020 Location	Location Type	Notes
MiLocal Routes				
53 – Kennedy	North	Hwy 407 & Hurontario Park & Ride	Terminal	OK as-is
	South	Cooksville GO Station	GO Station	Want to bring route in to GO Station, but driver peak when ticket booth is open
57 – Courtneypark	East	Renforth (Transitway)	TW Station	OK as-is, but to be revisited in a few months w
	West	Meadowvale Town Centre Terminal	Terminal	Congestion issues - see Rt 104
61 – Mavis	North	Sheridan College	Terminal	OK as-is
	South	City Centre Transit Terminal	Terminal	Congestion and space constraints - see Rt 110
64 – Meadowvale GO	East	Meadowvale GO Station	GO Station	OK as-is
	West	Meadowvale Town Centre Terminal	Terminal	Congestion issues - see Rt 104
66 – McLaughlin	North	Sheridan College	Terminal	OK as-is
	South	City Centre Transit Terminal	Terminal	Congestion and space constraints - see Rt 110
67 – Streetsville GO	East	Streetsville GO Station	GO Station	OK as-is
	West	Eglinton/Tenth Line	On-Street	Keep on-street for now, GO shuttle route isn't r
68 – Windsor Hill	East	City Centre Transit Terminal	Terminal	Congestion and space constraints - see Rt 110
	West	Bristol/Lismic	On-Street	(2020 end is at Bancroft/Creditview) Could pull Park terminal
70 – Keaton	East	Islington Subway Station*	Terminal	Will move to Kipling Hub
	West	Keaton/Matheson	On-Street	Could use to cover former Route 19 variants
73 – Maingate-Kamato	North	Kamato/Ambler	On-Street	OK as-is. Works as an airport corporate area s
	South	Dixie (Transitway)	TW Station	OK as-is
74 – Airport Corporate Centre	East	Renforth (Transitway)	TW Station	OK as-is. Also works as an airport corporate ar
	West	Dixie (Transitway)	TW Station	OK as-is
76 – City Centre-Subway	East	Islington Subway Station*	Terminal	Will move to Kipling Hub
	West	City Centre Transit Terminal	Terminal	Congestion and space constraints - see Rt 110
87 – Meadowvale-Skymark	East	Renforth (Transitway)	TW Station	OK as-is
	West	Meadowvale Town Centre Terminal	Terminal	Congestion issues - see Rt 104
91 – Hillcrest-Cooksville GO	North	City Centre Transit Terminal	Terminal	Congestion and space constraints - see Rt 110
	South	Cooksville GO Station	GO Station	OK as-is

facilities (i.e. washroom) only open in a.m.
en route redesign is complete.
lajor concern
this route end to Meadowvale Business
nuttle service
ea shuttle service









SEPTEMBER 2020

Appendix F Stop Classification Tables



Stop Classification Notes

Enhanced: Includes all MiExpress stops not shared or intersecting with another MiExpress route

Major Transfer: Includes all MiExpress stops shared or intersecting with another MiExpress route

Enhanced*: MiExpress stops only serving Route 108 - may be changed to Standard in the future

Stop ID	Stop Name	Direction	Municipality	MiExpress Routes	Stop Classification
62	FINANCIAL DR at DERRY RD	SB	Mississauga	108	Enhanced*
99	MEADOWVALE BLVD at TOTTINGTON DR	NB	Mississauga	108	Enhanced*
104	SOUTHDOWN RD at TRUSCOTT DR	SB	Mississauga	110	Enhanced
106	SOUTHDOWN RD at BROMSGROVE RD	SB	Mississauga	110	Enhanced
245	SOUTHDOWN RD at TRUSCOTT DR	NB	Mississauga	110	Enhanced
283	SOUTHDOWN RD at HARTLAND DR	NB	Mississauga	110	Enhanced
310	BLOOR ST W at GREEN LANES	WB	Toronto	101/A, 108, 109	Major Transfer
327	DERRY RD at TORBRAM RD	WB	Mississauga	104	Enhanced
328	DERRY RD at BRAMALEA RD	WB	Mississauga	104	Enhanced
351	MEADOWVALE BLVD at MISSISSAUGA RD	SB	Mississauga	108	Enhanced*
501	DUNDAS ST at WOODCHESTER DR	EB	Mississauga	101A	Enhanced
526	ERIN MILLS PKY at LEANNE BLVD	SB	Mississauga	110	Enhanced
	MEADOWVALE BLVD east of WEST CREDIT				
533	BLVD	SB	Mississauga	108	Enhanced*
535	DUNDAS ST W east of ERIN MILLS PKY	EB	Mississauga	101/A, 110	Major Transfer
539	MEADOWVALE BLVD at FINANCIAL DR	SB	Mississauga	108	Enhanced*
545	ERIN MILLS PKY south of DUNDAS ST W	SB	Mississauga	110	Major Transfer
	DUNDAS ST W at WINSTON CHURCHILL				
548	BLVD	EB	Mississauga	101A	Enhanced
566	ERIN MILLS PKY at FOWLER DR	NB	Mississauga	110	Enhanced
644	DUNDAS ST at WOLFEDALE RD	EB	Mississauga	101/A	Enhanced
645	DUNDAS ST at MAVIS RD	EB	Mississauga	101/A	Enhanced
748	DUNDAS ST at CONFEDERATION PKY	EB	Mississauga	101/A	Enhanced
749	DUNDAS ST at HURONTARIO ST	EB	Mississauga	101/A	Major Transfer
	WINSTON CHURCHILL BLVD at EGLINTON				
772	AVE W	NB	Mississauga	109	Enhanced
	WINSTON CHURCHILL BLVD at ERIN				
773	CENTRE BLVD	NB	Mississauga	109	Enhanced

APPENDIX F - STOP CLASSIFICATION TABLES

Stop ID	Stop Name	Direction	Municipality	MiExpress Routes	Stop Classification
774	WINSTON CHURCHILL BLVD at THOMAS ST	NB	Mississauga	109	Enhanced
802	DERRY RD at DIXIE RD	EB	Mississauga	104	Major Transfer
811	DUNDAS ST at AUKLAND RD	WB	Toronto	101/A, 108, 109	Major Transfer
815	DUNDAS ST at BILLINGHAM RD	WB	Toronto	101/A, 108, 109	Major Transfer
829	MEADOWVALE BLVD at FINANCIAL DR	NB	Mississauga	108	Enhanced*
831	DUNDAS ST east of DIXIE RD	EB	Mississauga	101/A	Enhanced
855	DUNDAS ST at CAWTHRA RD	EB	Mississauga	101/A	Enhanced
858	DUNDAS ST at TOMKEN RD	EB	Mississauga	101/A	Enhanced
862	DUNDAS ST at DIXIE RD	EB	Mississauga	101/A	Enhanced
866	DUNDAS ST at WHARTON WAY	EB	Mississauga	101/A	Enhanced
875	DUNDAS ST at WHARTON WAY	WB	Mississauga	101/A	Enhanced
	DUNDAS ST W at WINSTON CHURCHILL				
1002	BLVD	WB	Mississauga	101A	Enhanced
1033	SOUTH MILLWAY at FIFTH LINE WEST	EB	Mississauga	101/A	Enhanced
1037	DUNDAS ST east of ERIN MILLS PKY	WB	Mississauga	101/A	Major Transfer
1039	SOUTH MILLWAY at FIFTH LINE WEST	WB	Mississauga	101	Enhanced
1065	DIXIE RD at MID-WAY BLVD	SB	Mississauga	185	Enhanced
1156	DERRY RD at FINANCIAL DR	NB	Mississauga	108	Enhanced*
1189	DUNDAS ST at HURONTARIO ST	WB	Mississauga	101/A	Major Transfer
1190	DUNDAS ST at CONFEDERATION PKY	WB	Mississauga	101/A	Enhanced
1194	DUNDAS ST at MAVIS RD	WB	Mississauga	101/A	Enhanced
1195	DUNDAS ST at WOLFEDALE RD	WB	Mississauga	101/A	Enhanced
1283	DUNDAS ST at CAWTHRA RD	WB	Mississauga	101/A	Enhanced
1354	DUNDAS ST east of DIXIE RD	WB	Mississauga	101/A	Enhanced
1377	DUNDAS ST at DIXIE RD	WB	Mississauga	101/A	Enhanced
1381	DUNDAS ST at TOMKEN RD	WB	Mississauga	101/A	Enhanced
1396	NORTHWEST DR at AMERICAN DR	SB	Mississauga	107	Enhanced
1397	AMERICAN DR at NORTHAM DR	SB	Mississauga	107	Enhanced
1407	GOREWAY DR at NASHUA DR	NB	Mississauga	107	Enhanced
1423	DERRY RD west of MEADOWVALE BLVD	SB	Mississauga	108	Enhanced*
1443	ARGENTIA RD at CAMPOBELLO RD	SB	Mississauga	108	Enhanced*
1575	CREDITVIEW RD at DERRY RD	SB	Mississauga	108	Enhanced*
1660	DUNDAS ST W at VEGA BLVD	WB	Mississauga	101A	Enhanced

Stop ID	Stop Name	Direction	Municipality	MiExpress Routes	Stop Classification
1661	LAIRD RD west of RIDGEWAY DR	WB	Mississauga	101A	Enhanced
1666	DUNDAS ST at WOODCHESTER DR	WB	Mississauga	101A	Enhanced
1717	ERIN MILLS PKY at FOLKWAY DR	SB	Mississauga	110	Enhanced
1720	ERIN MILLS PKY at FOLKWAY DR	NB	Mississauga	110	Enhanced
	WINSTON CHURCHILL BLVD at BATTLEFORD				
1767	RD	NB	Mississauga	109	Enhanced
	WINSTON CHURCHILL BLVD at BATTLEFORD				
1783	RD	SB	Mississauga	109	Enhanced
1788	WINSTON CHURCHILL BLVD at THOMAS ST	SB	Mississauga	109	Enhanced
	WINSTON CHURCHILL BLVD at ERIN				
1790	CENTRE BLVD	SB	Mississauga	109	Enhanced
1853	GOREWAY DR at NASHUA DR	SB	Mississauga	107	Enhanced
2004	DIXIE RD at MATHESON BLVD	SB	Mississauga	185	Enhanced
2008	DIXIE RD at EGLINTON AVE	SB	Mississauga	185	Enhanced
2041	DIXIE RD at MATHESON BLVD	NB	Mississauga	185	Enhanced
2045	DIXIE RD at EGLINTON AVE	NB	Mississauga	185	Enhanced
2108	DERRY RD at ARGENTIA RD	EB	Mississauga	104	Enhanced
2109	SYNTEX DR at DERRY RD	NB	Mississauga	108	Enhanced*
2110	SYNTEX DR at MEADOWVALE BLVD	NB	Mississauga	108	Enhanced*
2131	MEADOWVALE BLVD at WEST CREDIT AVE	NB	Mississauga	108	Enhanced*
2134	DERRY RD at ARGENTIA RD	WB	Mississauga	104	Enhanced
2158	SYNTEX DR at DERRY RD	SB	Mississauga	108	Enhanced*
2159	SYNTEX DR at MEADOWVALE BLVD	SB	Mississauga	108	Enhanced*
2160	MEADOWVALE BLVD at WEST CREDIT AVE	SB	Mississauga	108	Enhanced*
2198	CARLINGVIEW DR at DIXON RD	NB	Toronto	107	Enhanced
2210	CARLINGVIEW DR at DIXON RD	SB	Toronto	107	Enhanced
2211	CAMPUS RD at BRESLER DR	NB	Mississauga	107	Enhanced
2214	CAMPUS RD at BRESLER DR	SB	Mississauga	107	Enhanced
2218	AMERICAN DR at VISCOUNT RD	NB	Mississauga	107	Enhanced
2230	VISCOUNT RD at AMERICAN DR	SB	Mississauga	107	Enhanced
2300	ARGENTIA RD at KITIMAT RD	SB	Mississauga	108	Enhanced*

Stop ID	Stop Name	Direction	Municipality	MiExpress Routes	Stop Classification
2301	ARGENTIA RD at MISSISSAUGA RD	SB	Mississauga	108	Enhanced*
2302	ARGENTIA RD at CENTURY AVE	SB	Mississauga	108	Enhanced*
2314	ARGENTIA RD at CENTURY AVE	NB	Mississauga	108	Enhanced*
2315	ARGENTIA RD at MISSISSAUGA RD	NB	Mississauga	108	Enhanced*
2316	ARGENTIA RD at KITIMAT RD	NB	Mississauga	108	Enhanced*
2371	ARGENTIA RD at TURNER VALLEY RD	SB	Mississauga	108	Enhanced*
2372	ARGENTIA RD west of TURNER VALLEY RD	SB	Mississauga	108	Enhanced*
2373	ARGENTIA RD at 2283 ARGENTIA RD	SB	Mississauga	108	Enhanced*
2374	ARGENTIA RD at CENTURY AVE	SB	Mississauga	108	Enhanced*
2375	ARGENTIA RD at DERRY RD	SB	Mississauga	108	Enhanced*
2376	MEADOWVALE BLVD at MISSISSAUGA RD	NB	Mississauga	108	Enhanced*
2377	ARGENTIA RD at CAMPOBELLO RD	NB	Mississauga	108	Enhanced*
2378	ARGENTIA RD at 1705 ARGENTIA RD	SB	Mississauga	108	Enhanced*
2379	ARGENTIA RD at DERRY RD	NB	Mississauga	108	Enhanced*
2380	ARGENTIA RD at CENTURY AVE	NB	Mississauga	108	Enhanced*
2381	ARGENTIA RD east of CENTURY AVE	NB	Mississauga	108	Enhanced*
2382	ARGENTIA RD at 2220 ARGENTIA RD	NB	Mississauga	108	Enhanced*
2383	ARGENTIA RD at TURNER VALLEY RD	NB	Mississauga	108	Enhanced*
2384	MEADOWVALE BLVD at FENGATE DR	NB	Mississauga	108	Enhanced*
2395	DERRY RD at MCLAUGHLIN RD	EB	Mississauga	104	Enhanced
2417	ARGENTIA RD west of CAMPOBELLO RD	SB	Mississauga	108	Enhanced*
2418	ARGENTIA RD at KINSMEN GATE	NB	Mississauga	108	Enhanced*
2496	ARGENTIA RD at CREDITVIEW RD	NB	Mississauga	108	Enhanced*
2497	DERRY RD at HURONTARIO ST	EB	Mississauga	104	Major Transfer
2498	DERRY RD at KENNEDY RD	EB	Mississauga	104	Enhanced
2499	DERRY RD at KENNEDY RD	WB	Mississauga	104	Enhanced
2502	DIXIE RD at MEYERSIDE DR	NB	Mississauga	185	Enhanced
2503	DIXIE RD at COURTNEYPARK DR	NB	Mississauga	185	Enhanced
2505	FINANCIAL DR at 6768 FINANCIAL DR	SB	Mississauga	108	Enhanced*
2507	DERRY RD at DIXIE RD	WB	Mississauga	104	Major Transfer
2514	DERRY RD at TOMKEN RD	EB	Mississauga	104	Enhanced
2516	DERRY RD at COLUMBUS RD	EB	Mississauga	104	Enhanced

