City of Yorkton
Transportation Master Plan Update

Final Report

Prepared for:

City of Yorkton
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1.0 Introduction

1.1 BACKGROUND

The City of Yorkton has commissioned Stantec Consulting Ltd. (Stantec) to prepare a Transportation Master Plan Update establishing a framework for current and future mobility needs. This study, which will provide an update to the Transportation Master Plan completed in 2003, encompasses roadways, pedestrian and cyclist facilities, and traffic operations within the City. An overall plan of the City is shown in Figure 1.1.

1.2 PROJECT PURPOSE

The purpose of the study is to:

- Update the previous Transportation Master Plan;
- Examine emerging traffic issues, recommend changes to the City's existing street network, and identify future improvements areas;
- Evaluate developments both within and outside of the City and how they will affect traffic patterns within the City;
- Evaluate the effects of annexation applications and potential new roadways to service those areas; and
- Evaluate and refine the alignment of the West Truck Bypass Route.

Going further, the overall purpose of the Transportation Master Plan is to provide a document that will aid the City in the development of policies and strategies for a multi-modal transportation network that complements a sustainable future and establishes a framework for growth to the 35,000 population planning horizon. This network includes roads, transit, pedestrian and cyclist facilities, and the City's connection to the provincial Highway system through the Urban Connector routes. Results of the Transportation Master Plan will help to further develop new transportation policies in conjunction with the Community Development Plan, Land Use Policies, and Zoning By-laws. The Transportation Plan will serve as a supporting document for the City's capital budgeting process and identify needed improvements sufficiently and in advance to allow for planned investments.

1.3 EXECUTIVE SUMMARY

The City of Yorkton and surrounding area has experienced economic and population growth in recent years which has increased traffic on City streets as well as the four major Provincial Highways which service it; Highway 9, Highway 10, Highway 16, and Highway 52. Highway 16, which also forms of portion of the TransCanada Highway System, has also experienced increased freight traffic which has had a direct impact on the City. The primary objective of this study is to update the previous Transportation Master Plan, which was completed in 2003,

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Figure No.
1.1

Title
OVERALL PLAN

which itself was an update to a previous study completed in 1987. The secondary objectives of this study are to examine emerging traffic issues, recommended changes to the existing road network, identify future improvement requirements, evaluate developments in and around the City, look at the effects of annexation applications, and potential roadways required to service these areas and to refine the alignment of the West Truck Bypass Route.

This report includes an evaluation of the existing transportation network including reviews of existing intersections and corridors, dangerous goods routes, downtown parking, truck bypass routes, the City transit system, pedestrian and cyclist facilities, railways, and collision analysis. Land use and population projections have been produced based on previous reports completed and information provided by the City of Yorkton. Projected traffic volumes have been produced based on a three-staged approach consistent with that provided in the *City of Yorkton Future Growth Needs Analysis* report completed in 2009 by Crosby, Hanna, and Associates. Traffic analysis has been conducted in each of the following three stages: Stage 1 (2011-2020), Stage 2 (2021-2030), and Stage 3 (2031-2040).

This report also includes a proposed Traffic Noise Attenuation Strategy to help the City deal with rising concerns over traffic noise created by increased traffic on City roadways. Based upon the future development areas and the projected traffic volumes at each respective stage of development, a proposed future roadway network is also provided. Finally, a transportation improvement plan is proposed to provide alternatives and recommendations for improvements to the existing road network as the City continues to develop through Stages 1, 2, and 3. These are referred to as immediate, intermediate, and long term improvements for each of the respective stages.

Recommendations for immediate improvements include:

- Signalization of the intersections of Broadway Street & Seventh Avenue, Queen Street & Highway 9, York Road & Gladstone Avenue, Darlington Street & Mayhew Avenue and Darlington Street & Dracup Avenue;
- Optimization of the existing traffic signals at Broadway Street & Dalebrooke Drive, Broadway Street & Gladstone Avenue and Broadway Street & Highway 9;
- Construction of a raised center median on York Road with the addition of protected left turning bays at various locations;
- Replacing the four way stops on King Street with modern roundabouts;
- Traffic calming measures on King Street; and
- Improvements to the Broadway Street corridor.

Recommendations for intermediate improvements include:

- Signalization of the intersections of York Road & Sully Avenue and Queen Street & Allanbrooke Drive;

- Optimization of the existing traffic signals at York Road & Highway 9;
- Closing Melville Avenue from Park Street to Borden Street;
- Re-alignment of the intersection of Laurier Avenue & Independent Street/Park Street;
- Upgrading Melville Avenue from King Street to Peaker Avenue to form a direct route with Haultain Avenue;
- Improving the Grain Millers Drive corridor and upgrading it to a truck route; and
- Widening Highway 9 from York Road to Smith Street and from Hamilton Road to Queen Street.

Recommendations for long-term improvements include:

- Signalization of the intersections of King Street & Highway 9, Queen Street and Gladstone Avenue, and Smith Street & Myrtle Avenue;
- Twinning the Queen Street corridor from Highway 10 to Highway 9;
- Construction of the West Truck By-Pass Route; and
- Construction of the Fourth Avenue Underpass and the Park Street extension.

2.0 Existing Conditions

2.1 PROJECT STUDY AREA

The study area includes existing and proposed roadways and intersections within the limits of the City of Yorkton. The analysis of current conditions concentrates on operational and safety problems on roadways within the City under current peak hour operating conditions. The analysis of future conditions, discussed in Section 6 of this report, will examine projected traffic demands required to serve a population of 35,000.

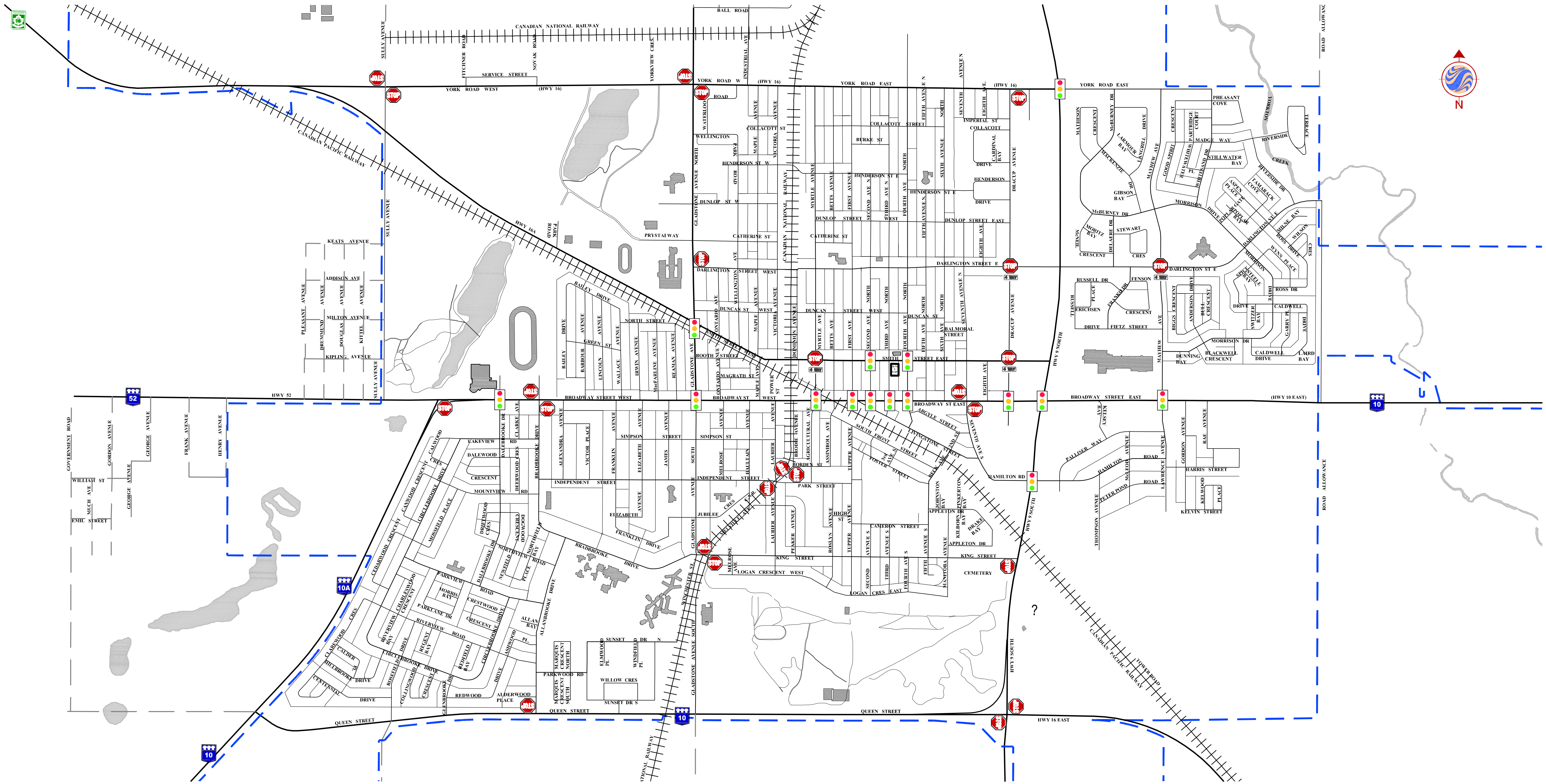
For practical purposes, analyses conducted for current conditions were limited to existing major routes within the city, existing signalized intersections, intersections identified by the City as potential areas of concern, intersections studied in the previous Transportation Study, and other locations within the city as identified by the project team. Each intersection and roadway included in the existing operational analyses is described in Section 2.2.

2.2 STUDY AREA INTERSECTIONS

Study area intersections are described in detail in this section. The locations of the study area intersections and their respective traffic control devices are provided in Figure 2.1. Unless otherwise noted, all approach roadways are undivided and consist of a single lane in each direction.

2.2.1 Signalized Intersections

- **York Road (Highway 16) & Highway 9 –** This intersection is currently signalized with a pre-timed, 75 second cycle length. York Road eastbound (EB) consists of two approach lanes, a thru lane and a forced, channelized, right turning lane. A separate left turn bay is provided for left-turning traffic. York Road westbound (WB) and Highway 9 northbound (NB) each consist of two approach lanes, a shared thru/left lane and a shared thru/right lane. Highway 9 southbound (SB) consists of one thru lane and one shared thru/left with a large channelized right turning lane. The intersection has a rural cross section with no available parking or sidewalks.
- **Smith Street & Gladstone Avenue –** This intersection is currently signalized with a pre-timed 70-second cycle length. Smith Street EB consists of two approach lanes, one thru lane and one shared thru/right lane, with a separate left turn bay. Smith Street WB consists of two approach lanes, one thru lane and one forced right lane, with a separate left turn bay. Gladstone Avenue NB consists of two approach lanes, a shared thru/left lane and a shared thru/right lane. Gladstone Avenue SB consists of two thru lanes, a channelized right turn, and a separate left turn bay. The intersection has an urban cross section with no available parking. Sidewalks are provided on both sides of the north and south legs of the intersection as well as the north side of the east leg of the intersection.