Stop ID	Stop Name	Direction	Municipality	MiExpress Routes	Stop Classification
2520	DIXIE RD at COURTNEYPARK DR	SB	Mississauga	185	Enhanced
2521	DIXIE RD at MEYERSIDE DR	SB	Mississauga	185	Enhanced
2533	FINANCIAL DR at 6696 FINANCIAL DR	SB	Mississauga	108	Enhanced*
2546	DERRY RD at CARDIFF BLVD	WB	Mississauga	104	Enhanced
2548	DERRY RD at TOMKEN RD	WB	Mississauga	104	Enhanced
2553	DERRY RD at BRAMALEA RD	EB	Mississauga	104	Enhanced
2554	ARGENTIA RD east of KITIMAT RD	NB	Mississauga	108	Enhanced*
2556	DERRY RD at HURONTARIO ST	WB	Mississauga	104	Major Transfer
2559	DERRY RD at MCLAUGHLIN RD	WB	Mississauga	104	Enhanced
2603	DERRY RD at CATTRICK ST	EB	Mississauga	104	Enhanced
2606	DIXIE RD at BRITANNIA RD	SB	Mississauga	185	Enhanced
2607	DERRY RD at AIRPORT RD	EB	Mississauga	104	Enhanced
	MEADOWVALE BLVD west of MISSISSAUGA				
2609	RD	NB	Mississauga	108	Enhanced*
2623	DIXIE RD at DERRY RD	NB	Mississauga	185	Major Transfer
2632	DIXIE RD at DREW RD	NB	Mississauga	185	Enhanced
2637	DIXIE RD at BRITANNIA RD	NB	Mississauga	185	Enhanced
2770	DERRY RD at AIRPORT RD	WB	Mississauga	104	Enhanced
2800	GOREWAY DR north of DERRY RD	NB	Mississauga	104, 107	Major Transfer
2904	RENFORTH DR at CONVAIR DR	NB	Toronto	107	Enhanced
2905	RENFORTH DR at CONVAIR DR	SB	Mississauga	107	Enhanced
2968	AMERICAN DR at NORTHAM DR	NB	Mississauga	107	Enhanced
2985	NORTHWEST DR at AMERICAN DR	NB	Mississauga	107	Enhanced
3083	MISSISSAUGA RD at DERRY RD	NB	Mississauga	108	Enhanced*
	WINSTON CHURCHILL BLVD at BRITANNIA				
3086	RD	SB	Mississauga	109	Enhanced
3117	FINANCIAL DR at 6897 FINANCIAL DR	WB	Mississauga	104	Enhanced
3279	GOREWAY DR at DERRY RD	SB	Mississauga	104, 107	Major Transfer
3301	CARLINGVIEW DR at RENFORTH DR	SB	Toronto	107	Enhanced
3363	DERRY RD at MAVIS RD	EB	Mississauga	104	Enhanced
3364	DERRY RD at MAVIS RD	WB	Mississauga	104	Enhanced
	WINSTON CHURCHILL BLVD at BRITANNIA				
3515	RD	NB	Mississauga	109	Enhanced

APPENDIX F - STOP CLASSIFICATION TABLES

Stop ID	Stop Name	Direction	Municipality	MiExpress Routes	Stop Classification
	WINSTON CHURCHILL BLVD at EGLINTON				
4512	AVE W	SB	Mississauga	109	Enhanced
	MISSISSAUGA RD at DUPONT MEADOW				
4517	PLACE	SB	Mississauga	108	Enhanced*
5011	DIXIE RD at DREW RD	SB	Mississauga	185	Enhanced
5012	DIXIE RD at CLARK BLVD	SB	Brampton	185	Enhanced
5013	DIXIE RD at BALMORAL DR	SB	Brampton	185	Enhanced
5014	DIXIE RD at STEELES AVE	SB	Brampton	185	Enhanced
5015	DIXIE RD at DERRY RD	SB	Mississauga	185	Major Transfer
5019	DIXIE RD at STEELES AVE	NB	Brampton	185	Enhanced
5020	DIXIE RD at BALMORAL DR	NB	Brampton	185	Enhanced
5021	DIXIE RD at CLARK BLVD	NB	Brampton	185	Enhanced
5023	DIXIE RD at MID-WAY BLVD	NB	Mississauga	185	Enhanced
6138	FINANCIAL DR at 6660 FINANCIAL DR	SB	Mississauga	108	Enhanced*
6139	CREDITVIEW RD at DERRY RD	NB	Mississauga	108	Enhanced*
6880	FINANCIAL DR south of SYNTEX CRT	EB	Mississauga	104, 108	Enhanced
9001	DUNDAS ST at BILLINGHAM RD	EB	Toronto	101/A, 108, 109	Major Transfer
9007	DUNDAS ST at AUKLAND RD	EB	Toronto	101/A, 108, 109	Major Transfer
	CARLINGVIEW DR north of INTERNATIONAL				
9970	BLVD	NB	Toronto	107	Enhanced









SEPTEMBER 2020

Appendix G Terminal Classification Tables



Proposed Terminal Classification

Four terminal types are proposed, based on the **primary** transit function:



Connect and Turnaround Terminals provide connections to other routes and services (including inter-municipal or regional transit services), and function as route-ends and turnarounds. Connect and turnaround terminals require layover space and staff facilities.



Connect Terminals primarily provide connections to other MiExpress and MiLocal routes, but are not likely to be route ends. As such, Connect terminals may include layover spaces or layovers may be accommodated in the in-service bays.



Turnaround Terminals are primarily route-ends and turnaround locations. Connections to other routes are limited. Turnaround terminals require layover space and staff facilities.

Through Terminals primarily provide through service. Connections to other routes and services are limited. Through terminals are not routeends or turnaround locations.

Terminal Type	Connections to other routes / inter- municipal or regional services	Layover Spaces for schedule recovery, breaks, stand-by buses	Staff Facilities	Route Ends
Connect and Turnaround	$\checkmark\checkmark\checkmark$	$\checkmark\checkmark\checkmark$	$\checkmark\checkmark\checkmark$	~ ~ ~
Connect	$\checkmark\checkmark\checkmark$	✓	~	~
Turnaround	~	<i>↓↓↓</i>	$\checkmark\checkmark\checkmark$	~ ~ ~
Through	\checkmark	_	✓	-

The terminal typology is independent of the terminal's size.

The operational function can be combined with density.

High, medium, and low density thresholds were identified for the MiWay Infrastructure Growth Plan based on the existing conditions.

- MiWay terminals with more than 100 people and jobs per hectare within a 400 m radius were considered **high density**
- MiWay terminals with between 51 and 100 people and jobs per hectare within a 400 m radius were considered **medium density**
- MiWay terminals with fewer than 50 people and jobs per hectare within a 400 m radius were considered **low density**

To identify the population and employment densities around terminals, 400 m buffers were drawn around each terminal and station as shown in the maps below. The population and employment densities within each traffic zone captured in the buffer were proportionally allocated to the area of the 400 m buffer. The combined population and employment density within 400 m of each terminal was designated as the density for each terminal.

This method assumed that population and employment are evenly distributed within each traffic zone, and as such, the densities provided are an estimate, to be considered with the surrounding land use context.

Mobility hubs, terminals outside Mississauga and out of scope terminals and stations were excluded from this density estimation.




MiWay Terminals and Stations for Classification

MiWay Terminals	People and Jobs/ha	Terminal/Station Category	Future Terminal/Station Category/Notes
Churchill Meadows Recreation Centre	N/A	Turnaround	
Credit Valley Hospital	99	Through	
Dixie Outlet Mall	21	Connect + Turnaround	
Dundas/ESR/Glengarry	70	Connect + Turnaround	Through
Erin Mills Town Centre	59	Connect	
Hurontario & 407 Park and Ride	N/A	Turnaround	Want to remove
Meadowvale Town Centre Transit Terminal	94	Connect + Turnaround	
Sheridan Centre	53	Through	Want to make this on- street
South Common Centre	80	Connect + Turnaround	
Trillium Health Centre	258	Connect + Turnaround	
University of Toronto Mississauga (UTM)	24	Through	
Westwood Square Transit Terminal	88	Connect + Turnaround	
Transitway Stations	People and Jobs/ha	Terminal/Station Category	Future Terminal/Station Category/Notes
Cawthra	35	Through	Connect + Turnaround
Central Parkway	45	Through	Connect + Turnaround
Dixie	33	Connect + Turnaround	
Erin Mills	35	Connect + Turnaround	
Etobicoke Creek	72	Through	
Orbitor	95	Through	
Spectrum	69	Through	
Tahoe	62	Through	Some debate

Tomken	30	Through	
Winston Churchill	51	Connect + Turnaround	
GO Stations	People and Jobs/ha	Terminal/Station Category	Future Terminal/Station Category/Notes
Clarkson GO	54	Connect + Turnaround	
Dixie GO	26	Through	Connect + Turnaround
Erindale GO	19	Connect + Turnaround	
Lisgar GO	31	Connect	
Malton GO	73	Connect	
Meadowvale GO	47	Connect	
Streetsville GO	27	Connect	
On-Street Route Ends	People and Jobs/ha	Terminal/Station Category	Future Terminal/Station Category/Notes
Laird/Ridgeway	N/A	Turnaround	
Lorimar/Cardiff	N/A	Turnaround	

Note: N/A: Not Available

Mobility Hubs Out of Scope	Terminal/Station Category	Future Terminal/Station Category/Notes
Airport Terminal 1 Airport Terminal 3	Connect + Turnaround	Beyond 2025 –Through (stops)
Viscount Station	Through	Beyond 2025 – Connect + Turnaround
City Centre Transit Terminal (Out-of-Scope)	Connect + Turnaround	
Renforth	Connect + Turnaround	
Cooksville GO	Connect + Turnaround	
Kipling GO	Connect + Turnaround	
Port Credit GO	Connect + Turnaround	
Terminals Out-of-Scope	Terminal/Station Category	Future Terminal/Station Category/Notes
Brampton Gateway	Connect	Could turnaround sooner but stop generates revenue for MiWay
Islington Subway Transit Terminal	Turnaround	
Woodbine Centre	Through (service will be moved to on-street)	Could be a Connect if GO station is built
Terminals Outside City Limits	Terminal/Station Category	Future Terminal/Station Category/Notes
Bramalea Terminal	Connect	
Bristol/Winston Park	Turnaround	
Etobicoke Hospital	Connect + Turnaround	
Long Branch GO	Connect + Turnaround	
Sherway Gardens	Connect + Turnaround	
Sheridan College	Turnaround	
Humber College North Campus	Turnaround	









SEPTEMBER 2020

Appendix H Stop and Terminal Prioritization Slides





Task 5: Opportunities Prioritization Methodology



IBI GROUP

The City of Mississauga MiWay Infrastructure Growth Plan August 20, 2019 – Revised December 3, 2019

Outline

- Purpose, Outcome, Objectives
- Terminal Prioritization
 - Two priority lists for terminals and stations
 - Five variables for scoring
- Stop Prioritization
 - Three variables for scoring
 - Stop pairing process
- Additional Considerations

MiWay MiWay Infrastructure Growth Plan Nov. 11, 2019 H-2

Purpose

- Screen the list of all MiWay terminals and MiExpress stops to a short list
- Prioritize the short list for implementation over the next 10 years

Outcome

• A priority list of terminals and a priority list of stops

MiWay MiWay Infrastructure Growth Plan

Objectives of the MIGP

- 1. Make it easier to identify MiWay stops and terminals
- 2. Provide more passenger amenities to improve the transit rider experience
- 3. Improve stop access, stop placement, and on-road infrastructure at MiExpress stops
- 4. Improve access and connections within MiWay Terminals and GO Stations
- 5. Improve wayfinding and connections between on-street stops and Transitway and GO Stations
- 6. Provide sufficient operator amenities to support bus operators

MiWay MiWay Infrastructure Growth Plan Nov. 11, 2019 H-4

Terminal Prioritization



MiWay MiWay Infrastructure Growth Plan

Nov. 11, 2019

H-5

Terminal Prioritization

- One priority lists for terminals and stations
 - Starts with all facilities
 - Can be filtered to exclude outof-scope facilities, facilities with existing plans, etc.
- Five variables
- Priority is higher for terminals with more points



MiWay MiWay Infrastructure Growth Plan

Nov. 11, 2019 H-6

Terminal Prioritization - Methodology

- Each terminal receives a score for each variable and scores are summed
- Together, the five variables:
 - Anticipate challenges at terminals that may occur with increased service
 - Reflect the scale of the problem based on potential land requirements and numbers and types of routes served
 - Capture interactions with other service providers



Terminal Prioritization – Variables

 How many operational challenges are faced (or anticipated) at each location?



Challenges	Points Awarded
0	0
1	1
2	2
3	3
4	4
5	5

• More challenges indicate a higher-priority facility and receive more points

MiWay MiWay Infrastructure Growth Plan

Nov. 11, 2019

Terminal Prioritization – Variables

- Will additional land be needed to resolve challenges?
 - Challenges that likely require additional land are awarded more points

Challenges Requiring Land	Points Awarded
0	0
1	1
2	2
3	3





Terminal Prioritization – Variables

- How many routes access the terminal or station?
 - Routes include MiLocal, MiExpress, and those from other service providers
 - Peak period GO buses are counted, but GO trains and train replacement buses are excluded
 - More routes increase the number of passengers impacted at a facility

All Routes	Points Awarded
0 – 3	0
4 – 6	1
7 – 9	2
10 – 12	3
13 – 15	4
16 – 18	5
19 – 21	6
22 +	7

MiWay MiWay Infrastructure Growth Plan

Nov. 11, 2019

H-10

Terminal Prioritization – Variables

- Does the terminal or station serve MiExpress routes?
 - Challenges at terminals or stations serving MiExpress routes may impact more riders

MiExpress Routes	Points Awarded
None	0
One or more	1

- How many other service providers use the terminal or station?
 - E.g. GO, TTC, Brampton, Oakville

	Number of Other Service Providers	Points Awarded	
	0	0	
	1	1	
	2	2	
	3	3	
4		4	
MiWay MiWay Ir	frastructure Growth Plan	Nov. 11, 2019	٦ ١

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Terminal Prioritization – Total Scores

- Terminals can score up to 20 points
- Terminals are prioritized from highest to lowest score
- The full list of terminals may be filtered in stages to remove out-of-scope facilities, etc.

Example – South Common

Category	Points Awarded
Number of Challenges	5 / 5
Land Requirements	3 / 3
Number of Routes	2/7
MiExpress Routes?	1 / 1
Number of Other Service Providers	1 / 4
Total	12 / 20

MiWay	Nov 11 2010	 Ц_12
MiWay Infrastructure Growth Plan	1100.11,2019	

Terminal Ownership

- MiWay terminals and stations can be
 - owned by the City or MiWay,
 - leased from private property owners (e.g. malls), or
 - owned by other transit service providers (e.g. GO Transits Stations)
- Once terminals are scored, land ownership for each of the terminals is noted
- Solutions are more challenging to implement at privately-owned terminals or stations, so land ownership for each terminal is also noted

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Nov. 11, 2019

Terminal Prioritization – Top 10 (All Terminals and Stations)

Terminal Name	Challenges	Land Requirement	Route Score	MiExpress Routes?	Other Svc. Providers	Score	City/MiWay Owned?
City Centre	4 (/5)	3 (/4)	7 (/7)	Y (1/1)	2 (/3)	17 (/20)	Ν
Bramalea	3	3	7	Y	2	16	Ν
Westwood Square	4	3	5	Y	2	15	Ν
Sheridan College	4	3	5	N	2	14	Ν
Airport Terminal 1	4	3	2	Y	3	13	Ν
Humber College	3	2	4	Y	3	13	Ν
Islington Subway	3	3	5	Y	1	13	Ν
Meadowvale Town Ctr.	4	3	5	Y	0	13	Ν
Clarkson GO	4	3	3	Y	1	12	Ν
South Common Centre	5	3	2	Y	1	12	N



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Terminal Prioritization – Filtering

• The full list of terminals has been filtered in four stages, yielding a list of in-scope facilities without existing projects or plans



Terminal Priority List #5 (No Plans or Projects within 6-10 Years)

Terminal Name	Challenges	Land Requirement	Route Score	MiExpress Routes?	Other Svc. Providers	Score	City/MiWay Owned?
Westwood Square	4	3	5	Υ	2	15	Ν
Meadowvale Town Centre	4	3	5	Υ	0	13	Ν
Clarkson GO	4	3	3	Υ	1	12	Ν
South Common Centre	5	3	2	Υ	1	12	Ν
Erin Mills Transitway	4	2	3	Υ	1	11	Ν
Renforth Transitway	2	1	5	Υ	2	11	Ν
Lisgar GO	4	3	1	Ν	2	10	Ν
Cawthra Transitway	5	3	0	Υ	0	9	Υ
Central Parkway Station	4	3	1	Y	0	9	Y
U of T Mississauga	3	3	1	Y	0	8	N

MiWay MiWay Infrastructure Growth Plan

Nov. 11, 2019 H-16

Stop Prioritization



MiWay MiWay Infrastructure Growth Plan

Nov. 11, 2019

H-17

Stop Prioritization

- Two priority list for stops
- One list for stop infrastructure and amenities
 - Priority is higher for individual stops with more deficiencies
 - Stop classification affects score
- One list for stop delay
 - Priority is higher for stop pairs with more passenger-delay



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Stop Prioritization – Infrastructure

- Stop infrastructure is scored against requirements from the typology
- Each substandard or missing element is one point
- Major transfer and enhanced stops are both scored out of 3

	Major Transfer Stops	Possible Points	Enhanced Stops	Possible Points
Infrastructure				
MiWay Premium Stop Marker	Required	1	Required	1
Concrete Bus Pad	Desirable	N/A	Desirable	N/A
Passenger Landing Pad	Required	1	Required	1
Sidewalk connection to landing pad	Required	1	Required	1
Total	-	3	-	3

MiWay MiWay Infrastructure Growth Plan

Nov. 11, 2019 H-19

Stop Prioritization – Amenities

- Stop amenities are scored against requirements from the typology
- Each substandard or missing element is one point
- Major transfer are scored out of 3, enhanced are scored out of 2

		Major Transfer Stops	Possible Points	Enhanced Stops		Possible Points	
	Amenities						
	Shelter with Bench and Lighting	Required	1	Required		1	
	Garbage Bin	Required	1	Required		1	1
	Wayfinding Information	Required	1	Desirable		N/A	
	Bicycle Storage	Desirable	N/A	Desirable		N/A	
	Heating	Desirable	N/A	Desirable		N/A	
	Total	-	3	-		2	7
		MiWay MiWay Infrastruc	ture Growth Plan	Nov.	. 11, 2019	H-20	

Stop Prioritization – Infrastructure and Amenity Scores

- Each stop can score up to 5 or 6 points
- Stops are prioritized from highest to lowest score
- The full list of stops may be filtered to remove out-of-scope locations, etc.

Example – Dixie Rd at Drew Rd (5011)

Category	Points Awarded		
I – Stop Marker	1 (not premium)		
I – Pass. Landing Pad	1 (not present)		
I – Sidewalk Connection	-		
A – Weather Protection	1 (no shelter)		
A – Garbage Bin	1 (no bin)		
Total	4 / 5		

MiWay	Nov. 11, 2019	 H-21
Milway Infrastructure Growth Plan		

Stop Prioritization – Infrastructure and Amenity List (top 10)

Stop Name (Number)	Туре	Out of Scope?	Infra Deficiencies	Amenity Deficiencies	Total
Dixie Rd at Mid-Way Blvd (1065)	Enhanced	N	2/3	2/2	4 / 5
Winston Churchill Blvd at Battleford Rd (1767)	Enhanced	N	2/3	2/2	4 / 5
Dixie Rd at Drew Rd (2632)	Enhanced	N	2/3	2/2	4 / 5
Renforth Dr at Convair Dr (2904)	Enhanced	Y	2/3	2/2	4 / 5
Renforth Dr at Convair Dr (2905)	Enhanced	N	2/3	2/2	4 / 5
Dixie Rd at Drew Rd (5011)	Enhanced	N	2/3	2/2	4 / 5
Dixie Rd at Steeles Ave (5019)	Enhanced	Y	2/3	2/2	4 / 5
Dixie Rd at Balmoral Dr (5020)	Enhanced	Y	2/3	2/2	4 / 5
Dixie Rd at Derry Rd (2623)	Major Transfer	N	2/3	2/3	4 / 6
Dixie Rd at Derry Rd (5015)	Major Transfer	N	2/3	2/3	4/6

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MiWay MiWay Infrastructure Growth Plan

Nov. 11, 2019 H-22

Stop Prioritization – Delay

- Total passenger-minutes of delay in the p.m. peak period are measured for each stop
- More delay represents a greater need for transit priority measures
- Stops are paired and ranked in order of delay (highest-lowest)
 - Stop pairing is described on the next slide



MiWay MiWay Infrastructure Growth Plan	Nov. 11, 2019	H-23
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Stop Prioritization – Stop Pairing

- Stops are 'paired' with one another to account for a.m. and p.m. peak directions of travel, where possible
 - Northbound and Southbound, or Eastbound and Westbound, stops serving MiExpress routes are paired at each intersection
 - Delay times from both stops are summed
 - Some stops do not have an equivalent in the opposite direction and are not paired
- Solutions will improve reliability and consistency in both service directions where stops are paired

MiWay MiWay Infrastructure Growth Plan Nov. 11, 2019 H-24

Stop Prioritization – Delay List (top 10)

Stop Pair Name	Туре	Out of Scope?	Stop 1 Delay	Stop 2 Delay	Total Delay
Dixie Rd at Derry Rd	Major Transfer	Ν	2:42 (h:mm)	0:13	2:55
Dundas St at Aukland Rd	Major Transfer	Y	2:01	0:49	2:50
Dixie Rd at Drew Rd	Enhanced	Ν	2:07	0:42	2:49
Erin Mills Pky at Folkway Dr	Enhanced	Ν	0:35	1:44	2:19
Dixie Rd at Steeles Ave	Enhanced	Y	0:00	2:16	2:16
Dundas St at Hurontario St	Major Transfer	Ν	0:55	1:08	2:03
Winston Churchill Blvd at Eglinton Ave W	Enhanced	Ν	1:23	0:22	1:45
Derry Rd at Tomken Rd	Enhanced	Ν	0:27	1:15	1:43
Dundas St at Billingham Rd	Major Transfer	Y	0:50	0:50	1:40
Dundas St at Tomken Rd	Enhanced	Ν	0:32	1:06	1:38

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Additional Considerations



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Additional Considerations

- What other strategic considerations would influence a stop or terminal's priority?
 - Existing plans and projects
 - Other transit providers' service and infrastructure changes
 - Grouping projects together
 - Proposed typologies (for terminals)
 - Others?

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Additional Considerations – Existing Projects and Plans

• Opportunities can be further filtered based on whether the site is the subject of an existing plan or project

Plans and Studies	Projects Underway (including Planned and Funded projects)	Recently Comple	ted Projects	
Reimagining the Malls; MTSA Overview (Peel Region); Clarkson MTSA; Dundas BRT TPAP; Lakeshore HOT TPAP (Phase 1 and 2); Road Characterization and Complete Streets Guidelines; Meadowvale GO Station Improvements; Port Credit GO Station Area Master Plan;	Hurontario LRT; GO Station Improvements • (Cooksville, Kipling, Bramalea) Collegeway Cycletrack; Transit Signal Priority; Churchill Meadows Community Centre; Edward Boulevard Sidewalk Construction;	Streetsville GO Im Mississauga Trans Lorimer and Cardi	provements; sitway; ff Washrooms;	
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Additional Considerations – Other Providers' Changes

- Planned changes by other service providers, in Mississauga or bordering municipalities, may affect MiWay operations
- TTC (Toronto):
 - Finch West LRT construction will disrupt Humber College area
 - Proposed redevelopment around Woodbine (potential GO Station)
 - Desire for improved transit infrastructure at Sherway Gardens
 - Plans for improving rail, bus, and streetcar connections at Long Branch GO (Metrolinx)

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Additional Considerations – Other Providers' Changes

- Oakville Transit:
 - No current plans for additional transit infrastructure in or around Mississauga
 - Would like to lay over at South Common, but bus bay capacity challenges and short-term construction are obstacles
 - Laird and Ridgeway will continue to be a preferred transfer point
 - MTSA planning process at Clarkson is underway Oakville will provide bus bay and terminal requirements to Metrolinx

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Additional Considerations – Other Providers' Changes

- GO Transit:
 - Main focus for bus service enhancements is along Highway 401 and 407 corridors, stopping at Hurontario and Mississauga Road
 - Noted interest in serving Meadowvale Business Park, but land uses are dispersed and there is no one point for a transfer hub
 - No major changes planned to bus service at any GO Stations
 - Bus loop construction underway at Cooksville, Malton, and Clarkson

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Additional Considerations – Other Providers' Changes

- Brampton Transit:
 - Hurontario LRT construction will impact Brampton and MiWay routes along Hurontario, at Brampton Gateway
 - Brampton is interested in connecting to Meadowvale GO or Meadowvale Town Centre, but there are capacity constraints
 - Brampton would be interested in serving future Woodbine GO Station
 - No major changes planned for other Brampton Transit facilities

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Additional Considerations – Grouping Projects

- Grouping projects, where appropriate, can streamline the implementation of solutions
- Opportunities may include:
 - Erin Mills and Eglinton-area terminals (Erin Mills Town Centre, Credit Valley Hospital, Erin Mills Transitway)
 - Multiple adjacent stops on Dundas or Dixie corridors

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Additional Considerations – Terminal Typologies

• The typology determines the design criteria for each terminal

	Connections to other routes / inter- municipal or regional services	Layover Spaces for schedule recovery, breaks, stand-by buses	Staff Facilities	Route Ends
Connect + Turnaround	$\checkmark \checkmark \checkmark$	$\checkmark \checkmark \checkmark$	$\checkmark \checkmark \checkmark$	$\checkmark \checkmark \checkmark$
Connect	$\checkmark \checkmark$	\checkmark	\checkmark	\checkmark
Turnaround	\checkmark	$\checkmark \checkmark \checkmark$	$\checkmark \checkmark \checkmark$	$\checkmark \checkmark \checkmark$
Through	\checkmark	—	\checkmark	_

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Additional Considerations – Terminal Typologies

- Existing population and employment densities are used to quantify land use around each terminal
 - **High Density Terminals:** Greater than or equal to 50 jobs and people per hectare
 - Low Density Terminals: Less than 50 jobs and people per hectare
- Together, terminal density and type make up the typology

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Thank you!



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SEPTEMBER 2020

Appendix I Stop Infrastructure and Amenity Deficiency Table

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FASTROUM

				MiExpress	Stop	Infrastructure	Amenity	Total	
Stop ID	Stop Name	Direction	Municipality	Routes	Classification	Deficiencies	Deficiencies	Deficiencies	Score
1065	DIXIE RD at MID-WAY BLVD	SB	Mississauga	185	Enhanced	2	2	4	4/5
	WINSTON CHURCHILL BLVD at								
1767	BATTLEFORD RD	NB	Mississauga	109	Enhanced	2	2	4	4/5
2632	DIXIE RD at DREW RD	NB	Mississauga	185	Enhanced	2	2	4	4/5
2904	RENFORTH DR at CONVAIR DR	NB	Toronto	107	Enhanced	2	2	4	4/5
					L	_			
2905	RENFORTH DR at CONVAIR DR	SB	Mississauga	107	Enhanced	2	2	4	4/5
5011	DIXIE RD at DREW RD	SB	Mississauga	185	Enhanced	2	2	4	4/5
5019	DIXIE RD at STEELES AVE	NB	Brampton	185	Enhanced	2	2	4	4/5
5020	DIXIE RD at BALMORAL DR	NB	Brampton	185	Enhanced	2	2	4	4/5
			-	101/A, 108,					
811	DUNDAS ST at AUKLAND RD	WB	Toronto	109	Enhanced	1	3	4	4/5
045			T	101/A, 108,	E a h a a a a d			,	A / E
815		WB	I Oronto	109	Ennanced	1	3	4	4/5
2623		NB	Mississauga	185	Major Transfer	2	2	4	4/6
5015		28	iviississauga	185	Major Transfer	2	2	4	4/6
770			Minning	100	Fabored				0/5
112		INB	iviississauga	109	Ennanced	Ζ	1	3	3/5
770			Mississer	100	Tabaaad		4		2/5
113		INB	Mississauga	109	Ennanced	Ζ	1	3	3/5
966		ЕР	Mississeures	101/4	Enhanced	2	1	2	2/E
000		ED	iviississauga	101/A	Ennanced	Ζ	1		3/5
1793		C B	Mississougo	100	Enhancod	2	1	2	3/5
2502		NB	Mississauga	109	Enhanced	2	1	3	3/5
2302			Iviississauga	105		Z	I		5/5
2503	DR	NB	Mississaura	185	Enhanced	2	1	3	3/5
2637	DIXIE RD at BRITANNIA RD	NB	Mississauga	185	Enhanced	2	1	3	3/5
2001	SOUTHDOWN RD at		Micciccuugu	100	Ennanood				0,0
106	BROMSGROVE RD	SB	Mississauga	110	Enhanced	1	2	3	3/5
100	DUNDAS ST W at WINSTON	00	meeleeuugu	110		•			0,0
1002		WB	Mississauga	101A	Enhanced	1	2	3	3/5
			Interiocuugu			•			0,0
1407	GOREWAY DR at NASHUA DR	NB	Mississauga	107	Enhanced	1	2	3	3/5
	DUNDAS ST at								5, 2
1666	WOODCHESTER DR	WB	Mississauga	101A	Enhanced	1	2	3	3/5
	ERIN MILLS PKY at FOLKWAY								
1717	DR	SB	Mississauga	110	Enhanced	1	2	3	3/5

				MiExpress	Stop	Infrastructure	Amenity	Total	
Stop ID	Stop Name	Direction	Municipality	Routes	Classification	Deficiencies	Deficiencies	Deficiencies	Score
1853	GOREWAY DR at NASHUA DR	SB	Mississauga	107	Enhanced	1	2	3	3/5
2198	CARLINGVIEW DR at DIXON RD	NB	Toronto	107	Enhanced	1	2	3	3/5
2210	CARLINGVIEW DR at DIXON RD	SB	Toronto	107	Enhanced	1	2	3	3/5
2211	CAMPUS RD at BRESLER DR	NB	Mississauga	107	Enhanced	1	2	3	3/5
2548	DERRY RD at TOMKEN RD	WB	Mississauga	104	Enhanced	1	2	3	3/5
2603	DERRY RD at CATTRICK ST	EB	Mississauga	104	Enhanced	1	2	3	3/5
3363	DERRY RD at MAVIS RD	EB	Mississauga	104	Enhanced	1	2	3	3/5
5012	DIXIE RD at CLARK BLVD	SB	Brampton	185	Enhanced	1	2	3	3/5
5013	DIXIE RD at BALMORAL DR	SB	Brampton	185	Enhanced	1	2	3	3/5
5014	DIXIE RD at STEELES AVE	SB	Brampton	185	Enhanced	1	2	3	3/5
5021	DIXIE RD at CLARK BLVD	NB	Brampton	185	Enhanced	1	2	3	3/5
5023	DIXIE RD at MID-WAY BLVD	NB	Mississauga	185	Enhanced	1	2	3	3/5
				101/A, 108,					
9001	DUNDAS ST at BILLINGHAM RD	EB	Toronto	109	Enhanced	0	3	3	3/5
				101/A, 108,					
9007	DUNDAS ST at AUKLAND RD	EB	Toronto	109	Enhanced	0	3	3	3/5
	GOREWAY DR north of DERRY								
2800	RD	NB	Mississauga	104, 107	Major Transfer	1	2	3	3/6
	SOUTHDOWN RD at								
104	TRUSCOTT DR	SB	Mississauga	110	Enhanced	1	1	2	2/5
	SOUTHDOWN RD at								
245	TRUSCOTT DR	NB	Mississauga	110	Enhanced	1	1	2	2/5
	SOUTHDOWN RD at								
283	HARTLAND DR	NB	Mississauga	110	Enhanced	1	1	2	2/5
328	DERRY RD at BRAMALEA RD	WB	Mississauga	104	Enhanced	1	1	2	2/5
	DUNDAS ST at								
501	WOODCHESTER DR	EB	Mississauga	101A	Enhanced	1	1	2	2/5
	ERIN MILLS PKY at LEANNE								
526	BLVD	SB	Mississauga	110	Enhanced	1	1	2	2/5
	DUNDAS ST W at WINSTON								
548	CHURCHILL BLVD	EB	Mississauga	101A	Enhanced	1	1	2	2/5
	ERIN MILLS PKY at FOWLER								
566	DR	NB	Mississauga	110	Enhanced	1	1	2	2/5