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Legend

STOP SIGN

4 WAY STOP

TRAFFIC SIGNAL

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STUDY AREA INTERSECTIONS / EXISTING TRAFFIC CONTROL

Crosswalks are located on all four legs of the intersection. Smith Street and Gladstone Avenue are both divided roadways with raised center medians.

- **Smith Street & Second Avenue –** This intersection is currently signalized with a pre-timed, 40-second cycle length. Smith Street EB consists of two approach lanes, a shared thru/left lane and a shared thru/right lane. Smith Street WB consists of two approach lanes, a thru lane and a shared thru/right lane, with a separate left turn bay. Second Avenue NB and SB each consist of a single shared left/thru/right lane. The intersection has an urban cross section with parking available on all approaches to the intersection. Sidewalks are provided on all legs of the intersection. Crosswalks are located on all four legs of the intersection. Smith Street is a divided roadway with a raised center median.
- **Smith Street & Fourth Avenue –** This intersection is currently signalized with a pre-timed, 40-second cycle length. Smith Street EB and WB each consist of two approach lanes, a thru lane and a shared thru/right lane, with separate left turn bays. Fourth Avenue NB consists of a single lane shared left/thru/right lane. Fourth Avenue SB consists of two approach lanes, a shared thru/left lane and a forced right lane. The intersection has an urban cross section with parking available on the EB, WB and NB approaches to the intersection. Sidewalks are provided on all legs of the intersection. Crosswalks are located on all four legs of the intersection. Smith Street is a divided roadway with a raised center median.
- **Broadway Street & Dalebrooke Drive –** This intersection is currently signalized with a pre-timed, 120-second cycle length. Broadway Street EB and WB each consist of two approach lanes, a thru lane and a shared thru/right lane, with separate left turn bays. Dalebrooke Drive NB consists of a single shared left/thru/right lane. Dalebrooke Drive SB consists of two approach lanes, a shared thru/left lane and a shared thru/right lane. The intersection has an urban cross section with parking available on the NB approach to the intersection only. Sidewalks are provided on either side of the south and east legs of the intersection, the west side of the north leg of the intersection, and the south side of the west leg of the intersection. Crosswalks are located on all four legs of the intersection. Broadway Street is a divided roadway with a raised center median.
- **Broadway Street & Gladstone Avenue –** This intersection is currently signalized with a pre-timed, 70-second cycle length. Broadway Street EB and WB each consist of two approach lanes, a thru lane and a shared thru/right lane, with separate left turn bays. Gladstone Avenue NB consists of two approach lanes, a shared thru/left lane and a shared thru/right lane. Gladstone Avenue SB consists of three approach lanes, a shared thru/left lane, a thru lane, and a forced right turning lane. The intersection has an urban cross section with parking available on the NB approach to the intersection only. Sidewalks are provided on both sides of all legs of the intersection. Crosswalks are located on all four legs of the intersection. Both Broadway Street and Gladstone Avenue are divided roadways with raised center medians.
- **Broadway Street & Agricultural Avenue / Myrtle Avenue –** This intersection is currently signalized with a pre-timed, 65 second cycle length. Broadway Street EB and WB each consist of two approach lanes, a thru lane and a shared thru/right lane, with

separate left turn bays. Both Agricultural Avenue NB and Myrtle Avenue SB consist of single shared left/thru/right lanes. The intersection has an urban cross section with parking available on the EB and WB approaches to the intersection. Sidewalks are provided on both sides of the north, east, and west legs of the intersection as well as the east side of the south leg of the intersection. Crosswalks are located on all four legs of the intersection. Broadway Street is a divided roadway with a raised center median.

- **Broadway Street & First Avenue –** This three-legged intersection is currently signalized with a pre-timed, 60-second cycle length. Broadway Street EB and WB each consist of two approach lanes, a thru lane and a shared thru/right lane, with separate left turn bays. First Avenue SB consists of a single shared left/thru/right lane. The intersection has an urban cross section with parking available on all approaches to the intersection. Sidewalks are provided on both sides of all legs of the intersection. Crosswalks are located on all three legs of the intersection. Broadway Street is a divided roadway with a raised center median.
- **Broadway Street & Second Avenue –** This three-legged intersection is currently signalized with a pre-timed, 60-second cycle length. Broadway Street EB consists of two approach lanes, a thru lane and a shared thru/right lane, with a separate left turn bay. Broadway Street WB consists of two approach lanes, a shared thru/left lane and a shared thru/right lane. Second Avenue SB consists of a single shared left/thru/right lane. The intersection has an urban cross section with parking available on the WB and SB approaches to the intersection. Sidewalks are provided on both sides of all legs of the intersection. Crosswalks are located on all three legs of the intersection. Broadway Street is a divided roadway with a raised center median.
- **Broadway Street & Third Avenue –** This intersection is currently signalized with a pre-timed, 60-second cycle length. Broadway Street EB and WB each consist of two approach lanes, a thru lane and a shared thru/right lane, with separate left turn bays. Third Avenue SB consists of a single shared left/thru/right lane. Third Avenue south of the intersection is a one-way street with SB traffic only. There is no NB approach to this intersection. The intersection has an urban cross section with parking available on all approaches to the intersection. Sidewalks are provided on both sides of all legs of the intersection. Crosswalks are located on all four legs of the intersection. Broadway Street is a divided roadway with a raised center median.
- **Broadway Street & Fourth Avenue –** This intersection is currently signalized with a pre-timed, 75-second cycle length. Broadway Street EB and WB each consist of two approach lanes, a thru lane and a shared thru/right lane, with separate left turn bays. Fourth Avenue NB consists of two approach lanes, a shared thru/left lane and a shared thru/right lane. Fourth Avenue SB consists of a single shared left/thru/right lane. The intersection has an urban cross section with parking available on the EB, WB and SB approaches to the intersection. Sidewalks are provided on both sides of all legs of the intersection. Crosswalks are located on all four legs of the intersection. Broadway Street is a divided roadway with a raised center median.
- **Broadway Street & Dracup Avenue –** This intersection is currently signalized with a pre-timed, 65-second cycle length. Broadway Street EB consists of three approach

lanes, two thru lanes and one shared thru/right lane, with a separate left turn bay. Broadway Street WB consists of two approach lanes, a thru lane and a shared thru/right lane, with a separate left turn bay. Dracup Avenue NB and SB each consist of two approach lanes, a shared thru/left lane and a shared thru/right lane. The intersection has an urban cross section with no available parking. Sidewalks are provided on both sides of the west leg of the intersection, the west side of the north and south legs of the intersection. Crosswalks are located on all four legs of the intersection. Broadway Street is a divided roadway with a raised center median.

- **Broadway Street & Highway 9 –** This intersection is currently signalized with a pre-timed, 90-second cycle length. Broadway Street EB and WB each consist of two thru lanes with separate left turn bays and channelized right turning lanes. Highway 9 NB and SB each consist of two thru lanes with separate left and channelized right turning bays. The intersection has a rural cross section with no available parking or sidewalks. Broadway Street and Highway 9 are both divided roadways with raised center medians.
- **Broadway Street & Lawrence Avenue / Mayhew Avenue –** This intersection is currently signalized with a pre-timed, 80 second cycle length. Broadway Street EB consists of two approach lanes, a thru lane and a shared thru/right lane, with a separate left turn bay. Broadway Street WB consists of a single thru lane with separate left and right turn bays. Highway 9 NB and SB each consist of two thru lanes with separate left and channelized right turning bays. Lawrence Avenue NB consists of two approach lanes, a shared thru/left lane and a shared thru/right lane. Mayhew Avenue SB consists of two lanes, a shared thru/left lane and a forced, channelized right turning lane. The intersection has a rural cross section with no available parking or sidewalks; however, there is one crosswalk on the east leg of the intersection. Both Broadway Street west of the intersection and Mayhew Avenue north of the intersection are divided roadways with raised center medians.
- **Hamilton Road & Highway 9 –** This intersection is currently signalized with a pre-timed, 65-second cycle length. Hamilton Road EB and WB each consist of a single shared thru/left lane and separate, channelized right turning lanes. Highway 9 NB and SB each consist of two thru lanes with separate left and channelized right turn bays. The intersection has a rural cross section with no available parking or sidewalks. Crosswalks are provided on both the north and south legs of the intersection. Highway 9 is a divided roadway north of the intersection only.

2.2.2 Stop Controlled Intersections

- **York Road (Highway 16) & Sully Avenue / Range Road 43 –** This intersection is stop controlled in the NB and SB directions. York Road EB consists of a single shared left/thru/right lane. York Road WB consists of two approach lanes, a shared thru/left lane and a shared thru/right lane. Sully Avenue NB consists of two approach lanes, a shared thru left lane and a forced right lane. Range Road 43 is a rural gravelled roadway with a single shared left/thru/right lane. The intersection has a rural cross section with no available parking, sidewalks, or crosswalks.

- **York Road (Highway 16) & Gladstone Avenue –** This intersection is stop controlled in the NB and SB directions. York Road EB consists of two approach lanes, a shared thru/left lane and a shared thru/right lane. York Road WB consists of two approach lanes, a thru lane and a shared thru/right lane, with a separate left turn bay. Gladstone Avenue NB consists of two lanes, a shared thru/left lane and a forced right turning lane. Gladstone Avenue SB consists of a single shared left/thru/right lane. The intersection has an urban cross section with no available parking, sidewalks, or crosswalks.
- **York Road (Highway 16) & Dracup Avenue –** This three legged intersection is stop controlled in the NB direction only. York Road EB consists of two approach lanes, a shared thru/left lane and a shared thru/right lane. York Road WB consists of two approach lanes, a thru lane and a shared thru/right lane, with a separate left turn bay. Dracup Avenue NB consists of a single shared left/thru/right lane. The intersection has an urban cross section with no available parking, sidewalks, or crosswalks.
- **Darlington Street & Gladstone Avenue –** This three legged intersection is stop controlled in the WB direction only. Darlington Street WB consists of a single shared left/thru/right lane. Gladstone Avenue NB and SB each consist of two approach lanes, a thru lane and a shared thru/right lane, with separate left turn bays and on-street bike paths. The intersection has an urban cross section with no available parking. Sidewalks are provided on both sides of the north and south legs of the intersection and on the north side of the east leg of the intersection. Crosswalks are located on the north and east legs of the intersection. The crossing on the north leg of the intersection is pedestrian actuated.
- **Darlington Street & Dracup Avenue –** This intersection is stop controlled in all four directions. Darlington Street EB and WB each consist of two approach lanes, a shared thru/left lane and a shared thru/right lane with on street bike paths provided. Dracup Avenue NB consists of two approach lanes, a shared thru/left lane and a forced right turning lane. Dracup Avenue SB consists of a single shared left/thru/right lane. The intersection has an urban cross section with parking available on the SB approach to the intersection only. Sidewalks are provided on both sides of the west leg of the intersection, the west side of the north leg of the intersection, and the north side of the east leg of the intersection. There are no sidewalks on the south leg of the intersection. Crosswalks are located on the north and west legs of the intersection only.
- **Darlington Street & Mayhew Avenue –** This intersection is stop controlled in all four directions. Darlington Street EB consists of two approach lanes, a shared thru/left lane and a shared thru/right lane with an on street bike path provided. Darlington Street WB and Mayhew Avenue NB and SB each consist of a single shared left/thru/right lane. The intersection has a rural cross section with no available parking. Sidewalks are provided on both sides of the east leg of the intersection, the north side of the west leg of the intersection, and the west side of the north and south legs of the intersection. Crosswalks are located on the north and south legs of the intersection only.
- **Smith Street & Myrtle Avenue –** This intersection is stop controlled in all four directions. Smith Street EB and WB each consist of two approach lanes, a thru lane and a shared thru/right lane, with separate left turn bays. Myrtle Avenue NB and SB each

consist of a single shared left/thru/right lane. The intersection has an urban cross section with parking available on the NB and SB approaches to the intersection only. Sidewalks are provided on both sides of all legs of the intersection. Crosswalks are located on all four legs of the intersection. Smith Street is a divided roadway with a raised center median.