				MiExpress	Stop	Infrastructure	Amenity	Total	
Stop ID	Stop Name	Direction	Municipality	Routes	Classification	Deficiencies	Deficiencies	Deficiencies	Score
	DUNDAS ST at WOLFEDALE								
644	RD	EB	Mississauga	101/A	Enhanced	1	1	2	2/5
	DUNDAS ST at								
748	CONFEDERATION PKY	EB	Mississauga	101/A	Enhanced	1	1	2	2/5
831	DUNDAS ST east of DIXIE RD	EB	Mississauga	101/A	Enhanced	1	1	2	2/5
855	DUNDAS ST at CAWTHRA RD	EB	Mississauga	101/A	Enhanced	1	1	2	2/5
858	DUNDAS ST at TOMKEN RD	EB	Mississauga	101/A	Enhanced	1	1	2	2/5
	DUNDAS ST at								
1190	CONFEDERATION PKY	WB	Mississauga	101/A	Enhanced	1	1	2	2/5
1194	DUNDAS ST at MAVIS RD	WB	Mississauga	101/A	Enhanced	1	1	2	2/5
	DUNDAS ST at WOLFEDALE								
1195	RD	WB	Mississauga	101/A	Enhanced	1	1	2	2/5
1283	DUNDAS ST at CAWTHRA RD	WB	Mississauga	101/A	Enhanced	1	1	2	2/5
	AMERICAN DR at NORTHAM								
1397	DR	SB	Mississauga	107	Enhanced	1	1	2	2/5
	LAIRD RD west of RIDGEWAY								
1661	DR	WB	Mississauga	101A	Enhanced	1	1	2	2/5
	WINSTON CHURCHILL BLVD at								
1788	THOMAS ST	SB	Mississauga	109	Enhanced	1	1	2	2/5
2008	DIXIE RD at EGLINTON AVE	SB	Mississauga	185	Enhanced	1	1	2	2/5
2041	DIXIE RD at MATHESON BLVD	NB	Mississauga	185	Enhanced	1	1	2	2/5
2045	DIXIE RD at EGLINTON AVE	NB	Mississauga	185	Enhanced	1	1	2	2/5
2134	DERRY RD at ARGENTIA RD	WB	Mississauga	104	Enhanced	1	1	2	2/5
2214	CAMPUS RD at BRESLER DR	SB	Mississauga	107	Enhanced	1	1	2	2/5
	VISCOUNT RD at AMERICAN				L				- (-
2230	DR	SB	Mississauga	107	Enhanced	1	1	2	2/5
2499	DERRY RD at KENNEDY RD	WB	Mississauga	104	Enhanced	1	1	2	2/5
2514	DERRY RD at TOMKEN RD	EB	Mississauga	104	Enhanced	1	1	2	2/5
					L		_	_	o (=
2516	DERRY RD at COLUMBUS RD	EB	Mississauga	104	Enhanced	1	1	2	2/5
2521	DIXIE RD at MEYERSIDE DR	SB	Mississauga	185	Enhanced	1	1	2	2/5
0								-	0/5
2546	DERRY RD at CARDIFF BLVD	INR I	Mississauga	104	Enhanced	1	1	2	2/5
2607	DERRY RD at AIRPORT RD	IFR	Mississauga	104	Enhanced	1	1	2	2/5

				MiExpress	Stop	Infrastructure	Amenity	Total	
Stop ID	Stop Name	Direction	Municipality	Routes	Classification	Deficiencies	Deficiencies	Deficiencies	Score
	NORTHWEST DR at AMERICAN								
2985	DR	NB	Mississauga	107	Enhanced	1	1	2	2/5
	WINSTON CHURCHILL BLVD at								
3086	BRITANNIA RD	SB	Mississauga	109	Enhanced	1	1	2	2/5
	WINSTON CHURCHILL BLVD at								
3515	BRITANNIA RD	NB	Mississauga	109	Enhanced	1	1	2	2/5
1660	DUNDAS ST W at VEGA BLVD	WB	Mississauga	101A	Enhanced	0	2	2	2/5
	ERIN MILLS PKY at FOLKWAY								
1720	DR	NB	Mississauga	110	Enhanced	0	2	2	2/5
	CARLINGVIEW DR at								
3301	RENFORTH DR	SB	Toronto	107	Enhanced	0	2	2	2/5
3364	DERRY RD at MAVIS RD	WB	Mississauga	104	Enhanced	0	2	2	2/5
	CARLINGVIEW DR north of								
9970	INTERNATIONAL BLVD	NB	Toronto	107	Enhanced	0	2	2	2/5
				101/A, 108,					
310	BLOOR ST W at GREEN LANES	WB	Toronto	109	Enhanced	1	1	2	2/5
	DUNDAS ST at HURONTARIO								
749	ST	EB	Mississauga	101/A	Major Transfer	1	1	2	2/6
802	DERRY RD at DIXIE RD	EB	Mississauga	104	Major Transfer	1	1	2	2/6
	DUNDAS ST at HURONTARIO								
1189	ST	WB	Mississauga	101/A	Major Transfer	1	1	2	2/6
2507	DERRY RD at DIXIE RD	WB	Mississauga	104	Major Transfer	1	1	2	2/6
2556	DERRY RD at HURONTARIO ST	WB	Mississauga	104	Major Transfer	1	1	2	2/6
3279	GOREWAY DR at DERRY RD	SB	Mississauga	104, 107	Major Transfer	0	2	2	2/6
645	DUNDAS ST at MAVIS RD	EB	Mississauga	101/A	Enhanced	1	0	1	1/5
862	DUNDAS ST at DIXIE RD	EB	Mississauga	101/A	Enhanced	1	0	1	1/5
	SOUTH MILLWAY at FIFTH								
1039	LINE WEST	WB	Mississauga	101	Enhanced	1	0	1	1/5
	WINSTON CHURCHILL BLVD at								
1790	ERIN CENTRE BLVD	SB	Mississauga	109	Enhanced	1	0	1	1/5
2498	DERRY RD at KENNEDY RD	EB	Mississauga	104	Enhanced	1	0	1	1/5
	DIXIE RD at COURTNEYPARK								
2520	DR	SB	Mississauga	185	Enhanced	1	0	1	1/5
2559	DERRY RD at MCLAUGHLIN RD	WB	Mississauga	104	Enhanced	1	0	1	1/5
2770	DERRY RD at AIRPORT RD	WB	Mississauga	104	Enhanced	1	0	1	1/5
327	DERRY RD at TORBRAM RD	WB	Mississauga	104	Enhanced	0	1	1	1/5

				MiExpress	Stop	Infrastructure	Amenity	Total	
Stop ID	Stop Name	Direction	Municipality	Routes	Classification	Deficiencies	Deficiencies	Deficiencies	Score
875	DUNDAS ST at WHARTON WAY	WB	Mississauga	101/A	Enhanced	0	1	1	1/5
1354	DUNDAS ST east of DIXIE RD	WB	Mississauga	101/A	Enhanced	0	1	1	1/5
1377	DUNDAS ST at DIXIE RD	WB	Mississauga	101/A	Enhanced	0	1	1	1/5
1381	DUNDAS ST at TOMKEN RD	WB	Mississauga	101/A	Enhanced	0	1	1	1/5
	NORTHWEST DR at AMERICAN								
1396	DR	SB	Mississauga	107	Enhanced	0	1	1	1/5
2108	DERRY RD at ARGENTIA RD	EB	Mississauga	104	Enhanced	0	1	1	1/5
	AMERICAN DR at VISCOUNT								
2218	RD	NB	Mississauga	107	Enhanced	0	1	1	1/5
2553	DERRY RD at BRAMALEA RD	EB	Mississauga	104	Enhanced	0	1	1	1/5
2606	DIXIE RD at BRITANNIA RD	SB	Mississauga	185	Enhanced	0	1	1	1/5
	AMERICAN DR at NORTHAM								
2968	DR	NB	Mississauga	107	Enhanced	0	1	1	1/5
	FINANCIAL DR at 6897								
3117	FINANCIAL DR	WB	Mississauga	104	Enhanced	0	1	1	1/5
	WINSTON CHURCHILL BLVD at								
4512	EGLINTON AVE W	SB	Mississauga	109	Enhanced	0	1	1	1/5
	ERIN MILLS PKY south of								
545	DUNDAS ST W	SB	Mississauga	110	Major Transfer	0	1	1	1/6
	DUNDAS ST east of ERIN MILLS								
1037	РКҮ	WB	Mississauga	101/A	Major Transfer	0	1	1	1/6
2497	DERRY RD at HURONTARIO ST	EB	Mississauga	104	Major Transfer	0	1	1	1/6
	DUNDAS ST W east of ERIN								
535	MILLS PKY	EB	Mississauga	101/A, 110	Major Transfer	0	0	0	0/6
	WINSION CHURCHILL BLVD at				L				
774		NB	Mississauga	109	Enhanced	0	0	0	0/5
	SOUTH MILLWAY at FIFTH				L				a (=
1033		EB	Mississauga	101/A	Enhanced	0	0	0	0/5
			.		_	_	_	_	o /=
2004	DIXIE RD at MATHESON BLVD	SB	Mississauga	185	Enhanced	0	0	0	0/5
							_		0/5
2395	DERRY RD at MCLAUGHLIN RD	FR	Mississauga	104	Enhanced	0	0	0	0/5
				404.400			_		0/5
6880	CRI	IFR	Mississauga	104, 108	Enhanced	0	0	0	0/5



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Appendix J Stop Pair Delay Table

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EASTBOUND

Note: Delay = Total passenger-minutes of delay, as measured in Fall 2018

		Stop 1	Stop 1	Stop 2	Stop 2 Name (if different from	Stop 2	Stop 2	Stop Pair	Stop Pair	MiExpress Routes	Stop Pair
Stop 1 ID	Stop 1 Name	Direction	Delay	ID	Stop 1)	Direction	Delay	Location	Classification	Served	Delay
2623	DIXIE RD at DERRY RD	NB	2:41:51	5015		SB	0:12:58	Mississauga	Major Transfer	185	2:54:49
811	DUNDAS ST at AUKLAND RD	WB	2:00:37	9007		EB	0:48:55	Toronto	Major Transfer	101/A, 108, 109	2:49:32
2632	DIXIE RD at DREW RD	NB	2:07:09	5011		SB	0:41:40	Mississauga	Enhanced	185	2:48:49
	ERIN MILLS PKY at FOLKWAY										
1717	DR	SB	0:34:43	1720		NB	1:43:45	Mississauga	Enhanced	110	2:18:28
5014	DIXIE RD at STEELES AVE	SB	0:00:00	5019		NB	2:15:48	Brampton	Enhanced	185	2:15:48
749	DUNDAS ST at HURONTARIO ST	EB	0:54:59	1189		WB	1:07:52	Mississauga	Major Transfer	101/A	2:02:51
	WINSTON CHURCHILL BLVD at										
772	EGLINTON AVE W	NB	1:22:51	4512		SB	0:22:18	Mississauga	Enhanced	109	1:45:09
2514	DERRY RD at TOMKEN RD	EB	0:27:20	2548		WB	1:15:28	Mississauga	Enhanced	104	1:42:48
815	DUNDAS ST at BILLINGHAM RD	WB	0:50:21	9001		EB	0:50:18	Toronto	Major Transfer	101/A, 108, 109	1:40:39
858	DUNDAS ST at TOMKEN RD	EB	0:32:03	1381		WB	1:05:33	Mississauga	Enhanced	101/A	1:37:36
855	DUNDAS ST at CAWTHRA RD	EB	0:51:47	1283		WB	0:42:06	Mississauga	Enhanced	101/A	1:33:53
	GOREWAY DR north of DERRY										
2800	RD	NB	0:43:28	3279	GOREWAY DR at DERRY RD	SB	0:49:46	Mississauga	Major Transfer	104, 107	1:33:14
862	DUNDAS ST at DIXIE RD	EB	1:10:50	1377		WB	0:19:23	Mississauga	Enhanced	101/A	1:30:13
866	DUNDAS ST at WHARTON WAY	EB	0:46:04	875		WB	0:39:00	Mississauga	Enhanced	101/A	1:25:04
2606	DIXIE RD at BRITANNIA RD	SB	0:07:48	2637		NB	1:11:43	Mississauga	Enhanced	185	1:19:31
	DIXIE RD at COURTNEYPARK										
2503	DR	NB	1:07:32	2520		SB	0:11:38	Mississauga	Enhanced	185	1:19:10
2607	DERRY RD at AIRPORT RD	EB	0:58:01	2770		WB	0:17:02	Mississauga	Enhanced	104	1:15:03
	WINSTON CHURCHILL BLVD at										
3086	BRITANNIA RD	SB	0:36:25	3515		NB	0:37:17	Mississauga	Enhanced	109	1:13:42
2004	DIXIE RD at MATHESON BLVD	SB	0:38:07	2041		NB	0:31:49	Mississauga	Enhanced	185	1:09:56
	DUNDAS ST at										
748	CONFEDERATION PKY	EB	0:33:41	1190		WB	0:35:20	Mississauga	Enhanced	101/A	1:09:01
645	DUNDAS ST at MAVIS RD	EB	0:38:50	1194		WB	0:28:53	Mississauga	Enhanced	101/A	1:07:43
1065	DIXIE RD at MID-WAY BLVD	SB	0:08:45	5023		NB	0:58:28	Mississauga	Enhanced	185	1:07:13
831	DUNDAS ST east of DIXIE RD	EB	0:12:20	1354		WB	0:53:24	Mississauga	Enhanced	101/A	1:05:43
5013	DIXIE RD at BALMORAL DR	SB	0:00:00	5020		NB	1:04:57	Brampton	Enhanced	185	1:04:57
802	DERRY RD at DIXIE RD	EB	0:35:43	2507		WB	0:27:07	Mississauga	Major Transfer	104	1:02:50
2498	DERRY RD at KENNEDY RD	EB	0:25:42	2499		WB	0:36:04	Mississauga	Enhanced	104	1:01:46
2497	DERRY RD at HURONTARIO ST	EB	0:20:40	2556		WB	0:39:15	Mississauga	Major Transfer	104	0:59:55
2603	DERRY RD at CATTRICK ST	EB	0:58:03	N/A	N/A	N/A	0:00:00	Mississauga	Enhanced	104	0:58:03
2502	DIXIE RD at MEYERSIDE DR	NB	0:47:31	2521		SB	0:09:42	Mississauga	Enhanced	185	0:57:14

		Stop 1	Stop 1	Stop 2	Stop 2 Name (if different from	Stop 2	Stop 2	Stop Pair	Stop Pair	MiExpress Routes	Stop Pair
Stop 1 ID	Stop 1 Name	Direction	Delay	ID	Stop 1)	Direction	Delay	Location	Classification	Served	Delay
	DUNDAS ST W east of ERIN				DUNDAS ST east of ERIN						
535	MILLS PKY	EB	0:28:12	1037	MILLS PKY	WB	0:28:54	Mississauga	Major Transfer	101/A, 110	0:57:06
	FINANCIAL DR at 6897				FINANCIAL DR south of						
3117	FINANCIAL DR	WB	0:12:17	6880	SYNTEX CRT	EB	0:41:40	Mississauga	Enhanced	104, 108	0:53:57
2198	CARLINGVIEW DR at DIXON RD	NB	0:13:46	2210		SB	0:36:48	Toronto	Enhanced	107	0:50:34
2008	DIXIE RD at EGLINTON AVE	SB	0:11:17	2045		NB	0:39:10	Mississauga	Enhanced	185	0:50:27
	ERIN MILLS PKY at LEANNE				ERIN MILLS PKY at FOWLER						
526	BLVD	SB	0:17:06	566	DR	NB	0:33:05	Mississauga	Enhanced	110	0:50:10
	WINSTON CHURCHILL BLVD at										
1767	BATTLEFORD RD	NB	0:11:37	1783		SB	0:37:31	Mississauga	Enhanced	109	0:49:08
	ERIN MILLS PKY south of										
545	DUNDAS ST W	SB	0:48:03	N/A	N/A	N/A	0:00:00	Mississauga	Major Transfer	110	0:48:03
	WINSTON CHURCHILL BLVD at										
774	THOMAS ST	NB	0:29:40	1788		SB	0:13:29	Mississauga	Enhanced	109	0:43:09
2395	DERRY RD at MCLAUGHLIN RD	EB	0:16:46	2559		WB	0:26:00	Mississauga	Enhanced	104	0:42:46
2211	CAMPUS RD at BRESLER DR	NB	0:18:16	2214		SB	0:24:03	Mississauga	Enhanced	107	0:42:18
	WINSTON CHURCHILL BLVD at										
773	ERIN CENTRE BLVD	NB	0:16:29	1790		SB	0:25:30	Mississauga	Enhanced	109	0:41:59
	DUNDAS ST W at WINSTON										
548	CHURCHILL BLVD	EB	0:33:31	1002		WB	0:07:39	Mississauga	Enhanced	101A	0:41:10
2904	RENFORTH DR at CONVAIR DR	NB	0:24:31	2905		SB	0:16:27	Miss./Toronto	Enhanced	107	0:40:57
3363	DERRY RD at MAVIS RD	EB	0:27:55	3364		WB	0:11:50	Mississauga	Enhanced	104	0:39:45
2108	DERRY RD at ARGENTIA RD	EB	0:12:30	2134		WB	0:26:36	Mississauga	Enhanced	104	0:39:06
	SOUTH MILLWAY at FIFTH LINE										
1033	WEST	EB	0:23:01	1039		WB	0:14:35	Mississauga	Enhanced	101/A	0:37:36
	CARLINGVIEW DR at				CARLINGVIEW DR north of						
3301	RENFORTH DR	SB	0:08:44	9970	INTERNATIONAL BLVD	NB	0:27:16	Toronto	Enhanced	107	0:36:00
	SOUTHDOWN RD at TRUSCOTT										
104	DR	SB	0:21:39	245		NB	0:13:53	Mississauga	Enhanced	110	0:35:32
					VISCOUNT RD at AMERICAN						
2218	AMERICAN DR at VISCOUNT RD	NB	0:19:47	2230	DR	SB	0:14:25	Mississauga	Enhanced	107	0:34:12
644	DUNDAS ST at WOLFEDALE RD	EB	0:15:12	1195		WB	0:15:56	Mississauga	Enhanced	101/A	0:31:08
1407	GOREWAY DR at NASHUA DR	NB	0:22:03	1853		SB	0:08:04	Mississauga	Enhanced	107	0:30:07
328	DERRY RD at BRAMALEA RD	WB	0:07:12	2553		EB	0:18:20	Mississauga	Enhanced	104	0:25:32
2516	DERRY RD at COLUMBUS RD	EB	0:16:35	2 546	DERRY RD at CARDIFF BLVD	WB	0:08:54	Mississauga	Enhanced	104	0:25:29
	DUNDAS ST at WOODCHESTER										
501	DR	EB	0:10:57	1666		WB	0:09:44	Mississauga	Enhanced	101A	0:20:41

		Stop 1	Stop 1	Stop 2	Stop 2 Name (if different from	Stop 2	Stop 2	Stop Pair	Stop Pair	MiExpress Routes	Stop Pair
Stop 1 ID	Stop 1 Name	Direction	Delay	ID	Stop 1)	Direction	Delay	Location	Classification	Served	Delay
	NORTHWEST DR at AMERICAN										
1396	DR	SB	0:07:02	2985		NB	0:12:29	Mississauga	Enhanced	107	0:19:31
1397	AMERICAN DR at NORTHAM DR	SB	0:10:43	2968		NB	0:07:27	Mississauga	Enhanced	107	0:18:10
5012	DIXIE RD at CLARK BLVD	SB	0:16:10	5021		NB	0:00:00	Brampton	Enhanced	185	0:16:10
327	DERRY RD at TORBRAM RD	WB	0:07:02	N/A	N/A	N/A	0:00:00	Mississauga	Enhanced	104	0:07:02
	SOUTHDOWN RD at				SOUTHDOWN RD at						
106	BROMSGROVE RD	SB	0:03:42	283	HARTLAND DR	NB	0:02:14	Mississauga	Enhanced	110	0:05:56
1660	DUNDAS ST W at VEGA BLVD	WB	0:04:45	N/A	N/A	N/A	0:00:00	Mississauga	Enhanced	101A	0:04:45
	LAIRD RD west of RIDGEWAY										
1661	DR	WB	0:00:36	N/A	N/A	N/A	0:00:00	Mississauga	Enhanced	101A	0:00:36
310	BLOOR ST W at GREEN LANES	WB	0:00:00	N/A	N/A	N/A	0:00:00	Toronto	Major Transfer	101/A, 108, 109	0:00:00



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SEPTEMBER 2020

Appendix K Terminal Prioritization List

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TAHOE

EASTBOUND

All Terminals and Stations

Terminal or Station Name	Priority Score	City or Miway Owned
City Centre Transit Terminal	17	N
Bramalea Transit Terminal	16	N
Westwood Square	15	N
Sheridan College	14	N
Airport Terminal 1	13	N
Humber College	13	N
Islington Subway Bus Terminal	13	N
Meadowvale Town Centre	13	N
Clarkson GO	12	N
South Common Centre	12	N
Erin Mills Station	11	N
Renforth Station	11	N
Cooksville GO	10	N
Lisgar GO	10	N
Long Branch GO	10	N
Airport Terminal 3	9	N
Kipling GO	9	N
Viscount Station	9	N
Brampton Gateway Terminal	8	N
Cawthra Station	9	Y
Central Parkway Station	9	Y
Dixie Outlet Mall	8	N
University Of Toronto Mississauga	8	N
Sherway Gardens	8	N
Meadowvale GO	8	N
Dixie Station	8	Y
Hurontario & 407	7	N
Streetsville GO	7	N
Winston Churchill Station	7	N
Etobicoke Creek Station	7	Y
Malton GO	6	N
Orbitor Station	7	Y
Spectrum Station	7	Y
Tahoe Station	7	Y
Tomken Station	7	Y
Trillium Health Centre	6	N
Credit Valley Hospital	5	N
Dundas/ESR/Glengarry	5	N
Port Credit GO	5	N
Dixie GO	4	N
Erin Mills Town Centre	4	N
Erindale GO	3	N
Sheridan Centre	3	N

Removed out-of-scope and out-of-jurisdiction facilities

Terminal or Station Name	Priority Score	City or MiWay Owned
Westwood Square	15	N
Meadowvale Town Centre	13	N
Clarkson GO	12	N
South Common Centre	12	N
Erin Mills Station	11	N
Renforth Station	11	N
Cooksville GO	10	N
Lisgar GO	10	N
Cawthra Station	9	Y
Central Parkway Station	9	Y
Dixie Outlet Mall	8	N
University Of Toronto Mississauga	8	N
Meadowvale GO	8	N
Dixie Station	8	Y
Hurontario & 407	7	N
Streetsville GO	7	N
Winston Churchill Station	7	N
Etobicoke Creek Station	7	Y
Malton GO	6	N
Orbitor Station	7	Y
Spectrum Station	7	Y
Tahoe Station	7	Y
Tomken Station	7	Y
Trillium Health Centre	6	N
Credit Valley Hospital	5	N
Dundas/ESR/Glengarry	5	N
Port Credit GO	5	N
Dixie GO	4	N
Erin Mills Town Centre	4	N
Erindale GO	3	N
Sheridan Centre	3	N

Removed facilities with no future terminal potential

Terminal or Station Name	Priority Score	City or MiWay Owned
Westwood Square	15	N
Meadowvale Town Centre	13	N
Clarkson GO	12	N
South Common Centre	12	N
Erin Mills Station	11	N
Renforth Station	11	N
Cooksville GO	10	N
Lisgar GO	10	N
Cawthra Station	9	Y
Central Parkway Station	9	Y
Dixie Outlet Mall	8	N
University Of Toronto Mississauga	8	N
Meadowvale GO	8	N
Dixie Station	8	Y
Hurontario & 407	7	N
Streetsville GO	7	N
Winston Churchill Station	7	N
Malton GO	6	N
Trillium Health Centre	6	N
Credit Valley Hospital	5	N
Dundas/ESR/Glengarry	5	N
Port Credit GO	5	N
Dixie GO	4	N
Erin Mills Town Centre	4	N
Erindale GO	3	N
Sheridan Centre	3	N

Removed facilities with plans/projects within 0-5 years

Terminal or Station Name	Priority Score	City or MiWay Owned
Westwood Square	15	N
Meadowvale Town Centre	13	Ν
Clarkson GO	12	N
South Common Centre	12	N
Erin Mills Station	11	N
Renforth Station	11	N
Lisgar GO	10	N
Cawthra Station	9	Y
Central Parkway Station	9	Y
Dixie Outlet Mall	8	N
University Of Toronto Mississauga	8	N
Meadowvale GO	8	N
Dixie Station	8	Y
Hurontario & 407	7	N
Winston Churchill Station	7	N
Trillium Health Centre	6	N
Credit Valley Hospital	5	N
Dundas/ESR/Glengarry	5	N
Port Credit GO	5	N
Dixie GO	4	N
Erin Mills Town Centre	4	Ν
Erindale GO	3	N
Sheridan Centre	3	N

Removed facilities with plans/projects within 6-10 years

Terminal or Station Name	Priority Score	City or MiWay Owned
Westwood Square	15	N
Meadowvale Town Centre	13	N
Clarkson GO	12	N
South Common Centre	12	N
Erin Mills Station	11	N
Renforth Station	11	N
Lisgar GO	10	N
Cawthra Station	9	Y
Central Parkway Station	9	Y
University Of Toronto Mississauga	8	N
Meadowvale GO	8	N
Dixie Station	8	Y
Hurontario & 407	7	N
Winston Churchill Station	7	N
Trillium Health Centre	6	N
Credit Valley Hospital	5	N
Dundas/ESR/Glengarry	5	N
Port Credit GO	5	N
Dixie GO	4	N
Erin Mills Town Centre	4	N
Erindale GO	3	N
Sheridan Centre	3	N



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SEPTEMBER 2020

Appendix L Stop Standard Drawings

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EASTBOUN

IBI GROUP APPENDIX L STOP STANDARD DRAWINGS Prepared for the City of Mississauga

List of Standard Drawings:

Standard Number	Description
2250.010	Concrete Bus Stop Platform (no bus shelter)
2250.030	Standard Concrete Shelter Pad
2250.040	Accessible Bus Stop (Sidewalk in front of Bus Shelter)
2250.050	Accessible Bus Stop (Sidewalk behind Bus Shelter)
2250.060	Enhanced Concrete Shelter Pad
2250.070	Bus Queue Jump Lane
2250.080	Concrete Bus Pad
2260.010	Bus Stop Nearside
2260.020	Bus Stop Farside
2260.030	Bus Stop Midblock
2270.010	Bus Bay Nearside (updated for 60' buses)
2270.020	Bus Bay Farside (updated for 60' buses)
2270.040	Bus Bay Midblock (updated for 60' buses)
2270.050	Typical Cross Section Concrete Bus Bay
2270.060	Concrete Bus Bay Nearside, Farside, and Midblock
2271.010	Terminal Bus Stop Configurations for Standard (40') Bus
2271.020	Terminal Bus Stop Configurations for Articulated (60') Bus
2280.010	On-Street Bus Stop Marker (updated with current marker designs)
2280.020	Terminal Bus Stop Marker
2240.083	Raised Cycle Track at Nearside & Farside Bus Stops (Constrained)
2240.085	Raised Cycle Track at Nearside & Farside Bus Stops (Preferred)
2240.086	Bike Lane Transition to Cycle Track at Nearside Bus Stops (Preferred)
2240.087	Bike Lane Transition to Cycle Track at Farside Bus Stops (Preferred)
2240.088	Bike Lane Transition to Cycle Track at Nearside Bus Stops (Retrofit)
2240.089	Bike Lane Transition to Cycle Track at Farside Bus Stops (Retrofit)
2240.090	Bike Lane at Nearside & Farside Bus Stops (Constrained)
2240.091	Multi-use Trail set behind Nearside & Farside Bus Stops (Preferred)
2240.092	Multi-use Trail set in front of Nearside & Farside Bus Stops (Constrained)



BUS SHELTER PAD LOCATION (PLAN VIEW)











19.4m





NOTES:

- 1. FOR CHANNELIZED RIGHT-TURN DETAILS, REFER TO CITY STANDARD DRAWING 2211.210.
- 2. FOR FARSIDE RECEIVING BUS BAY, REFER TO CITY STANDARD DRAWING 2270.020.
- 3. FINAL DESIGN TO BE APPROVED BY ROAD AUTHORITY.
- 4. PAVEMENT MARKINGS AND SYMBOLS TO BE CONFIRMED IN DETAILED DESIGN AND APPROVED BY MIWAY

ALL DIMENSIONS IN METRES UNLESS OTHERWISE NOTED.



\bowtie	MISSISSauga	

BUS QUEUE JUMP LANE

EFF. DATE: SEPT 2020		SCALE:	N.T.S.	
REV.		DRAWN: AC	STANDARD No.	2250.070







STREET 'A'



MIDBLOCK OF INTERSECTIONS **BUS STOP**

NOTES:

- 1. FOR CONCRETE CURB AND GUTTER, REFER TO CITY STANDARD DRAWING 2230.010 AND OPSD 600.040.
- 2. FOR BUS PAD AND PLATFORM DETAIL REFER TO CITY STANDARD DRAWINGS 2250.010 TO 2250.080.

ALL DIMENSIONS IN METRES UNLESS OTHERWISE NOTED.