- **Smith Street & Dracup Avenue –** This intersection is stop controlled in all four directions. Smith Street EB and WB each consist of two approach lanes, a thru lane and a shared thru/right lane, with separate left turn bays. Dracup Avenue NB consists of two approach lanes, a shared thru/left lane and a shared thru/right lane. Dracup Avenue SB consists of a single shared left/thru/right lane. The intersection has an urban cross section with no available parking, sidewalks, or crosswalks. Smith Street is a divided roadway with a raised center median.
- **Broadway Street & Highway 10A** – This three-legged intersection is stop controlled in the NB direction. Broadway Street EB consists of two thru lanes and a separate right turn lane. Broadway Street WB consists of two thru lanes and a separate left turn bay. Highway 10A NB consists of two approach lanes, a left turn lane and a forced, channelized right turn lane. The intersection has a rural cross section with no available parking, sidewalks, or crosswalks. Broadway Street is a divided roadway with a raised center median.
- **Broadway Street & Bradbrooke Drive –** This intersection is stop controlled in the NB and SB directions. Broadway Street EB and WB each consist of two approach lanes, a thru lane and a shared thru/right lane, with separate left turn bays. Bradbrooke Drive NB consists of two approach lanes, a shared thru/left lane and a forced right lane. Bradbrooke Drive SB consists of a single shared left/thru/right lane. The intersection has an urban cross section with no available parking. Sidewalks are located on both sides of the south, east, and west legs of the intersection. Crosswalks are located on the north, south, and east legs of the intersection. Bradbrooke Drive south of the intersection is a divided roadway with a raised center median.
- **Broadway Street & Seventh Avenue –** This intersection is stop controlled in the NB and SB directions. Broadway Street EB and WB each consist of two approach lanes, a thru lane and a shared thru/right lane, with separate left turn bays. Seventh Avenue NB and SB each consist of a single shared left/thru/right lane. The intersection has an urban cross section with parking available on the NB and SB approaches to the intersection. Sidewalks are located on both sides of the east and west legs of the intersection and on the east side of the south leg of the intersection. Crosswalks are located on both the north and south legs of the intersection. Broadway Street is a divided roadway with a raised center median.
- **Independent Street, Laurier Avenue & Melville Avenue –** This five-legged intersection is stop controlled in the EB, WB and SWB directions. The Canadian National Railway crosses the east leg of Independent Street and the south leg of Laurier Avenue. All five legs of the intersection consist of single shared left/thru/right lanes. The intersection has an urban cross section with parking available on all approaches to the intersection. Sidewalks are located on both sides of the north and south legs of the intersection, the

north side of the west leg of the intersection, and the east side of the NE leg of the intersection. Crosswalks are located on the north and west legs of the intersection.

- **King Street & Melville Avenue / Gladstone Avenue –** This misaligned intersection is stop controlled in the NB and SB directions. King Street is continuous while Melville Avenue to the north and Gladstone Avenue to the south are slightly offset. The Canadian National Railway crosses King Street just west of the intersection. All four legs of the intersection consist of single shared left/thru/right lanes with the north leg consisting of a gravelled surface. The intersection has an urban cross section with no available parking. Sidewalks are located on the east side of the south leg of the intersection and the south side of the east leg of the intersection. Crosswalks are located on the north leg of the intersection as well as crossing King Street between the offset roadways.
- **King Street & Highway 9** – This three-legged intersection is stop controlled in the EB direction. Highway 9 NB consists of two approach lanes, a shared thru/left lane and a thru lane. Highway 9 SB consists of two thru lanes with a separate right turn lane. King Street consists of two approach lanes, a left turning lane and a right turning lane. The intersection has a rural cross section with no available parking, sidewalks, or crosswalks.
- **Queen Street (Highway 10) & Allanbrooke Drive –** This three legged intersection is stop controlled in the SB direction. Queen Street EB consists of two approach lanes, a shared thru/left lane and a thru lane. Queen Street WB consists of two approach lanes, a thru lane and a shared thru/right lane. Allanbrooke Drive SB consists of a single shared left/thru/right lane. The intersection has a rural cross section with no available parking, sidewalks, or crosswalks.
- **Queen Street (Highway 10) / Highway 16 & Highway 9 –** This intersection is stop controlled in the EB and WB directions. Queen Street EB consists of a single shared left/thru/right lane. Highway 16 WB consists of a single shared left/thru lane with a large channelized right turn. Highway 9 NB consists of two approach lanes, a shared thru/left lane and a shared thru/right lane. Highway 9 SB consists of two approach lanes, a shared thru/left lane and a thru lane with a large channelized right turn. The intersection has a rural cross section with no available parking, sidewalks, or crosswalks.

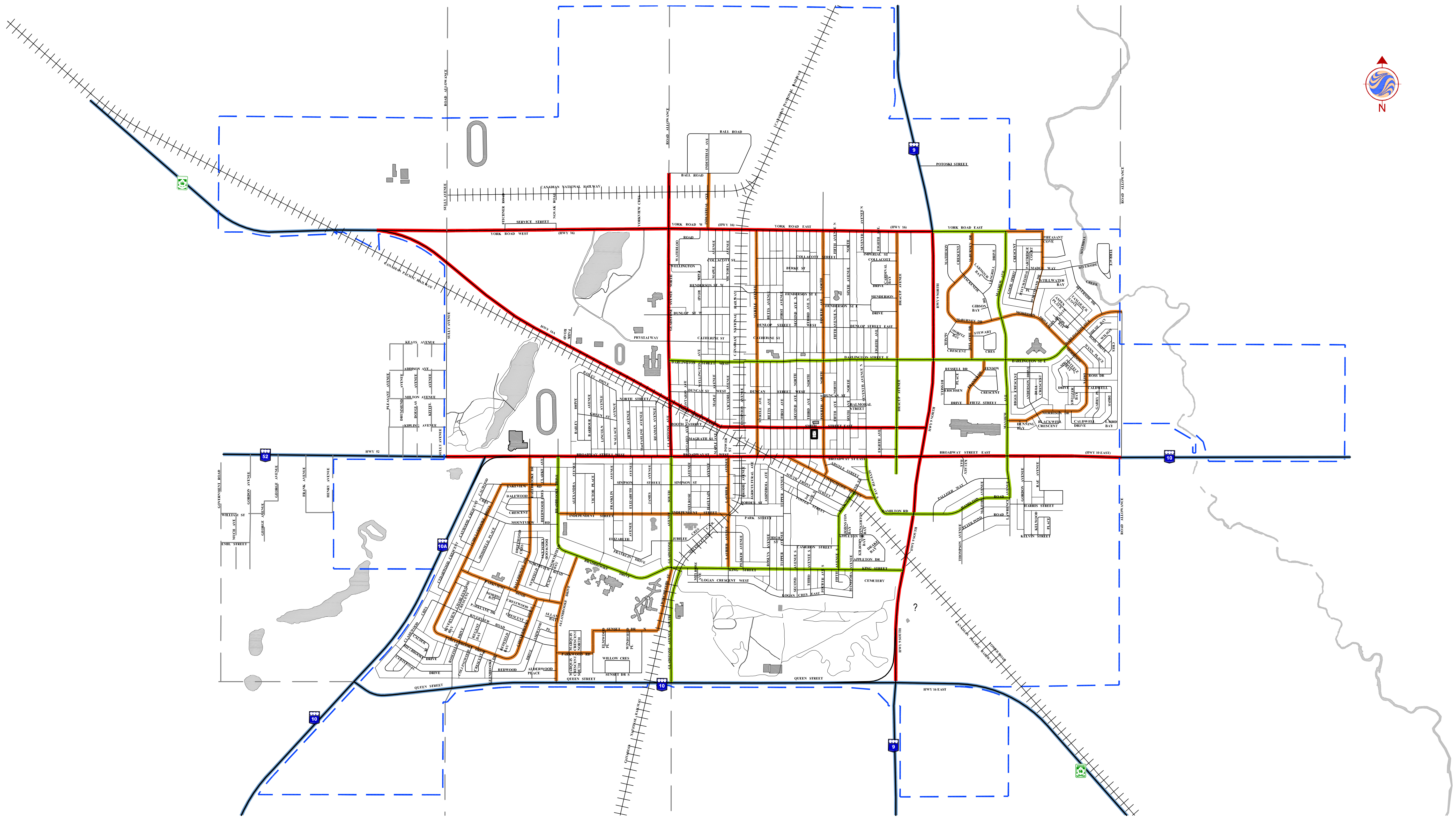
2.2.3 Roundabout Intersections

- **Bradbrooke Drive / King Street & Gladstone Avenue / Winchester Street –** This four legged intersection contains a roundabout with a single lane entering the intersection from each direction. Gladstone Avenue SB consists of two approach lanes; the left lane enters the roundabout while the right lane provides a bypass of the roundabout linking directly to Bradbrooke Drive. The intersection consists of an urban cross section with no available parking. Sidewalks are located on both sides of all four legs of the intersection. Crosswalks are located on all four legs of the intersection.

2.3 STUDY AREA CORRIDORS

In addition to specific intersections, the study includes a review of existing conditions along several primary traffic routes within the City. The corridors included in the analysis are listed below. A map of the overall street classification as provided by the City of Yorkton is illustrated in Figure 2.2. All corridors are undivided with a posted speed of 50km/hr unless otherwise stated.

- **Grain Millers Drive –** This corridor is a rural gravelled roadway running east-west approximately one mile north of the City of Yorkton between Highway 9 and Highway 16. The speed limit on this roadway is 80 km/hr.
- **York Road (Highway 16) –** This corridor is a provincial highway running east-west through the City of Yorkton. Within the city limits the roadway functions as a two lane arterial roadway with both rural and urban cross sections. Parking is permitted along portions of the roadway and the posted speeds vary from 80 km/hr to 50 km/hr within City limits. East of Highway 9, York Road becomes a major collector roadway and then a minor collector roadway before terminating at Whitesand Drive. Highway 16 continues south via Highway 9.
- **Darlington Street –** This corridor is a major collector roadway running east-west through the City of Yorkton from Gladstone Avenue to Morrison Drive. Darlington Street continues past Morrison Drive but as a minor collector. An on-street bike path is provided on both sides of the roadway from Gladstone Avenue to Mayhew Avenue. Darlington Street passes beneath Highway 9 in the City's only grade separation with no direct connections provided to the highway.
- **Smith Street (Highway 16A) –** This corridor is an urban arterial roadway running east-west through the City of Yorkton which functions as the primary access to the downtown area from the west. Smith Street is a four lane divided roadway with a raised center median and an urban cross section. The posted speeds along Smith Street vary from 100 km/hr as it enters the City to 50 km/hr within City limits. Smith Street terminates as a right-in/right-out intersection with Highway 9.
- **Broadway Street –** This corridor is an urban arterial roadway running east-west through the City of Yorkton. East and west of the City limits, Broadway Street becomes Highway 10 and Highway 52, respectively. For the majority of its length, Broadway Street is a four lane divided roadway with a raised center median. The posted speed limit is 50 km/hr and on-street parking is allowed along the majority of the roadway through the Central Business District (CBD). Within the CBD, several of the intersections are controlled by traffic signals and have separate left turning bays.
- **Bradbrooke Drive / King Street –** This corridor is a major collector running east-west through the City of Yorkton from Broadway Street to Highway 9. The majority of the roadway consists of two lanes with the roadway widening to four lanes at major intersections with Broadway Street and Highway 9. The City's only roundabout exists where Bradbrooke Drive becomes King Street as it intersects Gladstone Avenue. More recently, two new four way stops have been implemented at its intersections with Laurier Avenue and Fifth Avenue.



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Legend

- PROVINCIAL / THROUGH HIGHWAY
- ARTERIAL
- MAJOR COLLECTOR
- MINOR COLLECTOR
- LOCAL STREET

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Figure No.
2.2

Title
EXISTING ROADWAY CLASSIFICATION

- **Queen Street (Highway 10) –** This corridor is a provincial highway running east-west along the southern city limit from Highway 9 to Highway 10. East of Highway 9, Queen Street becomes Highway 16. Queen Street is a two lane roadway with a posted speed of 90 km/hr.
- **Gladstone Avenue –** This corridor is an arterial roadway running north-south from York Road to Queen Street. It is primarily a four lane roadway with a posted speed limit of 50 km/hr for the majority of its length. The speed limit is reduced to 40 km/hr between Wellington Street and Smith Street in the vicinity of the Sacred Heart and Yorkton Regional High Schools. On-street bike paths are provided on either side of Gladstone Avenue between York Road and Bradbrooke Drive.
- **Hamilton Road –** This corridor is a major collector running east west in the City of Yorkton from Lawrence Avenue turning north into Seventh Avenue. The roadway consists of two lanes and is signalized at its intersection with Highway 9.
- **Dracup Avenue –** This corridor is a collector roadway running north-south in the City of Yorkton from York Road to just south of Broadway Street. Dracup Avenue is a four lane major collector roadway south of Darlington Street and a two lane minor collector roadway north of Darlington Street.
- **Highway 9 –** This corridor is a provincial highway running north-south through the City of Yorkton. Highway 9 functions as a two lane arterial roadway between York Road and the Darlington Street overpass and a four lane divided roadway between the Darlington Street overpass and Hamilton Road. The highway remains a four lane undivided roadway between Hamilton Road and Queen Street. The posted speed limits on Highway 9 vary as follows: 90km/hr north of York Road, 70km/hr between York Road and Smith Street, 50km/hr between Smith Street and Hamilton Road, 70km/hr between Hamilton Road and Queen Street, and 100km/hr south of Queen Street.
- **Mayhew Avenue –** This corridor is a major collector roadway running north-south in the City of Yorkton from York Road to Broadway Street. Mayhew Avenue consists of two lanes of traffic.

2.4 EXISTING TRAFFIC SIGNAL SYSTEM

As shown on Figure 2.1, there are currently fifteen signalized intersections within the City of Yorkton, ten of which are along the Broadway Street corridor. The remaining signals are located on the Smith Street and Highway 9 corridors. The features and limitations of the existing signal system as described by the City of Yorkton are listed below:

- The three traffic signals along Smith Street at the intersections of Gladstone Avenue, Second Avenue and Fourth Avenue are all pre-timed with no actuation.
- The intersections of York Road & Highway 9, Hamilton Road & Highway 9, and Broadway Street with Dalebrooke Drive, Dracup Avenue, and Mayhew Avenue all contain traffic signals which are actuated with a newer style actuation camera.
- The intersections of Broadway Street with Gladstone Avenue and Highway 9 both contain traffic signals which are actuated with an older style of actuation camera.

- The five traffic signals along the Broadway Street corridor at the intersections of Myrtle Avenue, First Avenue, Second Avenue, Third Avenue, and Fourth Avenue are all non-actuated but are coordinated. These are the only signals in the City of Yorkton currently capable of being coordinated.
- There are no main or side-street loops for any of the detection systems. All detection, where provided, is through the use of actuation cameras.
- The signals along Broadway do not currently allow for rail pre-emption to ensure queued traffic can clear the crossings when trains are in operation on either the CN or CP Rail lines that run through the downtown core.

The City of Yorkton has expressed concerns over the functionality of the five traffic signals along the Broadway Street corridor through the CBD. Currently, a central controller at Broadway Street and Fourth Avenue controls all five signals. As part of this study, Stantec will be examining signal timings for those signals that are not currently coordinated, however, the original scope does not provide for the writing or correcting of any signal timing programs. It is recommended that the City of Yorkton further investigate the current traffic signal coordination program to ensure that it is functioning properly and to its full potential.

3.0 Traffic Volume Data Collection

During the week of October 18, 2010, Stantec commissioned an assessment of the existing traffic conditions within the City of Yorkton. Data collected included intersection turning movement counts and corridor tube counts. Each of the data collection activities are described below along with the resulting project data.

3.1 INTERSECTION TURNING MOVEMENT COUNTS

Intersection Turning Movement Counts (TMC's) were conducted at each of the study area intersections described in Section 2. The TMC data is necessary to properly analyze existing traffic conditions and accurately predict future traffic volumes. The data was gathered in fifteen minute intervals from 0700 - 0900, 1100 -1300, and 1600 – 1800 to ensure that AM, Noon, and PM peak traffic data was recorded. Since traffic volume in urban areas is usually consistent throughout the year, seasonalization of the TMC data was considered unnecessary. All TMC data is provided in *Appendix A.*

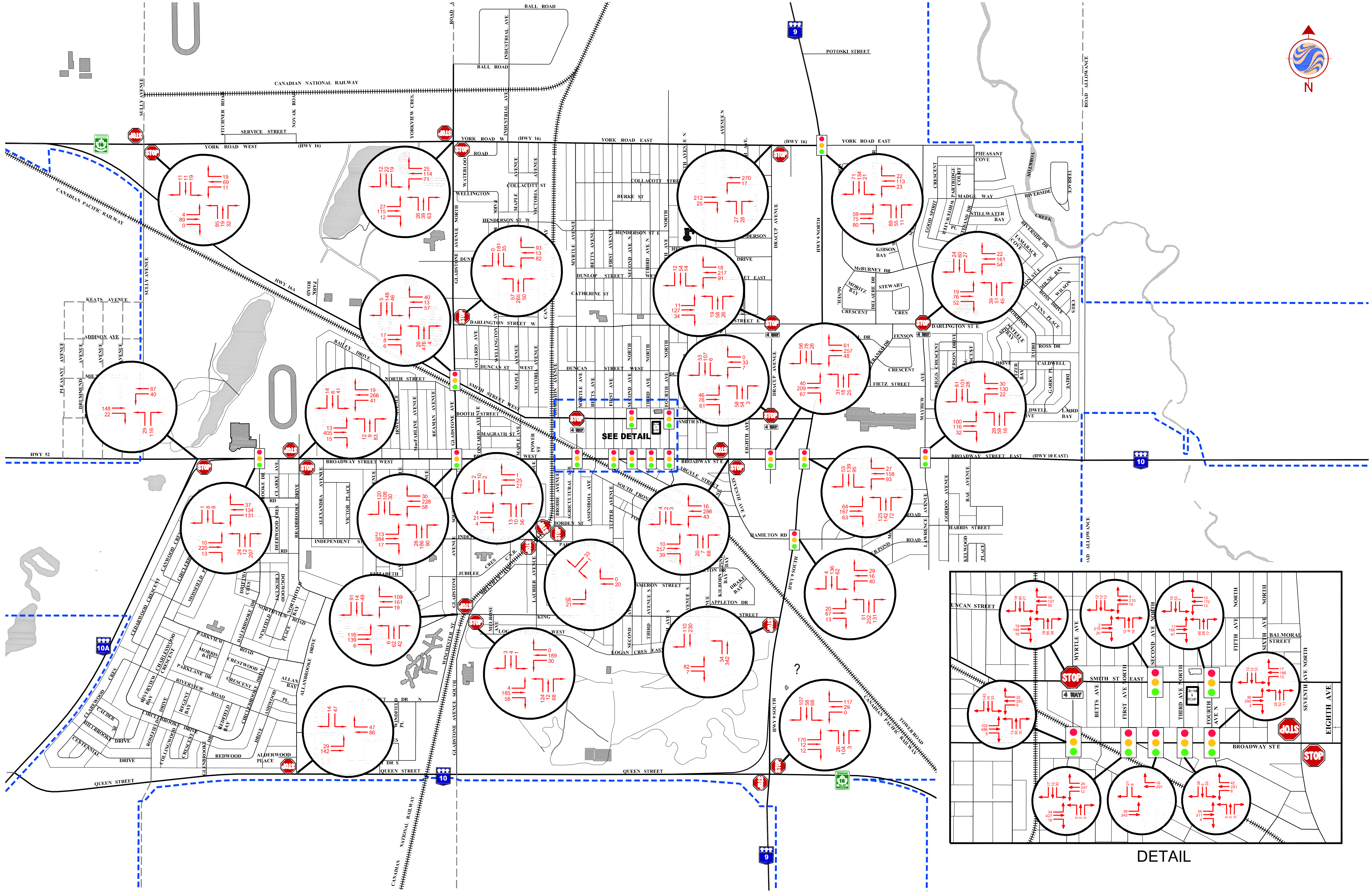
3.1.1 Peak Hour Traffic Volume

Based on the TMC data, peak hour traffic volumes for the AM, Noon, and PM time periods were determined based on the maximum one hour volume during the period data was collected. The peak hour turning movements for the AM, Noon and PM peaks for all intersections within the study area are shown in Figures 3.1, 3.2, and 3.3 respectively.