2260.030




















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SEPTEMBER 2020

Appendix M Stop Feasibility Plans

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EASTBOUND

IBI GROUP APPENDIX M STOP FEASIBILITY PLANS Prepared for the City of Mississauga

List of Drawings:

Intersection (Direction of Travel)	Stop Classification
Dixie Rd at Derry Rd (N/S)	Major Transfer
Dixie Rd at Derry Rd (E/W)	Major Transfer
Derry Rd at Kennedy Rd (E/W)	Enhanced
Derry Rd at Tomken Rd (E/W)	Enhanced
Derry Rd at Hurontario Rd (E/W)	Major Transfer
Derry Rd at Mavis Rd (E/W)	Enhanced
Derry Rd at Bramalea Rd (E/W)	Enhanced
Derry Rd at Airport Rd (E/W)	Enhanced
Goreway Dr at Derry Rd (N/S)	Enhanced
Dixie Rd at Courtneypark Dr (N/S)	Enhanced
Dixie Rd at Britannia Rd (N/S)	Enhanced
Dixie Rd at Matheson Dr (N/S)	Enhanced
Erin Mills Pkwy at Folkway Dr (N/S)	Enhanced
Southdown Rd at Truscott Dr (N/S)	Enhanced
Southdown Rd at Bromsgrove Dr (N/S)	Enhanced

Dixie Road at Derry Road Northbound & Southbound



NOT FOR CONSTRUCTION. CONCEPTUAL DESIGN ONLY. THIS DESIGN WILL NEED TO BE REFINED WITH UPDATED BASE PLANS INCLUDING UTILITIES AND PROPERTY DATA.



N.T.S

Derry Road at Dixie Road Eastbound & Westbound

Existing C Westbound Infrastructure & Amenities Deficiencies	onditions - Outdated waste recept - Sub-standard landing p	acle ad (1.8m width)	Existing Conditions		
Westbound Traffic	Period95th Percentile Queue (m)AM210PM241	Existing Right- Turn Storage 205	EXISTING WB BUS STOP - 119.5 m		
Westbound	Total Passenger- Minutes Delay	27			
Transit	Total MiExpress Boardings 2018	60			-
Eastbound	Alightings 2018	43	AD-FAST		en la
Infrastructure & Amenities Deficiencies	- Outdated waste recept	acle		9	
Eastbound	Period 95th Percentile Queue (m)	Existing Right- Turn Storage	76.5 m	0	11
	AM 242 PM 202 Total Passanger	290	G PLAN // 146 EXISTING EB BUS STOP - 6994		
Eastbound	Minutes Delay Total MiExpress	35			
Operations	Boardings 2018 Total MiExpress	64	1400 - 1402		123
	Alightings 2018	03			
			Proposed Improvements		J J SI
			Proposed Improvements		SI CA FO
Proposed	Improvements		Proposed Improvements RELOCATE FARSIDE WB BUS STOP CLOSER TO THE INTERSECTION AND UPGRADE TO ENHANCED SHELTER		SI CC FC
Proposed Westbound	Improvements - Waste receptacle - Enhanced shelter		Proposed Improvements RELOCATE FARSIDE WB BUS STOP CLOSER TO THE INTERSECTION AND UPGRADE TO ENHANCED SHELTER WITH ADJUSTED 2.0m WIDE SIDEWALK 65.0 m		SI C F C
Proposed Westbound Infrastructure & Amenities	Improvements - Waste receptacle - Enhanced shelter - Adjust 2.0m sidewalk - Remove existing bus b	ay and taper	Proposed Improvements RELOCATE FARSIDE WB BUS STOP CLOSER TO THE INTERSECTION AND UPGRADE TO ENHANCED SHELTER WITH ADJUSTED 2.0m WIDE SIDEWALK 65.0 m		SI C F C
Proposed Westbound Infrastructure & Amenities Improvements Westbound	Improvements - Waste receptacle - Enhanced shelter - Adjust 2.0m sidewalk - Remove existing bus b - Adjust existing channel into Smart Channel	ay and taper ized right-turn	Proposed Improvements RELOCATE FARSIDE WB BUS STOP CLOSER TO THE INTERSECTION AND UPGRADE TO ENHANCED SHELTER WITH ADJUSTED 2.0m WIDE SIDEWALK REMOVE EXISTING BUS		SI C C C C
Proposed Westbound Infrastructure & Amenities Improvements Westbound Transit Priority Measures	Improvements - Waste receptacle - Enhanced shelter - Adjust 2.0m sidewalk - Remove existing bus b - Adjust existing channel into Smart Channel - Add queue jump lane - Relocate farside bus st intersection	ay and taper ized right-turn top closer to	Proposed Improvements ReLOCATE FARSIDE WB BUS STOP CLOSER TO THE INTERSECTION AND UPGRADE TO ENHANCED SHELTER WITH ADJUSTED 2.0m WIDE SIDEWALK BAY AND TAPER DERRRY ROAD		
Proposed Westbound Infrastructure & Amenities Improvements Westbound Transit Priority Measures Eastbound Infrastructure & Amenities Improvements	Improvements - Waste receptacle - Enhanced shelter - Adjust 2.0m sidewalk - Remove existing bus b - Adjust existing channel into Smart Channel - Add queue jump lane - Relocate farside bus st intersection - Waste receptacle - Enhanced shelter - Adjust existing channel into Smart Channel	ay and taper ized right-turn top closer to ized right-turn	Proposed Improvements RELOCATE FARSIDE WB BUS STOP CLOSER TO THE INTERSECTION AND UPGRADE TO ENHANCED SHELTER WITH ADJUSTED 2.0m WIDE SIDEWALK 65.0 m REMOVE EXISTING BUS BAY AND TAPER DERRY ROAD ADD QUEUE JUMP LANE WITH RED PLASTIC APPLICATION		S
Proposed Westbound Infrastructure & Amenities Improvements Westbound Transit Priority Measures Eastbound Infrastructure & Amenities Improvements Eastbound Transit Priority Measures	Improvements - Waste receptacle - Enhanced shelter - Adjust 2.0m sidewalk - Remove existing bus b - Adjust existing channel into Smart Channel - Add queue jump lane - Relocate farside bus st intersection - Waste receptacle - Enhanced shelter - Adjust existing channel into Smart Channel - Add queue jump lane - Relocate nearside bus intersection	ay and taper ized right-turn top closer to ized right-turn stop closer to	Proposed Improvements ReLOCATE FARSIDE WB BUS STOP U)PGRADE TO ENHANCED SHELTER WITH ADJUSTED 2.0m WIDE SIDEWALK 65.0 m 65.0 m 65.0 m 65.0 m 0 for the sidewalk REMOVE EXISTING BUS BAY AND TAPER DEDRET ROAD MITH RED PLASTIC APPLICATION 14.5 m 6994 6994 6994 6994 6994 6994	XEROAD	

NOT FOR CONSTRUCTION. CONCEPTUAL DESIGN ONLY. THIS DESIGN WILL NEED TO BE REFINED WITH UPDATED BASE PLANS INCLUDING UTILITIES AND PROPERTY DATA.





Derry Road at Kennedy Road Eastbound & Westbound

Existing Co	onditio	ons			
Westbound Infrastructure & Amenities Deficiencies	- Outda	- Outdated waste receptacle			
Westbound Traffic	Period AM PM	95th Percentile Queue (m) 188 333	Existing Right- Turn Storage (m) 215		
Masthound	Tota Mi	al Passenger- inutes Delay	36		
Transit	Tot Boa	al MiExpress ardings 2018	48		
Operations	Total MiExpress Alightings 2018 91				
Eastbound Infrastructure & Amenities Deficiencies	- Outda - Sub-s	ated waste recep tandard landing p	tacle oad (1.5m width)		
Eastbound	Period	95th Percentile Queue (m)	Existing Right- Turn Storage (m)		
Traffic	AM PM	321 226	130		
Faathound	Total Passenger- Minutes Delay 25		25		
Transit	Tot Boa	al MiExpress ardings 2018	90		
	Tot Alig	Total MiExpress Alightings 2018 71			



Proposed Improvements Westbound - Waste receptacle Infrastructure - Enhanced shelter & Amenities - Adjust existing channelized right-turn into Improvements Smart Channel - Add queue jump lane Westbound Fransit Priority Relocate nearside bus stop further from intersection Measures - Waste receptacle Eastbound Infrastructure - Enhanced shelter - Adjust existing channelized right-turn into & Amenities Improvements Smart Channel Eastbound Add queue jump lane Transit Priority Relocate nearside bus stop to farside Measures

NOT FOR CONSTRUCTION. CONCEPTUAL DESIGN ONLY. THIS DESIGN WILL NEED TO BE REFINED WITH UPDATED BASE PLANS INCLUDING UTILITIES AND PROPERTY DATA.

N.T.S

Derry Road at Tomken Road Eastbound & Westbound

Existing Conditions			
Westbound Infrastructure & Amenities Deficiencies	- Outda - Sub-s	ated waste recept tandard landing p	tacle pad (1.8m width)
Westbound Traffic	Period AM PM	95th Percentile Queue (m) 136 268	Existing Right- Turn Storage (m) 50
	Tota M	al Passenger- inutes Delay	75
Transit	Tot Boa	al MiExpress ardings 2018	102
Operations	Total MiExpress Alightings 2018		55
Eastbound Infrastructure & Amenities Deficiencies	- Outda - Sub-s	ated waste recept tandard landing p	tacle bad (1.8m width)
Eastbound	Period	95th Percentile Queue (m)	Existing Right- Turn Storage (m)
Traffic	AM PM	79 156	180
Fastbourd	Tota M	al Passenger- inutes Delay	27
Transit	Tot Bo	al MiExpress ardings 2018	60
Operations	Total MiExpress Alightings 2018		152



NOT FOR CONSTRUCTION. CONCEPTUAL DESIGN ONLY. THIS DESIGN WILL NEED TO BE REFINED WITH UPDATED BASE PLANS INCLUDING UTILITIES AND PROPERTY DATA.

Proposed I	mprovements
Westbound Infrastructure & Amenities Improvements	 Waste receptacle Enhanced shelter Adjust and widen sidewalk to 2.0m Adjust existing channelized right-turn into Smart Channel
Westbound Transit Priority Measures	 Add queue jump lane Relocate nearside stop closer to intersection
Eastbound Infrastructure & Amenities Improvements	- Waste receptacle - Enhanced shelter - Adjust existing channelized right-turn into Smart Channel
Eastbound Transit Priority Measures	- Add queue jump lane - Relocate farside stop closer to intersection

N.T.S

Derry Road and Hurontario St Eastbound & Westbound

Existing Co	onditio	ons				
Westbound Infrastructure & Amenities Deficiencies	- Outda	Outdated waste receptacle				
Westbound Traffic	Period AM PM	95th Percentile Queue (m) 119 152	Existing Right- Turn Storage 90			
Westbound	Tota Mi	al Passenger- inutes Delay	39			
Transit	Tot Boa	al MiExpress ardings 2018	71			
Operations	Tot Alig	al MiExpress ghtings 2018	163	ŧ		
Eastbound Infrastructure & Amenities Deficiencies	- Outda	ated waste recept	acle			
Eastbound	Period	95th Percentile Queue (m)	Existing Right- Turn Storage	1		
Traffic	AM PM	163 95	0			
Fastbound	Tota Mi	Total Passenger- Minutes Delay 20				
Eastbound Transit	Tot Boa	al MiExpress ardings 2018	244			
Operations	Tot Alig	al MiExpress ghtings 2018	97			

Proposed Improvements

Waste receptacle Enhanced shelter

Waste receptacle

Enhanced shelter

No improvements proposed due to

No improvements proposed due to

future Hurontario LRT construction

future Hurontario LRT construction

Westbound

Infrastructure

& Amenities Improvements

Westbound

Transit

Priority

Measures

Eastbound

Infrastructure

& Amenities

Improvements

Eastbound

Transit

Priority Measures



NOT FOR CONSTRUCTION. CONCEPTUAL DESIGN ONLY. THIS DESIGN WILL NEED TO BE REFINED WITH UPDATED BASE PLANS INCLUDING UTILITIES AND PROPERTY DATA.

N.T.S DATE DRAWN: 2020-04-24

Derry Road West at Mavis Road Eastbound & Westbound



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DATE DRAWN: 2020-04-24

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Derry Road and Airport Road Eastbound & Westbound

Existing Conditions				
Westbound Infrastructure & Amenities Deficiencies	- Outdated waste receptacle			
Westbound Traffic	Period AM	95th Percentile Queue (m) 25	Existing Right- Turn Storage (m) 0	
Moothound	РМ Tota Mi	al Passenger- nutes Delay	17	
Transit	Total MiExpress Boardings 2018		52	
Operations	Total MiExpress Alightings 2018		9	
Eastbound Infrastructure & Amenities Deficiencies	- No we - Outda	- No weather protection - Outdated waste receptacle		
Eastbound	Period	95th Percentile Queue (m)	Existing Right- Turn Storage (m)	
Traffic	AM PM	145 134	125	
Footbourd	Total Passenger- Minutes Delay 58		58	
Transit	Tot Boa	al MiExpress ardings 2018	11	
Operations	Total MiExpress Alightings 2018		62	





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Proposed Improvements

Westbound	- Waste receptacle
Infrastructure	- Enhanced shelter
& Amenities	- Add concrete platform along existing
Improvements	boulevard
Westbound	- MiWay to work with property owner to
Transit Priority	close driveways to reduce conflicts with
Measures	pedestrians
Eastbound Infrastructure & Amenities Improvements	 Waste receptacle Enhanced shelter Add concrete platform along existing boulevard Adjust existing channelized right-turn into Smart Channel
Eastbound Transit Priority Measures	 Add queue jump lane Relocate nearside bus stop closer to intersection



N.T.S

Derry Road at Goreway Drive Northbound & Southbound

Existing Co	Existing Conditions				
Southbound Infrastructure & Amenities Deficiencies	- Outda	Outdated waste receptacle			
Southbound Traffic	Period AM PM	95th Percentile Queue (m) 99 92	Existing Right- Turn Storage 0		
Southbound	Tota Mi	al Passenger- nutes Delay	49		
Transit	Tot Boa	al MiExpress ardings 2018	467		
Operations	Total MiExpress Alightings 2018 62		62		
Northbound Infrastructure & Amenities Deficiencies	- Outda	- Outdated waste receptacle			
Northbound	Period	95th Percentile Queue (m)	Existing Right- Turn Storage		
Traffic	AM PM	23 92	N/A		
Northbound	Tota Mi	al Passenger- nutes Delay	43		
Transit	Tot Boa	al MiExpress ardings 2018	116		
Operations	Tot Aliç	al MiExpress ghtings 2018	424		

EXISTING NB BUS STOP 82.0m EXISTING SB BUS STOP 10.5m DRIVE **DERRY ROAD EAST** OREWAY



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Proposed I	mprovements
Southbound Infrastructure & Amenities Improvements	- Waste receptacle - Enhanced shelter - Add concrete platform along existing boulevard
Southbound Transit Priority Measures	- N/A
Northbound Infrastructure & Amenities Improvements	- Waste receptacle - Enhanced shelter - Add concrete platform along existing boulevard
Northbound Transit Priority Measures	- Relocate farside bus stop to closer to intersection



Dixie Road at Courtneypark Drive Northbound & Southbound

-EAS,

EXISTING SB BUS STOP

39 m

5

ROAD

ш DIXIO

38 m

33 m

ROAD

DIXIE

Existing Conditions

Existing Conditions				
Southbound Infrastructure & Amenities Deficiencies	- Outda	ited waste recept	tacle	
Southbound	Period	95th Percentile Queue (m)	Existing Right- Turn Storage (m)	
Trainc	PM	109.8	65	
Carthharmd	Tota Mi	al Passenger- inutes Delay	11	
Transit	Tot Boa	al MiExpress ardings 2018	18	
Operations	Total MiExpress Alightings 2018		33	
Northbound Infrastructure & Amenities Deficiencies	- Outda - Stop I	- Outdated waste receptacle - Stop marker		
Northbound	Period	95th Percentile Queue (m)	Existing Right- Turn Storage (m)	
Traffic	AM PM	160.1 216.8	50	
Northbourd	Tota Mi	al Passenger- inutes Delay	67	
Transit	Tot Boa	al MiExpress ardings 2018	50	
Operations	Tot Alię	al MiExpress ghtings 2018	20	

Proposed Improvements

boulevard

Smart Channel

Waste receptacle

Enhanced shelter

Smart Channel

Southbound

Infrastructure

& Amenities

Improvements

Southbound

Transit Priority

Measures

Northbound

Infrastructure

& Amenities

Improvements

Northbound

Transit Priority

Measures

Waste receptacle Enhanced shelter



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FOOTPRINT

ENHANCED SHELTER

N.T.S

Dixie Road and Britannia Road Northbound & Southbound

Existing Co	onditio	ons				
Southbound Infrastructure	- Outda	Outdated waste receptacle				
Deficiencies						
	Period	95th Percentile	Existing Right-			
Southbound	- onou	Queue (m)	Turn Storage			
Traffic	AM	130	150			
	PM	118.9	150			
Southbound	Tota Mi	al Passenger- nutes Delay	7			
Transit	Tot Bo	al MiExpress ardings 2018	12			
Operations	Tot Alię	al MiExpress ghtings 2018	47			
Northbound Infrastructure & Amenities Deficiencies	- Outda - Stop I - Sub-s	ated waste recept marker standard landing p	acle pad (1.8m width)			
Northbound	Period	95th Percentile Queue (m)	Existing Right- Turn Storage			
Traffic	AM PM	58.2 173.1	180			
Northbound	Total Passenger- Minutes Delay		71			
Transit	Tot Bo	al MiExpress ardings 2018	30			
	Tot Alię	al MiExpress ghtings 2018	4			







NOT FOR CONSTRUCTION. CONCEPTUAL DESIGN ONLY. THIS DESIGN WILL NEED TO BE REFINED WITH UPDATED BASE PLANS INCLUDING UTILITIES AND PROPERTY DATA.