3.2 CORRIDOR TUBE COUNTS

Mid-block traffic volumes were also gathered using pneumatic tube traffic counters. Tube counts were taken along designated corridors within the City of Yorkton to quantify the volume of traffic traveling in each direction on each link. These volume counts are used to determine the Average Annual Daily Traffic (AADT) on each link. Tube counts were completed at the following locations and are shown in Figure 3.4:

- Sully Avenue – just south of York Road (Highway 16);
- York Road (Highway 16) – approximately 1 km east of Crescent Avenue;
- York Road (Highway 16) – between First Avenue and Second Avenue;
- Gladstone Avenue – just north of Darlington Street;
- Gladstone Avenue – between Simpson Street and Independent Street;
- Darlington Street – between First Avenue and Second Avenue;
- Smith Street – between First Avenue and Second Avenue;
- Mayhew Avenue – between Fietz Street and Franko Drive;
- Broadway Street – between Wallace Avenue and Irwin Avenue;



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2011-06-14 03:32PM By: throberts

N.T.S.
JUNE, 2011
113154417

ORIGINAL SHEET - ANSI B

Stantec

City of Yorkton

Legend

XX AM PEAK HOUR TRAFFIC VOLUME

Client/Project

CITY OF YORKTON

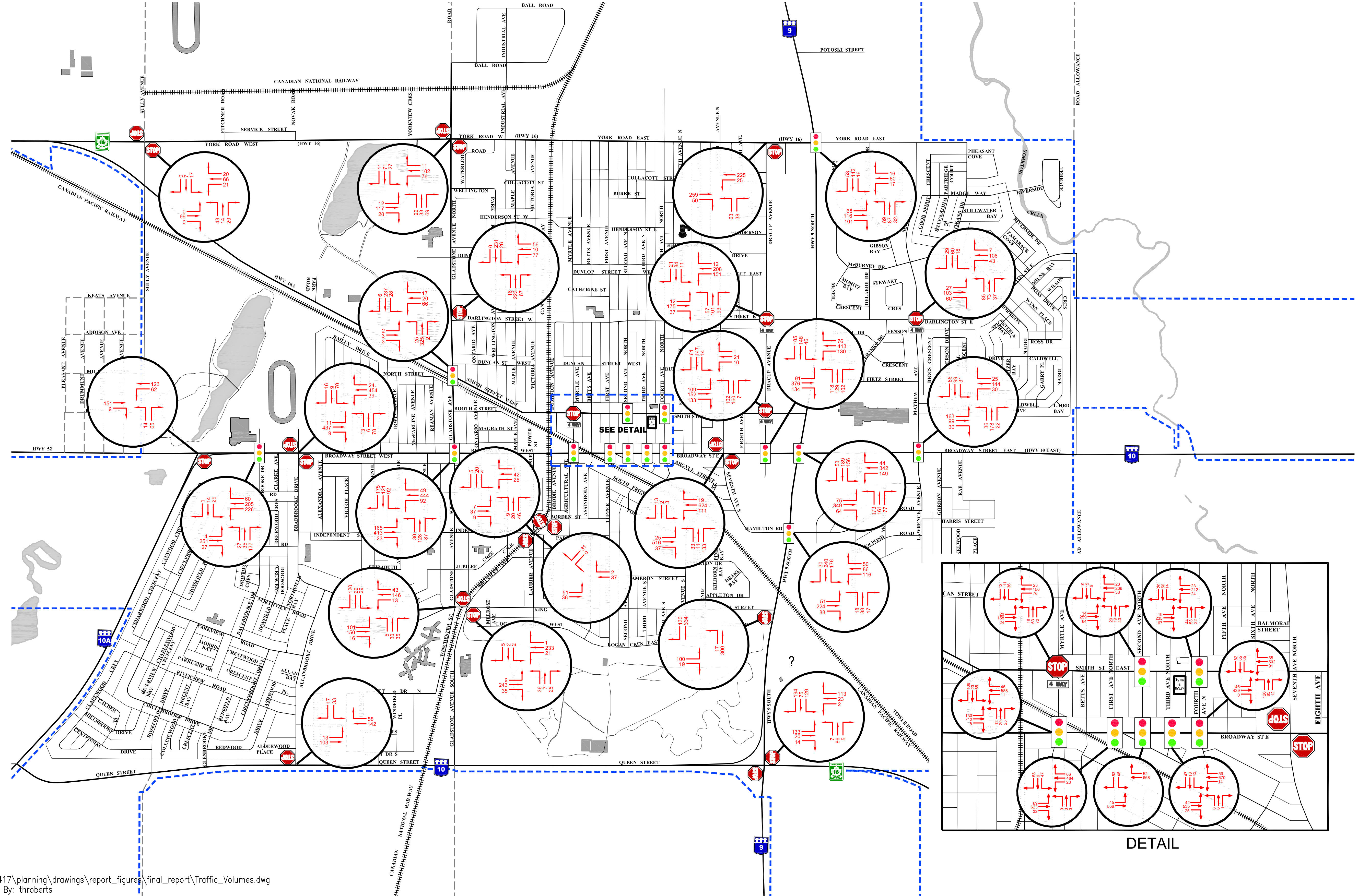
TRANSPORTATION MASTER PLAN UPDATE

Figure No.

3.1

Title

EXISTING AM PEAK HOUR TRAFFIC VOLUMES



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2011-06-14 03:29PM By: throberts

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JUNE, 2011
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Stantec

City of Yorkton

Legend

xx NOON PEAK HOUR TRAFFIC VOLUME

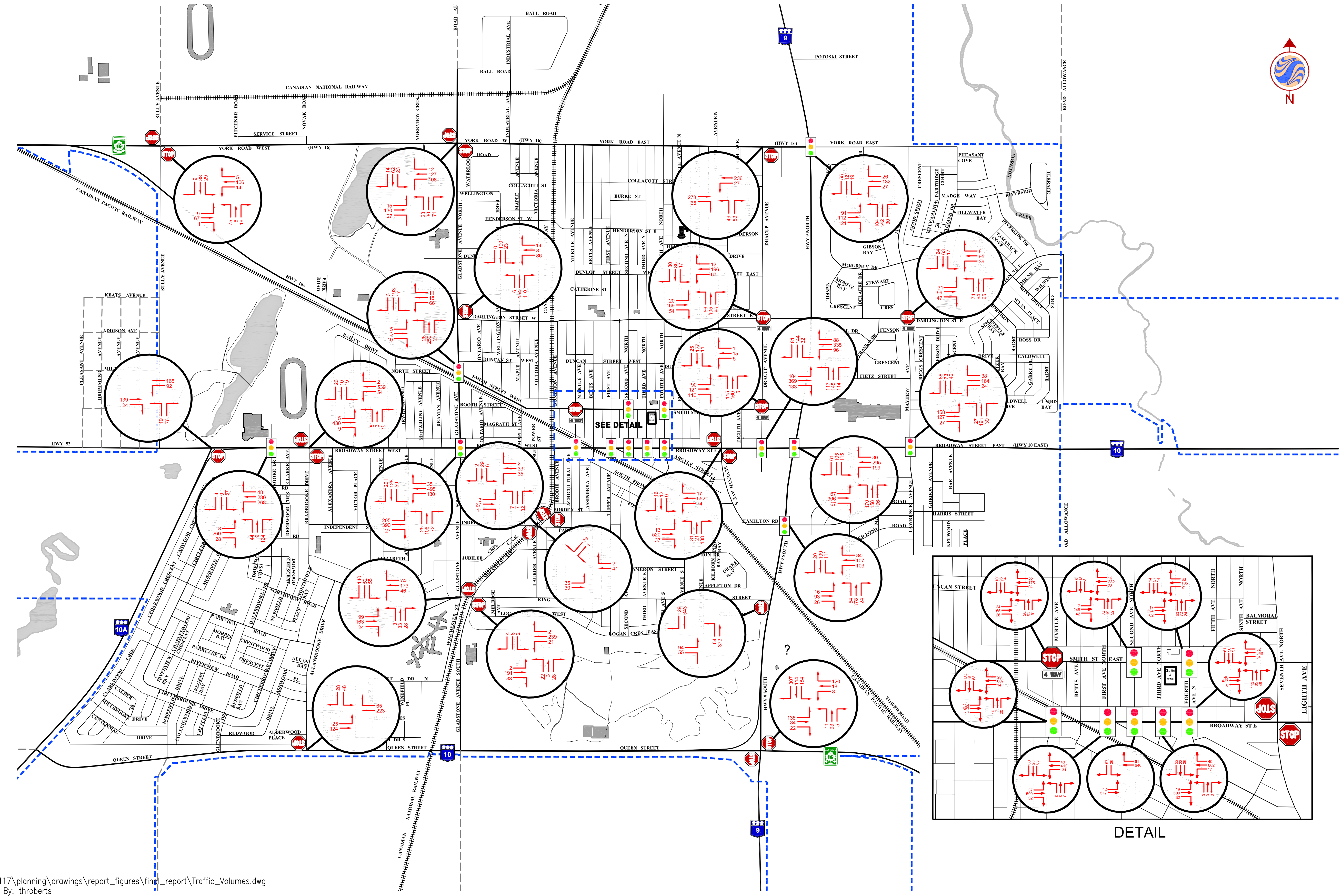
Client/Project

CITY OF YORKTON
TRANSPORTATION MASTER PLAN UPDATE

Figure No.
3.2

Title

EXISTING NOON PEAK HOUR TRAFFIC VOLUMES



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2011-06-14 03:31PM By: throberts

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JUNE, 2011
113154417

ORIGINAL SHEET - ANSI B

Stantec

City of Yorkton

Legend

XX PM PEAK HOUR TRAFFIC VOLUME

Client/Project

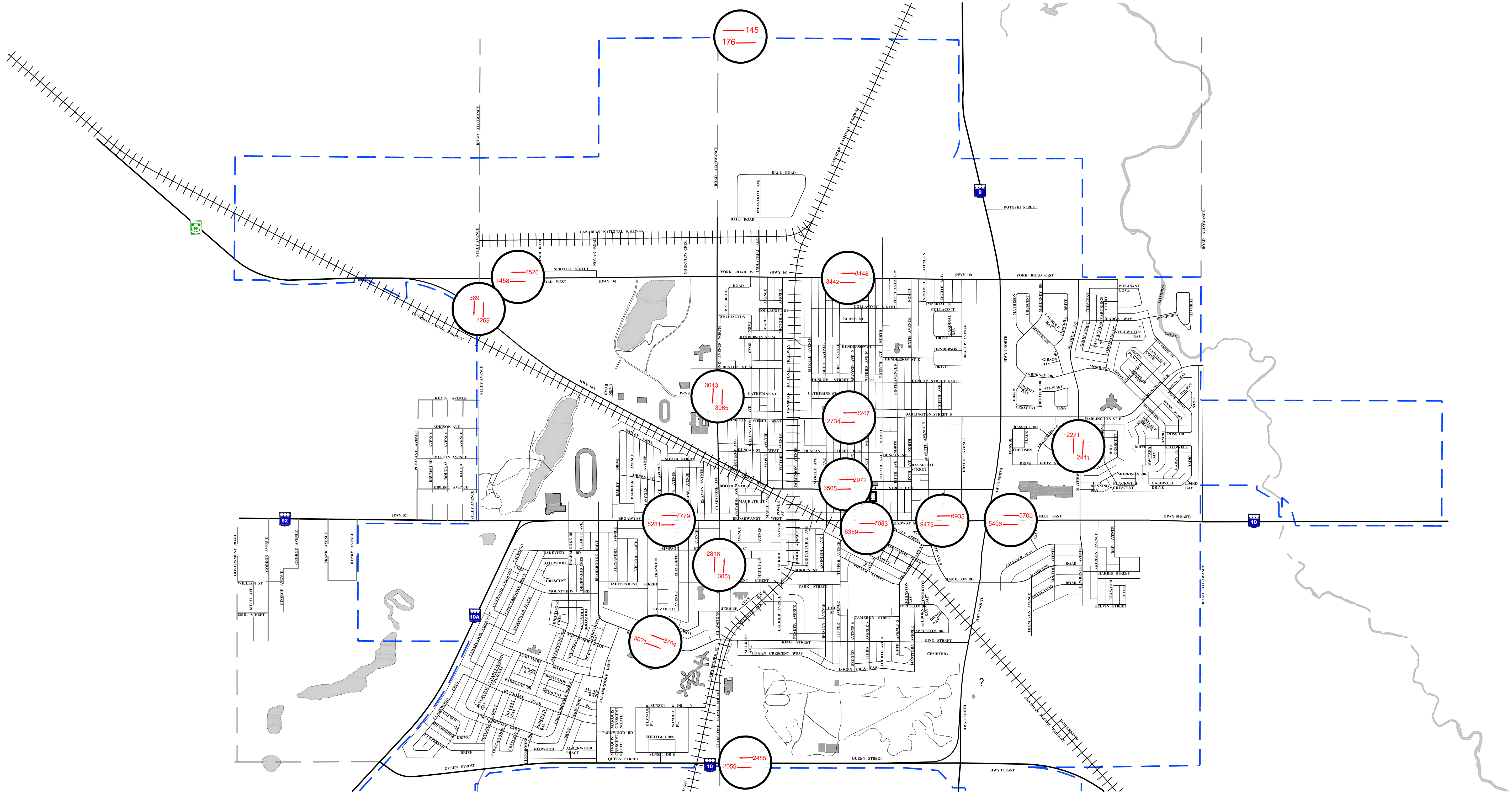
CITY OF YORKTON
TRANSPORTATION MASTER PLAN UPDATE

Figure No.

3.3

Title

EXISTING PM PEAK HOUR TRAFFIC VOLUMES



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2011-06-20 03:10PM By: throberts

JUNE, 2011
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Stantec

City of Yorkton

Client/Project
CITY OF YORKTON
TRANSPORTATION MASTER PLAN UPDATE

Figure No.
3.4

Title
AVERAGE ANNUAL DAILY TRAFFIC VOLUMES

- Broadway Street – between Second Avenue and Third Avenue;
- Broadway Street – between Eighth Avenue and Dracup Avenue;
- Broadway Street – between Highway 9 and the Parkland Mall access;
- Bradbrooke Drive – between the Nursing Home and the Hospital;
- Queen Street (Highway 10) – just west of Gladstone Avenue; and
- Grain Millers Drive – just east of Gladstone Avenue.

The resulting AADT volumes and the tube count data is provided in *Appendix B*.

3.3 EXISTING HIGHWAY TRAFFIC VOLUMES

The Saskatchewan Ministry of Highways and Infrastructure (SMHI) provided Stantec with the AADT in and around the City of Yorkton as shown on Figure 3.5.

Figure 3.5 – Average Annual Daily Traffic in and Around Yorkton

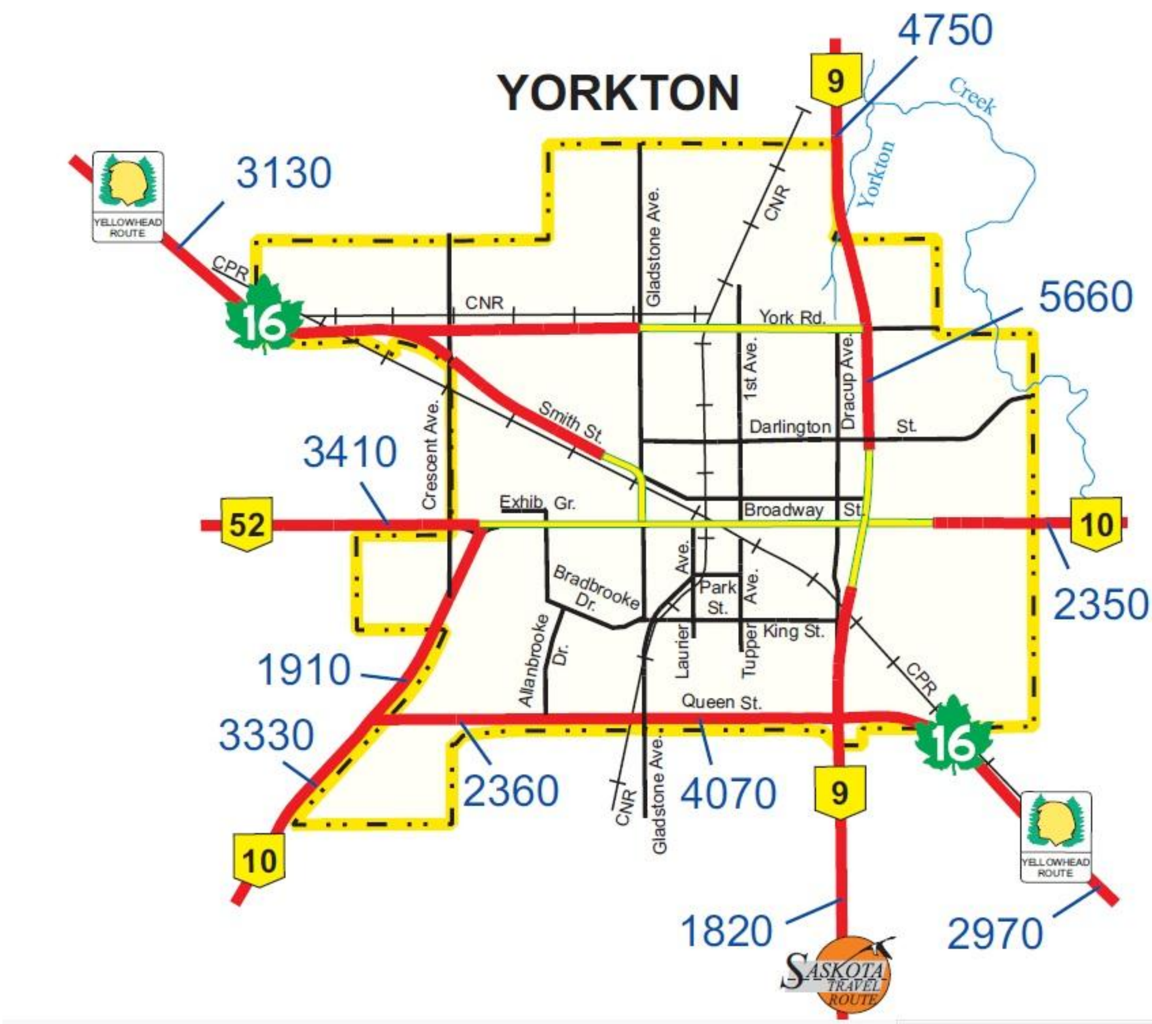


Table 3.1 shows the comparison of the AADT's from 2003 and 2009 and provides the change in traffic volume over the six year period between data sets.

Table 3.1 Comparison of AADT Volumes

Location	2003	2009	Change
Hwy. 16 North	3010	3130	4.0%
Hwy. 16 South	2690	2970	10.4%
Hwy. 9 North	5100	4750	-6.9%
Hwy. 9 South	1590	1820	14.5%
Hwy. 52	2440	3410	39.8%
Hwy. 10 South	3630	3330	-8.3%
Hwy. 10 East	2320	2350	1.3%
Hwy. 10A	2030	1910	-5.9%
Queen St. West	2530	2360	-6.7%
Queen St. East	3590	4070	13.4%
Hwy. 9 (near York Rd.)	5260	5660	7.6%

Based upon the above information, AADT values changed significantly on a number of roadways throughout the City, including a nearly 40% increase on Highway 52. The 2003 study saw increases in traffic on all roadways examined from 1979 to 1984 and from 1984 to 2002. In 2009, however, a number of roadways throughout the City experienced a decrease in traffic between 2003 and 2009 including Highway 9 North, Highway 10 South, Highway 10A, and Queen Street West. This represents a significant change in travel patters around the City likely attributed to developments in and around the City.

3.4 TRAFFIC VOLUME COMPARISON

3.4.1 Intersection Turning Movement Counts

A comparison of the 2003 and 2010 total traffic entering volumes for the PM peak hour is shown in Table 3.2.

Table 3.2 Comparison of Entering Traffic Volumes

Intersection	2003 Total Traffic Entering	2003 Rank	2010 Total Traffic Entering	2010 Rank	% Change 2003-2010
Broadway St. & Gladstone Ave.	1,644	3	1,873	1	14%
Broadway St. & Myrtle Ave.	1,715	2	1,780	2	4%
Broadway St. & Hwy. 9	1,994	1	1,759	3	-12%
Broadway St. & Dracup Ave.	1,597	4	1,758	4	10%
Broadway St. & Fourth Ave.	1,425	7	1,511	5	6%
Broadway St. & Seventh Ave.	---	---	1,440	6	---
Broadway St. & Second Ave.	1,547	6	1,369	7	-12%
Broadway St. & Third Ave.	1,404	8	1,359	8	-3%
Broadway St. & First Ave.	---	---	1,201	9	---
Broadway St. & Bradbrooke Dr.	---	---	1,166	10	---
Broadway St. & Dalebrooke Dr.	869	12	1,134	11	30%
King St. & Hwy. 9	1,106	9	1,061	12	-4%
Queen St. & Hwy. 9	799	14	1,049	13	31%
Hamilton Rd. & Hwy. 9	1,585	5	1,015	14	-36%
Broadway St. & Mayhew Ave.	975	11	998	15	2%
York Rd. & Hwy. 9	823	13	930	16	13%
Darlington St. & Dracup Ave.	750	16	897	17	20%
King St./Bradbrooke Dr. & Gladstone Ave.	1,030	10	890	18	-14%
Smith St. & Myrtle Ave.	---	---	800	19	---
Smith St. & Fourth Ave.	744	18	786	20	6%
Smith St. & Dracup Ave.	---	---	785	21	---
York Rd. & Dracup Ave.	587	20	703	22	20%
Smith St. & Second Ave.	748	17	687	23	-8%
Darlington St. & Mayhew Ave.	465	24	656	24	41%
York Rd. & Gladstone Ave.	541	22	642	25	19%
Smith St. & Gladstone Ave.	768	15	638	26	-17%
Darlington St. & Gladstone Ave.	498	23	586	27	18%
King St. & Melville/Gladstone Ave.	702	19	558	28	-21%
Broadway St. & Hwy. 10	544	21	519	29	-5%
Queen St. & Allanbrooke Dr.	---	---	513	30	---
York Rd. & Crescent Ave.	296	25	375	31	27%
Independent St./Park St. & Laurier Ave.	---	---	194	32	---
Park St. & Melville St.	---	---	138	33	---

Based upon the above, the number of vehicles entering each intersection increased, on average, by approximately 5%. Some intersections, however, saw entering traffic increase substantially over the seven-year period between 2003 and 2010 while others saw a significant decrease in the overall traffic entering. This represents a significant shift in travel patterns within the community as was noted in the 2003 study. Possible contributing factors to the observed shift in traffic patterns could be the closure of the Casino in Downtown Yorkton and its relocation the far west end of the City, the build out of new commercial areas, particularly east of Highway 9, the increase/decrease of traffic volumes on the Highways surrounding Yorkton as shown in Table 3.1, improvements made to existing intersections and corridors since the 2003 study, and a general shift to new residential areas, particularly in the NE quadrant of the City.