Dixie Road at Matheson Boulevard Northbound & Southbound

Existing Conditions			
Southbound Infrastructure & Amenities Deficiencies	- Outdated waste receptacle		
Southbound Traffic	Period AM PM	95th Percentile Queue (m) 133 194.5	Existing Right- Turn Storage (m) 175
Southbound	Tota Mi	al Passenger- nutes Delay	38
Transit Operations	Total MiExpress Boardings 2018		8
	Total MiExpress Alightings 2018		59
Northbound Infrastructure & Amenities Deficiencies	- Outdated waste receptacle - Stop marker		
Northbound Traffic	Period	95th Percentile Queue (m)	Existing Right- Turn Storage (m)
	AM PM	118.2 217.4	0
Northbourd	Total Passenger- Minutes Delay		31
Transit	Total MiExpress Boardings 2018		53
Operations	Total MiExpress Alightings 2018		5

Proposed Improvements		
Southbound Infrastructure & Amenities Improvements	 Waste receptacle Enhanced shelter Add concrete platform along existing boulevard Adjust existing channelized right-turn into Smart Channel Premium stop marker 	
Southbound Transit Priority Measures	- Add queue jump lane	
Northbound Infrastructure & Amenities Improvements	 Waste receptacle Enhanced shelter Adjust and widen sidewalk to 2.0m Road widened with right-turn lane Adjust existing channelized right-turns into Smart Channel 	
Northbound Transit Priority Measures	- Add queue jump lane - Relocate nearside bus stop to farside - Add farside bus bay	



NOT FOR CONSTRUCTION. CONCEPTUAL DESIGN ONLY. THIS DESIGN WILL NEED TO BE REFINED WITH UPDATED BASE PLANS INCLUDING UTILITIES AND PROPERTY DATA.





Erin Mills Parkway at Folkway Drive Northbound & Southbound

Existing Conditions			
Southbound Infrastructure & Amenities Deficiencies	- Outdated waste receptacle		
Southbound	Period	95th Percentile Queue (m)	Existing Right- Turn Storage (m)
Traffic	AM PM	52.3 40.8	110
Cauthbaund	Total Passenger- Minutes Delay		34
Transit	Total MiExpress Boardings 2018		24
Operations	Total MiExpress Alightings 2018		13
Northbound Infrastructure & Amenities Deficiencies	- Outdated waste receptacle		
	Period	95th Percentile Queue (m)	Existing Right- Turn Storage (m)
Northbound Traffic	AM	228.1	80
	PM	159.4	
Northbound Transit	Total Passenger- Minutes Delay		103
	Total MiExpress Boardings 2018		41
Operations	Total MiExpress Alightings 2018		90

Proposed I	mprovements
	- Waste receptacle
Southbound	- Enhanced shelter
Infrastructure	- Add concrete platofrm along existing
& Amenities	boulevard
Improvements	- Adjust existing channelized right-turn
	into Smart Channel
Southbound	
Transit	- Add queue jump lane
Priority	- Relocate nearside bus stop to farside
Measures	
N la utila la a cua d	- Waste receptacle
Infractructure	- Enhanced shelter
& Amonities	- Adjust and widen sidewalk to 2.0m
	- Adjust existing channelized right-turn
Improvements	into Smart Channel
Northbound	
Transit	- Add queue jump lane
Priority	- Relocate nearside bus stop to farside
Measures	



NOT FOR CONSTRUCTION. CONCEPTUAL DESIGN ONLY. THIS DESIGN WILL NEED TO BE REFINED WITH UPDATED BASE PLANS INCLUDING UTILITIES AND PROPERTY DATA.

N.T.S

Southdown Road at Truscott Drive Northbound & Southbound

Existing Conditions			
Southbound Infrastructure & Amenities Deficiencies	- Outdated waste receptacle		
Southbound	Period	95th Percentile Queue (m)	Existing Right- Turn Storage (m)
Traffic	AM PM	N/A N/A	110
Ossithly sound	Total Passenger- Minutes Delay		21
Southbound Transit Operations	Total MiExpress Boardings 2018		13
	Total MiExpress Alightings 2018		75
Northbound Infrastructure & Amenities Deficiencies	- Outdated waste receptacle		
Northbound Traffic	Period	95th Percentile Queue (m)	Existing Right- Turn Storage (m)
	AM PM	N/A N/A	0
Northbound Transit Operations	Total Passenger- Minutes Delay		13
	Total MiExpress Boardings 2018		74
	Total MiExpress Alightings 2018		12



NOT FOR CONSTRUCTION. CONCEPTUAL DESIGN ONLY. THIS DESIGN WILL NEED TO BE REFINED WITH UPDATED BASE PLANS INCLUDING UTILITIES AND PROPERTY DATA.

Proposed I	mprovements	
	- Waste receptacle	
Southbound	- Enhanced shelter	
Infrastructure	- Adjust existing channelized right-turn	
& Amenities	into Smart Channel	
Improvements	- Add concrete platform along existing	
	boulevard	
Southbound Transit Priority Measures	- Add queue jump lane - Relocate farside bus stop closer to intersection	
Northbound	- Waste receptacle	
Infrastructure	- Enhanced shelter	
& Amenities	- Add concrete platform along existing	
Improvements	boulevard	
Northbound		
Transit	Relocate nearside bus ston to farside	
Priority		
Measures		



DATE DRAWN: 2020-04-24

N.T.S

Southdown Road at Bromsgrove Road Northbound & Southbound



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SEPTEMBER 2020

Appendix N Terminal Feasibility Plans

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TAHOE

EASTBOUND

List of Drawings:

Transit Terminal	Terminal Classification
Cawthra Transitway Station Two (2) Concepts 	Through (Future Connect and Turnaround)
Central Parkway Transitway StationThree (3) Concepts	Through (Future Connect and Turnaround)
Meadowvale Town Centre Transitway TerminalFive (5) Concepts	Connect and Turnaround
Laird and Vega Three (3) Concepts 	Turnaround
Other	
Operator Washroom Layouts	



PRELIMINARY DESIGN - NOT FOR CONSTRUCTION




1,	BUS TYPES		SERVICE	LAY-BY	TOTAL	CAR PARKING SCHEDULE (APPROX.)		mi way		TRANSI
		STANDARD BUS	0	0	0	EXISTING	5			CENTRAL P
		ARTICULATED	2	1	3	REVISED	0	IBI GROUP 7th Floor - 55 St. Clair Avenue West Toronto ON M4V 2Y7 Canada		PROJECT # 117569
		TOTAL	2	1	3	NET LOSS	5		tel 416 596 1930 fax 416 596 0644 ibigroup.com	REV. 0

DRAWN CR

SCALE 1:600

DATE 2020-03-31 DWG. # CP-01

ENTRAL PARKWAY STATION - OPTION 1

TRANSIT TERMINAL CONCEPTS

NOTE: PROPOSED TERMINAL DESIGN TO BE COORDINATED WITH FUTURE PROPOSED OFF-ROAD TRAIL AND SWM CHANNEL

	OPERATOR WASHROOM
	POSSIBLE LANDSCAPING / BIO-SWALE
	PROPOSED CURB LINE
	PROPOSED SIDEWALK
	POSSIBLE RETAINING WALL FOR GRADE SEPARATION

 EXIST. SWALE
 POSSIBLE RETAINING WALL FOR GRADE SEPARATION
PROPOSED SIDEWALK WITH DROP CURB REINSTATE ACCESS TO
STORMWATER POND
EXIST. SWALE

		*
-	BRT	



	BUS TYPES	SERVICE	LAY-BY	TOTAL	CAR PARKING SCHEDULE (APPROX.)		mi way 🕅 Mississauga	TRANSIT TERMINAL CONCEPTS				
	STANDARD BUS	0	0	0	EXISTING	5			CENTRAL PARKWAY STATION - OPTION 2			
		1	0	1	REVISED	5		IBI GROUP 7th Floor - 55 St. Clair Avenue West Toronto ON M4V 2Y7 Canada	PROJECT # 117569	SCALE 1:600	DATE 2020-03-17	
	TOTAL	1	0	1	NET LOSS	0	tel 416 596 1930 fax 416 596 0644 ibigroup.com		REV. 0	DRAWN CZ	DWG. # CP-02	

	СВ
TORMWATER D ACCESS	

CB



1.	BUS TYPES	SERVICE	LAY-BY	TOTAL	CAR PARKING SCHEDULE (APPROX.)		mi way		TRANSI
	STANDARD BUS	2	1	3	EXISTING	5			CENTRAL P
	ARTICULATED	1	1	2	REVISED	0		IBI GROUP 7th Floor - 55 St. Clair Avenue West Toronto ON M4V 2Y7 Canada	PROJECT # 117569
	TOTAL	3	2	5	NET LOSS	5	tel 416 596 1930 fax 416 596 0644		REV. 0

DRAWN CR

SCALE 1:600

DATE 2020-03-31 DWG. # CP-03

ENTRAL PARKWAY STATION - OPTION 3

TRANSIT TERMINAL CONCEPTS

NOTE: PROPOSED TERMINAL DESIGN TO BE COORDINATED WITH FUTURE PROPOSED OFF-ROAD TRAIL AND SWM CHANNEL

POSSIBLE RETAINING WALL FOR GRADE SEPARATION

PROPOSED CURB LINE PROPOSED SIDEWALK

POSSIBLE LANDSCAPING / **BIO-SWALE**

EXIST. SWALE

REINSTATE ACCESS TO STORMWATER POND PROPOSED SIDEWALK WITH DROP CURB

POSSIBLE RETAINING WALL

BRT

FOR GRADE SEPARATION

EXIST SWALE













LAIRD/VEGA STATION - OPTION 1					
CT# 117569	SCALE 1:600	DATE 2020-03-17			
	DRAWN CR	DWG. # LV-01			



LAIRD/VEGA STATION - OPTION 2					
CT # 117569	SCALE 1:600	DATE 2020-03-17			
	DRAWN CR	dwg. # LV-02			







	DRAWN CR	dwg. # WR-01
CT # 117569	SCALE NTS	DATE 2020-02-25

OPERATOR WASHROOM LAYOUTS

PREFAB. UNISEX WASHROOM









SEPTEMBER 2020

Appendix O External Stakeholder Consultation





Minutes

To/Attention		Notes to File	Notes to File Date		April 21, 2020				
From		Margaret Parkhill	Project No	117569	9				
Sub	ject	MiWay Infrastructure Growth Teleconference 2019-08-12, 2:00 p.m.	MiWay Infrastructure Growth Plan - Call with TTC Teleconference 2019-08-12, 2:00 p.m.						
Pres	sent	TTC: Scott Haskill, Eric Chu, MiWay: Alice Ho, Alana Tyers IBI: Margaret Parkhill, Greg H	TTC: Scott Haskill, Eric Chu, Dominic Ho MiWay: Alice Ho, Alana Tyers IBI: Margaret Parkhill, Greg Hoy						
Dist	ribution	Alice Ho							
Item	Discussed	1			Action By				
1.	Introdu	ction							
•	Alice gave (MIGP) to of Mississ	,	Info						
2.	Stop an	d Shelter Upgrades							
•	TTC has i with large ramp dep								
•	Most stop	s being improved are not near M	lississauga		Info				
•	Within the and other locations Mississau	IIIO							
•	In genera infrastruct								

2019-08-12, 2:00 p.m. Page 2 of 3 **Item Discussed** Action By 3. Surface Treatments TTC has started using red paint for bus-only lanes and ramps. MiWay is also using this surface treatment For areas in Toronto (e.g. around Renforth Station) where MiWay would like a treatment, MiWay can reach out to TTC, who will inform the City of Toronto where paint is required A. Ho Alice and Scott to connect offline and coordinate 4. **Terminals and Stations Humber College** Will change with the development of the Finch West LRT (i.e. remove 36 Finch West, connect to two subway stations, extend 37 Islington) Expect disruption during construction, and a potentially different layout following completion MiWay to get in touch with LRT developers (Mosaic Transit) to A. Ho coordinate route changes with construction phasing. TTC can help connect MiWay to the right people and share a copy of current plans **Kipling GO** Currently under construction as part of Metrolinx Mobility Hub work Unlikely to be completed by end of 2019 - MiWay was supposed to move out of Islington by the end of the year, alternative temporary plans are being developed **Etobicoke Hospital** No major infrastructure changes expected See Humber College for LRT-related changes Info **Woodbine Centre** Changes to be determined, with development around the casino, mall, and GO line Potential new GO Station and transit hub - would be Metrolinx-led MiWay infrastructure needs changed as of July 1, since routes no longer go into mall, instead stopping on Rexdale Boulevard **Sherway Gardens** City of Toronto has a secondary plan for the mall which calls for a transit hub. In the long term, hoping for urbanization and improved multimodal access No immediate changes planned or expected, but note the potential for future growth and development in the area

2019	-08-12, 2:00 p.m.	Page 3 of 3
Item	Discussed	Action By
•	Current redevelopment had promised better transit infrastructure, but did not materialize	
Wes	twood Square	
•	No major changes expected to Route 52 service levels or TTC requirements at Westwood	Info
Lon	g Branch GO	Inio
•	Metrolinx has plans to improve connections between bus loop, streetcar loop, and GO platforms	
•	TTC noted the possibility of MiWay terminating service at Humber College instead of Long Branch, but MiWay noted that not a lot of requests for this service	
5.	On-Street Upgrades, Other Changes	
•	TTC has been adding next-bus screens, multiple route maps, and other information and services to its terminals, but it has been an ad-hoc process so far	
Rex	dale & Islington	
•	Intersection will be normalized (converted from slip ramps to T), which will impact some routes	
•	TTC to keep MiWay informed about progress and plans	A. Ho
Bur	nhamthorpe & Mill Road	
•	Potential for routing changes along this corridor, as TTC and MiWay have service overlap	
•	Discussion of using the Mill Road loop as a turnaround for MiWay, or having better service integration	
•	MiWay and TTC to discuss and plan together	A. Ho