The top four busiest intersections from 2003 remained the top four busiest intersections in 2010, albeit in a different order. It is also noted that the top ten busiest intersections in the City in terms of entering traffic are all located along the Broadway corridor.

Intersections that saw more than a 25% increase in traffic include Broadway Street & Dalebrooke Drive, Queen Street & Highway 9, Darlington Street & Mayhew Avenue, and York Road & Crescent Avenue. The intersection of Hamilton Road & Highway 9 saw entering traffic decrease in excess of 35%.

3.4.2 Average Annual Daily Traffic

A comparison of the 2003 and 2010 AADT on Broadway Street is shown in Table 3.3. AADT was only compared along Broadway Street as these were the only locations where consistent tube count data was provided in both 2003 and 2010.

Table 3.3 Comparison of Traffic Volumes on Broadway Street

Location	Peak Hour	2003			2010			% Increase 2003-2010
		Peak Volume	Daily Volume	% of Daily Volume	Peak Volume	Daily Volume	% of Daily Volume	
Between Bradbrooke Dr. & Alexandra Ave.	Noon	675	9,822	6.9%	1,309	16,060	8.2%	94%
Between Second Ave. & Third Ave.	Noon	1076	14,109	7.6%	1,101	13,477	8.2%	2%
Between Eighth Ave. & Dracup Ave.	Noon	1079	13,276	8.1%	1,649	16,611	9.9%	53%
Between Hwy. 9 & Mall Access	Noon	1032	11,257	9.2%	1,149	10,664	10.8%	11%
Between Bradbrooke Dr. & Alexandra Ave.	PM	699	9,822	7.1%	1,356	16,060	8.4%	94%
Between Second Ave. & Third Ave.	PM	1057	14,109	7.5%	1,110	13,477	8.2%	5%
Between Eighth Ave. & Dracup Ave.	PM	1078	13,276	8.1%	1,478	16,611	8.9%	37%
Between Hwy. 9 & Mall Access	PM	981	11,257	8.7%	1,081	10,664	10.1%	10%

Based on the results in Table 3.3, the peak volumes as a percent of daily traffic had average increases of 8% to 9.3% and 7.9% to 8.9% for the Noon and PM peak hours respectively. These percentages represent typical averages of daily traffic, which, for urban centers in the PM peak generally range from 9% to 11%.

The locations between Second Avenue & Third Avenue and between Highway 9 & the Mall Access saw marginal increases in traffic over the peak hours and less overall traffic from 2003 to 2010 while the locations between Bradbrooke Drive & Alexandra Avenue and Eighth Avenue & Dracup Avenue saw significant increases in traffic over the peak hours and significant increases in overall traffic over the same sample period. The increases in traffic over these two sections of Broadway Street can be attributed to the opening of the casino on Broadway Street west of Bradbrooke Drive and the commercial developments on Broadway Street between Highway 9 and Seventh Avenue. The casino and much of the commercial development was not in place at the time of the previous study and both land uses attract a large number of vehicle trips.

4.0 Transportation System Base Year Analysis

4.1 ANALYSIS BACKGROUND

The purpose of this task is to analyze traffic operations at study area intersections and roadways to determine what improvements and traffic control strategies, if any, are needed to address existing traffic problems. Both the Noon and PM peak traffic periods were included in the traffic analysis as these typically represent the two busiest time periods in urban centers.

4.1.1 Vehicle Delay Based Intersection Analysis

Traffic analyses for signalized and un-signalized intersections are typically conducted according to methodology developed by the Transportation Research Board (TRB) and as published by the *2000 Highway Capacity Manual* (HCM). Most of the analyses concern estimates of vehicle delay under various traffic volumes, roadway configurations, and traffic control strategies. The delay estimates are used as the basis for determining intersection performance and evaluating potential improvement alternatives. According to the HCM, the relative performance of an intersection depends on a number of different factors which include:

- **Level of Service (LOS)** – measures the average signal delay per vehicle during a fifteen minute analysis period. Levels of service range from A to F (minimal delay to un-acceptable delay) and may be measured on an intersection, a particular intersection approach, or on a per movement basis for each respective movement at an intersection;
- **Degree of Saturation** – measured in terms of a ratio of demand flow rate (v) to maximum capacity (c); intersections with volume to capacity (v/c) ratios greater than 1.0 are at full capacity and likely experience severe congestion;
- **Vehicle Delay** – average vehicle delay on an intersection, approach, or per movement basis. Measured in seconds per vehicle or total hours of delay during the peak hour under analysis. For design and planning purposes in urban locations, LOS D or better are generally considered acceptable under peak hour traffic conditions. As the City of Yorkton is much smaller in size when compared to larger urban centres such as Saskatoon and Regina, driver perception is much different and LOS D may be perceived as a more significant delay. For this reason, this report assumes than anything experiencing LOS C or better is considered acceptable.

Tables 4.1 and 4.2 summarize the LOS for signalized and un-signalized intersections respectively as listed in the 2000 edition of the HCM.

Table 4.1 LOS – Signalized Intersections

HCM Level of Service	Average Signal Delay per Vehicle (sec/veh)	Characteristics
A	≤ 10	Free flow, low volumes and high speeds, most drivers can select own speed
B	> 10 and ≤ 20	Stable flow, speed restricted slightly by traffic
C	> 20 and ≤ 35	Stable flow, speed controlled by traffic
D	> 35 and ≤ 55	Approaching unstable flow, low speed
E	> 55 and ≤ 80	Unstable flow & speeds, volumes at or near capacity
F	> 80	Forced flow, low speed, volume above capacity

Table 4.2 LOS – Un-signalized Two-Way and All-Way Stop Control Intersections

HCM Level of Service	Average Total Delay (sec/veh)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

4.2 ANALYSIS METHODOLOGY

4.2.1 Traffic Analysis

The intersections within the study area were analyzed using the computer program SYNCHRO ver. 7.0. SYNCHRO analyzes both signalized and un-signalized intersections in terms of LOS, vehicle delay, and queue lengths according to the methodology detailed in the 2000 edition of the HCM. It can be used to evaluate existing operations or to optimize traffic signal phase configurations, timing splits, and cycle lengths. The program also optimizes coordinated signal networks and their associated cycle offsets. For the purposes of this study, SYNCHRO was used to analyze intersection operations and to optimize signal phasing, offsets, and arterial coordination under existing volume conditions.

4.2.2 Traffic Analysis Assumptions

Where existing information was not available, it was necessary to make a number of assumptions regarding existing traffic conditions at intersections in the study area. These assumptions include:

- A minimum heavy vehicle percentage of 2% was applied to all intersection movements;
- On street parking was allowed where permitted during the peak hours under analysis;
- Ideal saturated flow = 1800 vehicles per hour per lane;
- Right turns on red are permitted movements;
- All lane widths were assumed to be 3.6 m for analysis purposes; and
- Ten pedestrian calls per hour on all cross movements.

All existing signal timing information was provided by the City of Yorkton.

4.2.3 Traffic Control Assumptions

Information on the existing signal timing and control systems was provided by the City and used as the basis for analysis of existing conditions. As discussed in Section 2.4, all signals are currently actuated and un-coordinated, with the exception of the coordinated signals on Broadway Street from Myrtle Avenue to Fourth Avenue. For analysis purposes, it was assumed that roadway network improvement alternatives could include the following:

- Installation of four-way stop control or traffic signal control where warranted;
- Signal timing variations based on time-of-day traffic demand;
- Coordination of traffic signals using an interconnection system; and
- Installation of additional turning lanes.

4.2.4 Traffic Simulation

In addition to the intersection/network analysis and optimizations, a traffic simulation program, SIMTRAFFIC, was used to validate roadway geometry and traffic control to ensure actual conditions were modeled as accurately as possible. It also provided a means for determining the suitability of various traffic control and geometric improvement alternatives. The primary benefit of traffic simulation is the identification of locations where significant queuing creates spillback that affects upstream intersection operations. The HCM methodology does not include the potential for spillback in its intersection evaluations.

4.3 SIGNAL WARRANT ANALYSIS

Traffic signal warrant analyses were conducted for all un-signalized study area intersections in accordance with the guidelines developed by the Transportation Association of Canada (TAC). The warrant analysis takes into account traffic volumes, the number of thru and turning lanes, and pedestrian movements as well as other factors, including speed, proximity to schools, senior citizen's homes, and the downtown area, transit routes, percentage of trucks, and the overall population. To warrant signalization, an intersection must score a minimum of 100 basis points. The results of the traffic signal warrant analysis are provided in *Appendix C* and summarized in Table 4.3. Note that these results are based on existing traffic volumes and additional signals may be warranted under future traffic volume projections.

Table 4.3 Signal Warrant Analysis Results

Intersection	Warrant Basis Points	Result
York Rd. (Hwy. 16) & Crescent Ave.	15	Not Warranted
York Rd. & Gladstone Ave.	37	Not Warranted
York Rd. & Dracup Ave.	23	Not Warranted
Darlington St. & Gladstone Ave.	20	Not Warranted
Darlington St. & Dracup Ave.	64	Not Warranted
Darlington St. & Mayhew Ave.	43	Not Warranted
Smith St. & Myrtle Ave.	41	Not Warranted
Smith St. & Dracup Ave.	31	Not Warranted
Broadway St. & Hwy. 10	17	Not Warranted
Broadway St. & Bradbrooke Dr.	53	Not Warranted
Broadway St. & Seventh Ave.	127	Warranted
King St. & Melville Ave./Gladstone Ave.	43	Not Warranted
King St. & Hwy. 9	30	Not Warranted
Queen St. (Hwy. 10) & Allanbrooke Dr.	13	Not Warranted
Queen St. (Hwy. 10)/Hwy. 16 & Hwy. 9	108	Warranted

As shown, under existing traffic volumes, the intersections of Broadway Street & Seventh Avenue and Queen Street and Highway 9 both warrant traffic signals scoring 127 and 108 respectively. All other stop controlled intersections analyzed do not require signalization under existing traffic conditions.