Minutes

To/A	ttention	Notes to File	Date	April 21, 2020
Fror	n	Margaret Parkhill	Project No	117569
Sub	ject	MiWay Infrastructure Growth Teleconference 2019-08-15, 11:00 a.m.	Plan - Call with Oakvi	lle Transit
Pres	sent	Oakville Transit: Joanne Phoe MiWay: Alice Ho, Paulina Szm IBI Group: Margaret Parkhill, G	nix udrowska Greg Hoy	
Distribution		Alice Ho		
Item	Discussed			Action By
1.	Introduc	tion		
•	Alice gave (MIGP) to of Mississa	an overview of the MiWay Infras set priorities for building transit in auga	tructure Growth Plan frastructure in the City	, Info
2.	Future S	Service Changes		
•	Minimal Oa years, as t reallocatin	akville Transit service changes ex oudget is limited. Focus will be or g service as needed	xpected in the next five a finding efficiencies ar	e nd Info
•	Almost all	proposed changes will be interna	l to Oakville, no v or Mississauga	

Item	n Discussed	Action By
3.	Service Connections (On-Street)	
Bris	tol and Winston Park	
•	Oakville Transit intends to continue serving this area	
•	Sidewalk upgrades may be required in some spots to meet Mississauga's bus infrastructure standards	
•	Number or frequency of MiWay-Oakville transfers in this area is unknown	
Lair	d and Ridgeway	Info
•	Oakville Transit intends to continue serving this area, especially with increased demand from Sheridan College (shuttle service has been cancelled, so riders will take alternate routes)	
•	Some consideration given to pulling Oakville out of South Common and focusing on Laird and Ridgeway, but no plans so far	
•	Oakville may increase frequencies of buses, but no plans to add service	
•	Would be included in Dundas BRT	
4.	Terminals and Stations	
Sou	th Common	
•	Oakville Transit is looking for a place to lay over in Mississauga as of September, based on more demand coming from Sheridan College	
•	South Common cannot accommodate any more buses, and construction in the area (South Millway) will worsen situation over the coming months	
•	No space for another Oakville bus in the long term due to physical constraints, so an alternate location would be needed. However, a lot of Oakville transfers happen at South Common	Info
Clar	kson GO	
•	Peel Region is going through MTSA project at Clarkson	
•	MiWay will help Oakville Transit stay in the loop, since both providers use this facility	
•	Oakville notes delays getting into or out of Clarkson are significant	
5.	Other Infrastructure Upgrades	
Bus	Infrastructure Upgrade Program	
•	Oakville has an annual program for retrofitting bus stops that are missing concrete landing pads, walkways, bus pads, sidewalk connections, etc.	Info

MiWay Infrastructure Growth Plan - Call with Oakville Transit Teleconference 2019-08-15, 11:00 a.m.

2019-0	08-15, 11:00 a.m.	Page 3 of 3
ltem	Item Discussed	
•	Program is financially constrained, so areas shared with MiWay (e.g. Plymouth, Winston Park) have been considered but deferred	
•	Bigger challenges exist where there are no municipal sidewalk connections to the bus stop	
Stop	Design Standards	
•	Oakville would like to see MiWay's new stop design standards (as designed by IBI) when complete	A. Ho
•	Oakville has included some outdoor seating and additional benches at stops where needed (i.e. seniors' centre). MiWay notes this may be done as part of downtown streetscaping program, but that is separate from transit	
TSP		
•	Oakville could benefit from TSP in a number of locations within Mississauga (e.g. on approach to Clarkson, South Common)	
•	Schedule-based solutions have not worked so far, so infrastructure solutions are required	



Minutes

To/Attention	Notes to File	Date	April 21, 2020	
From	Margaret Parkhill	Project No	117569	
Subject	MiWay Infrastructure Growth Planning Teleconference 2019-08-16, 10:00 a.m.	Plan - Call with GO Tr	ansit Service	
Present	GO Transit: Andrew Goddard, MiWay: Alice Ho, Alana Tyers IBI Group: Margaret Parkhill, G	Matt Lee, Randy Bui Greg Hoy		
Distribution	Alice Ho			
Item Discussed			Action B	у

1. Introduction Alice gave an overview of the MiWay Infrastructure Growth Plan • Info (MIGP) to set priorities for building transit infrastructure in the City of Mississauga 2. **Future GO Bus Service Changes** Developing a 10-year bus strategy to configure more regional • express bus services and door-to-door services. This would require more expressway (401, 403, 407) stops Envision bus services primarily on 400-series highways, . Info investigating what options exist that would provide on- or nearhighway stops (similar to OC Transpo in Ottawa) Working on corridor analysis to identify infrastructure requirements, and trying to identify how best to re-orient the bus network to align with major highway interchanges

<u></u>		
lten	n Discussed	Action By
3.	Service Connections (On-Street)	
•	Meadowvale Business Park is an opportunity area – connections to Highways 401 and 407 and Mississauga Road. Brampton Transit also considering connections here	Info
•	Issue is that land uses are dispersed, so no single location exists for a transfer point. Would not be a terminal or hub, but more likely an on-street 'super stop'	
4.	Terminals and Stations	
Lon	g Branch GO	
•	No GO Bus service, no plans to introduce service	
Por	t Credit GO	
•	Limited GO Bus service (early morning, late night only)	
•	No planned changes beyond integration of Hurontario LRT	
Cla	rkson GO	
•	Limited GO Bus service (early morning, late night only)	
•	In short term, some plans for ramp improvement from Southdown Road to the bus loop. Station Planning team is in charge of these changes	
•	Recently, some discussion of Transit-Oriented Development around Clarkson led to changes in platform configuration, but no future changes planned	
Milt Lisç	on Line (Dixie, Cooksville, Erindale, Streetsville, Meadowvale, gar)	Info
•	No planned service changes	
•	Not RER corridor, so no expected reductions in GO Bus service in the near term. Potentially ongoing increases in service because of growing ridership, but would be incremental over time	
•	Cooksville is currently under construction – MiWay has copy of the completed design	
•	Meadowvale was considered for changes, but status is not certain	
Mal	ton GO	
•	This station will have RER service, but other GO Bus services (e.g. Bolton) still feed in	
•	Malton bus loop is under construction, plans are in place. No additional changes are expected	
Hur	ontario & 407 Park & Ride	
•	Ideally, would have an expressway stop (on side of 407) to get customers on and off more guickly and reduce diversions	

MiWay Infrastructure Growth Plan - Call with GO Transit Service Planning Teleconference 2019-08-16, 10:00 a.m.

2019-	08-16, 10:00 a.m.	Page 3 of 3
ltem	Discussed	Action By
•	Challenge is that no Hurontario LRT or other stops are expected to be closer to the 407 than the Park & Ride	
Miss Chui	issauga Transitway Stations (Renforth, Erin Mills, Winston rchill)	
•	GO Bus service will continue along the Transitway, 10-year bus strategy will increase regional bus service. High-frequency highway service combined with door-to-door connections, e.g. McMaster to Square One	Info
•	Buses from Highway 407 cannot use Winston Churchill Station, but there is no business case for addressing this issue. Would be very expensive to add ramps and provide a connection	
5.	Other Infrastructure	
•	Changes to traffic lights at Dixie Transitway have impacted some bus movements, but no major change	Info
•	Square One/City Centre has a lot of delay. Discussions are ongoing about property developments that are taking out bus bays on Station Gate	
6.	Next Steps	
•	GO Transit to provide MiWay and IBI with contact in Station Planning team	GO Transit; IBI
•	IBI to set up a conference call with Metrolinx/GO Station Planning team	



Minutes

To/Attention		Notes to File	es to File Date April 2		21, 2020	
Fron	n	Margaret Parkhill	Project No	117569)	
Subj	ect	MiWay Infrastructure Growth Teleconference 2019-08-22, 9:00 a.m.	n Plan - Call with Bramp	oton Trar	nsit	
Pres	ent	Brampton Transit: David Stow MiWay: Alice Ho, Alana Tyers IBI Group: Margaret Parkhill, (ve, Hank Wang s Greg Hoy			
Dist	ribution	Alice Ho				
ltem	Discussed				Action By	
1.	Introduc	tion				
•	Alice gave (MIGP) to of Mississa	an overview of the MiWay Infras set priorities for building transit in auga	structure Growth Plan nfrastructure in the City		Info	
2.	Future S	Service Changes				
•	Not a lot o realignmer	f planned changes to conventior nt of routes in industrial areas	nal transit, some			
•	Future Zur and the air	n corridor identified to connect b port	etween Bramalea GO			
•	Metrolinx F Derry/Stee	RTP identifies Bramalea/Dixie (i. eles – Dixie) as a priority bus cor	e. Bramalea – ridor			
•	Kennedy F connect to	Road Zum corridor is in future pla Hurontario LRT and would need	ans, would like to d a turnaround point		Info	
•	McLaughli BRT as Co Main Stree alignment. will be revi	n Road corridor is on the radar a buncil has confirmed that the Hu et and not the original proposed I Not sure if it would cross in to M ewed as part of next TMP updat	as priority bus, Zum, or LRT alignment will be o Kennedy/McLaughlin ⁄lississauga or not, but te	'n		
•	Next poter Meadowva GO would	ntial Zum corridor is Chinguacous ale GO or Hurontario & 407 Park be preferred from a regional cor	sy/Mavis, terminating a & Ride. Meadowvale nnectivity standpoint	t		

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	Action By
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MiWay –	A. Ho
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MiWay Infrastructure Growth Plan - Call with Br	ampton Transit
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Item	Discussed	Action By	
Woo	odbine Development		
•	Brampton would be interested in a transit facility around Woodbine, will reach out to be part of the study	H. Wang / D. Stowe	
5.	Other Infrastructure		
•	Brampton does not provide shelters, ZUM stops, or other infrastructure outside their city limits		
•	If a ZUM route were to stop in Mississauga, it would use whatever infrastructure is provided there, and Brampton would coordinate installation of a stop marker	Info	
•	Brampton is refreshing bus stop guidelines and policies, and would be interested in seeing MiWay's revised standards when complete	A. Ho	



Minutes

To/Attention	Notes to File	Date	April 21, 2020
From	Margaret Parkhill	Project No	117569
Subject	MiWay Infrastructure Growth Plan - C Planning Teleconference 2019-09-06, 1:00 p.m.	all with GO Tra	ansit Station
Present	GO Transit: Joseph Milos, Andrew Goo MiWay: Alice Ho, Alana Tyers IBI Group: Margaret Parkhill, Greg Hoy	ldard , Josephine Ma	acharia
Distribution	Alice Ho		

Item Discussed

Action By

1.	Introduction	
•	Alice gave an overview of the MiWay Infrastructure Growth Plan (MIGP) to set priorities for building transit infrastructure in the City of Mississauga	Info
2.	Infrastructure Planning Overview	
•	Joseph notes that infrastructure planning work is happening in two 'buckets'; One for early work, preparing for electrification on- corridor, and one for off-corridor supporting work	
•	GO Station Access Plan document is the main reference and target for design changes. Gaps from Station Access Plan targets (after work is completed) will be made up in other ways	Info
•	Off-corridor program (e.g. station proofing and state of good repair) started in 2016 and received MiWay, Oakville, and other municipal requirements around that time. Update may be needed, since requirements may have changed	
3.	Terminals and Stations	
•	15-minute service on the Lakeshore West corridor is a good test case showing how RER will operate elsewhere	Info

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Iten	n Discussed	Action By	
•	Milton GO track is entirely owned by CP Rail, therefore no expansion or RER opportunities can be considered and only peak direction service can be provided		
Lor	ng Branch GO		
•	Substantial amount of work planned for on-corridor preparation		
•	Parking reduction forecasted for short term, and looking for ways to increase bus access during this time		
•	No major station or bus loop changes are proposed. Main changes will be bringing platforms up to AODA compliance and improving secondary station access via Exmoor Drive		
•	No changes expected to station footprint in 5-10 year window. Legion is only potential property to acquire, and they are not interested in selling		
Por	rt Credit GO		
•	On-corridor electrification work and underground work for Hurontario LRT are coming soon, plus ongoing negotiation with City of Mississauga about parking rates		
•	Expect 2-5 years of impact from Hurontario LRT work on the south parking lot	Info	
•	Long term plans to expand bus loop and grow PPUDO (provide on both sides of the corridor), but no parking expansion		
Cla	rkson GO		
•	Significant off-corridor work planned, including expansion of bus loop from 9 to 11 bays while retaining current configuration, plans to expand PPUDO on both sides of rail corridor, new station to the south – not yet approved or funded		
•	Allocation of new bus bays has not been determined yet		
•	MiWay requirements at Clarkson were provided to Metrolinx last year		
•	Ongoing work between MiWay and Metrolinx on MTSA plan, potential for future Transit-Oriented Development on site		
Dix	ie GO		
•	Metrolinx owns roadway connecting Dixie to the GO Station, and the City has an easement		
•	Not a lot of station infrastructure changes planned, primarily station building rehab, secure bike parking, curbing and improved sidewalk connections		
•	No plans for MiWay to come in to bus loop, but would like to improve Dixie Road connection to station for passenger transfer, however grade separation is a challenge		

MiWay Infrastructure Growth Plan - Call with GO Transit Station Planning Teleconference

2019-09-06, 1:00 p.m.		Page 3 of 4			
Iten	n Discussed	Action By			
Coc	Cooksville GO				
•	Currently under construction, nearing full completion of early works program including preparation for Hurontario LRT				
•	Bridge across Hurontario to be scoped through TOD – no longer included in station or LRT plans				
•	Future bus loop to include 10 bays, adjacent to parking structure. Will have priority egress onto Hillcrest				
•	Joseph to check on what washroom facilities (for operators) are in the building scope	J. Milos			
Erir	ndale GO				
•	Was renovated in 2009/2010, no major plans for any more changes other than the addition of bike parking				
•	6-bay bus loop has priority access and egress				
•	Revisiting road pattern and alignment to Rathburn. Metrolinx would like to improve bus exit, improve safety, may be accomplished by converting existing intersection into a traffic circle/roundabout				
•	Road changes would also be made with the goal of improving pedestrian safety and reducing conflicts				
Stre	eetsville GO				
•	Bus loop will be modified to add 2 more bus bays, but not sure which provider these would serve, more likely MiWay than GO				
•	Hoping to begin delivering the off-corridor program (of which this would be a part) this fall, for completion around 2021				
•	Plans to implement secured bike parking	Info			
Меа	adowvale GO				
•	No additional infrastructure changes currently planned				
•	Alana asked about plans for bus loop redevelopment – Joseph noted these funds have been reallocated, so any plans are on hold				
•	Plan may proceed as standalone AFP, but no funding at this time				
Lis	gar GO				
•	No additional infrastructure changes currently planned				
•	407 Transitway IBC – to connect, may pull in, but no expansion of the facility if this were to happen				
Mal	ton GO				
•	Significant amount of rehabilitation work planned				
•	Expansion of bus loop to 6 bays (from 4 bays) with reconfiguration of PPUDO and parking, expansion of station building included within off-corridor program, targeting completion by 2021				
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MiWay Infrastructure Growth Plan - Call with GO Transit Station Planning	
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ltem	Action By	
•	Potential for expanding parking at International Centre (i.e., south of corridor)	
•	Considering providing an employee shuttle service between Malton GO and Pearson Airport	
Erin	Mills Transitway	
•	Joseph will ask Rapid Transit team for input on this station	J. Milos
Hurontario & 407 Park & Ride		
•	Planning work for 407 Transitway and Hurontario LRT is ongoing, would impact this location. Still early and nothing confirmed yet	