4.4 TRAFFIC ANALYSIS RESULTS

The existing roadway and intersection geometry, traffic control, and travel patterns were used as the basis for all analyses. The street network was then analyzed under existing Noon and PM peak hours to identify congested traffic operations. The LOS and control type at study area intersections under current traffic conditions for the PM Peak hour time period are shown in Table 4.4.

Table 4.4 Intersection Traffic Analysis Summary (PM Peak)

Intersection	Control Type	LOS
York Rd. (Hwy. 16) & Crescent Ave.	2-way stop	A
York Rd. & Gladstone Ave.	2-way stop	A
York Rd. & Dracup Ave.	1-way stop	A
York Rd. & Hwy. 9	signal	B
Darlington St. & Gladstone Ave.	1-way stop	A
Darlington St. & Dracup Ave.	4-way stop	B
Darlington St. & Mayhew Ave.	4-way stop	A
Smith St. & Gladstone Ave.	signal	B
Smith St. & Myrtle Ave.	4-way stop	B
Smith St. & Second Ave.	signal	A
Smith St. & Fourth Ave.	signal	A
Smith St. & Dracup Ave.	4-way stop	B
Broadway St. & Hwy.10	1-way stop	A
Broadway St. & Dalebrooke Dr.	signal	C
Broadway St. & Bradbrooke Dr.	2-way stop	A
Broadway St. & Gladstone Ave.	signal	B
Broadway St. & Myrtle Ave.	signal	B
Broadway St. & First Ave.	signal	B
Broadway St. & Second Ave.	signal	B
Broadway St. & Third Ave.	signal	B
Broadway St. & Fourth Ave.	signal	B
Broadway St. & Seventh Ave.	2-way stop	A
Broadway St. & Dracup Ave.	signal	B
Broadway St. & Hwy. 9	signal	C
Broadway St. & Mayhew Ave.	signal	B
Independent St. & Laurier Ave.	3-way stop	A
Hamilton Rd. & Hwy. 9	signal	B
Bradbrooke Dr./King St. & Gladstone Ave./Winchester St.	roundabout yield	A
King St. & Melville Ave./Gladstone Ave.	2-way stop	A
King St. & Hwy. 9	1-way stop	A
Queen St. (Hwy. 10) & Allanbrooke Dr.	1-way stop	A
Queen St. (Hwy. 10) & Hwy. 9	2-way stop	B

The LOS and control type at study area intersections under current traffic conditions for the Noon Peak hour time period are shown in Table 4.5.

Table 4.5 Intersection Traffic Analysis Summary (Noon Peak)

Intersection	Control Type	LOS
York Rd. (Hwy. 16) & Crescent Ave.	2-way stop	A
York Rd. & Gladstone Ave.	2-way stop	A
York Rd. & Dracup Ave.	1-way stop	A
York Rd. & Hwy. 9	signal	B
Darlington St. & Gladstone Ave.	1-way stop	A
Darlington St. & Dracup Ave.	4-way stop	B
Darlington St. & Mayhew Ave.	4-way stop	A
Smith St. & Gladstone Ave.	signal	B
Smith St. & Myrtle Ave.	4-way stop	B
Smith St. & Second Ave.	signal	A
Smith St. & Fourth Ave.	signal	A
Smith St. & Dracup Ave.	4-way stop	B
Broadway St. & Hwy. 10	1-way stop	A
Broadway St. & Dalebrooke Dr.	signal	C
Broadway St. & Bradbrooke Dr.	2-way stop	A
Broadway St. & Gladstone Ave.	signal	B
Broadway St. & Myrtle Ave.	signal	B
Broadway St. & First Ave.	signal	B
Broadway St. & Second Ave.	signal	B
Broadway St. & Third Ave.	signal	B
Broadway St. & Fourth Ave.	signal	B
Broadway St. & Seventh Ave.	2-way stop	A
Broadway St. & Dracup Ave.	signal	B
Broadway St. & Hwy. 9	signal	C
Broadway St. & Mayhew Ave.	signal	B
Independent St. & Laurier Ave.	3-way stop	A
Hamilton Rd. & Hwy. 9	signal	B
Bradbrooke Dr./King St. & Gladstone Ave./Winchester St.	roundabout yield	A
King St. & Melville Avenue/Gladstone Ave.	2-way stop	A
King St. & Hwy. 9	1-way stop	A
Queen St. (Hwy. 10) & Allanbrooke Dr.	1-way stop	A
Queen St. (Hwy. 10) & Hwy. 9	2-way stop	A

On an overall intersection basis, all analyzed locations currently operate acceptably during both the Noon and PM peak periods. However, at several locations there are specific movements that experience large delays, queuing problems, and/or high volume to capacity ratios indicating they are approaching full capacity.

For locations which experience these conditions, minimal and moderate cost improvements have been investigated in order to mitigate problems that occur under existing traffic conditions. These improvement are intended to be implemented over the short-term and do not include extensive geometric improvements that are more suited to long term transportation system needs.

Intersections experiencing critical movements with LOS D or worse are described as follows:

4.4.1 Broadway Street & Dalebrooke Drive

The traffic analysis results for the signal controlled intersection of Broadway Street & Dalebrooke Drive indicated that the EB thru movement experiences LOS D during both the Noon and PM peak hour time periods. The likely cause of the lower than ideal operating condition for this particular movement is the opposing traffic in the WB direction which is currently allotted more green time for the WB left turning movement which experiences much higher traffic volumes that any one other movement at the intersection. Optimizing the signal timings at this intersection improves the EB thru movement to LOS C.

4.4.2 Broadway Street & Bradbrooke Drive

The traffic analysis results for the stop controlled intersection of Broadway Street & Bradbrooke Drive indicated that the SB left, thru, and right movements experience LOS D during the Noon peak hour time period. The intersection is currently un-signalized and free flowing in the EB and WB directions which is likely the cause of the lower than ideal operating conditions. The large volumes of traffic on Broadway Street do not allow large enough gaps for SB vehicles on Bradbrooke Drive to cross or turn left onto Broadway Street. During the PM peak hour, a total of thirty seven vehicles attempted to cross or turn left onto Broadway Street. This represents 3% of the total traffic entering the intersection during the PM peak hour. As the cross traffic volume is low, it is impractical to suggest changes to this location that could have a larger, negative impact on traffic flow in the EB and WB directions which carry substantially more traffic.

4.4.3 Broadway Street & Seventh Avenue

The traffic analysis results for the signal controlled intersection of Broadway Street & Seventh Avenue indicated that the NB left movement experiences LOS E during both the Noon and PM peak hour time periods. The traffic analysis also indicated that the SB left, thru, and right turning movements experience LOS D during the PM peak hour time period only. The likely cause of the lower than ideal operating conditions for these particular movements is that the intersection is currently un-signalized and free flowing in the EB and WB directions and the large volumes of traffic do not create the necessary gaps to allow NB and SB vehicles on Seventh Avenue to cross or turn onto Broadway Street. As described in Section 4.3, traffic signals are warranted at this location and improve the individual LOS for each of the described movements to acceptable levels.

4.4.4 Hamilton Road & Highway 9

The traffic analysis results for the signal controlled intersection of Hamilton Road & Highway 9 indicated that the WB thru movement experiences a LOS D during the Noon peak hour time period. The likely cause of the less than ideal operating condition for the WB thru movement is that only one lane is provided in the WB direction. In turn, left turning vehicles in the WB direction waiting for traffic in the opposing direction to clear are backing up thru traffic. Adding a left-turn bay and a protected left turn stage improves the WB thru movement to a LOS C and the WB left turning movement to a LOS B. Adding left-turn bays at this location will require the existing traffic signals be relocated in order to accommodate the wider roadway. Overall, the intersection operates at a LOS B and as the changes proposed involve significant geometric changes, it may not be practical to re-construct the intersection in the short term. The preferred improvement strategy is to defer any improvements to the latter part of Stage 1.

4.4.5 Queen Street & Highway 9

The traffic analysis results for the existing stop-controlled intersection of Queen Street & Highway 9 indicated that the EB left, thru, and right turning movements experience LOS D during the PM peak hour time period. Queen Street is stop-controlled in both the EB and WB directions while Highway 9 is free-flowing. Heavy traffic on Highway 9 makes it difficult for traffic on Queen Street to proceed across or onto Highway 9. As described in Section 4.3, traffic signals are warranted at this location and improve the individual LOS for each of the described movements to acceptable levels.

4.5 CORRIDOR ANALYSIS

Corridor analysis using SIMTRAFFIC modeling software was carried out to obtain delay and average travel speed characteristics for study area corridors and correlated these against LOS criteria. The PM peak hour thru volumes as determined by the TMC's and tube counts were used as the basis for all analyses.

Analysis was carried out on the following corridors:

- Grain Millers Drive;
- York Road (Highway 16);
- Smith Street;
- Broadway Street;
- Queen Street (Highway 10); and
- Highway 9.

Not all of the corridors where tube count data was obtained were analysed. Only those corridors identified as having the potential for operational issues, those with high volumes of daily traffic, or those with one or more tube counts and accompanying TMC's were selected.

4.5.1 Analysis Results

- **Grain Millers Drive –** Recent upgrades as part of the first phase of the West Truck Bypass Route have provide for better access to Grain Millers Drive from Highway 16 west of the City. Although current traffic volumes are low, it is expected that this route will see significant increases in traffic with new developments in the area and shifts in traffic patterns off of York Road. This corridor contained only one tube count as shown in Figure 3.4 and no turning movement counts; therefore, a complete analysis was not carried out. Recommended improvements to the Grain Millers Drive corridor are discussed in Section 7.2.

- **York Road (Highway 16) –** The primary concerns with York Road are the presence of heavy truck traffic, high traffic volumes, traffic noise, excessive speed, traffic congestion, and pollution. Traffic counts were carried out at three locations along York Road and tube counts were collected at two locations along the corridor as shown in Figures 3.1, 3.2, 3.3 and 3.4. Based upon the corridor analysis in SYNCHRO, delays along York Road are generally acceptable. The majority of the corridor operates at LOS B or better. Average vehicle speed drops are relatively constant and occur only in the vicinity of Highway 9, however, this intersection is the busiest location on the corridor and lower speeds are expected. Recommended improvements to the York Road corridor are discussed in Section 7.1.
- **Smith Street –** Although Smith Street does serve as the primary access to the downtown core from west of the City, there is little concern under existing traffic conditions with this corridor. Traffic counts were carried out at four locations along Smith Street and one tube count was collected as shown in Figures 3.1, 3.2, 3.3 and 3.4. The analysis suggests that Smith Street does not experience any significant operational issues. Average arterial speeds are observed throughout the corridor with all segments operating at LOS B or better.
- **Broadway Street –** Broadway Street is the busiest corridor within the City of Yorkton. Traffic counts were carried out at thirteen locations along Broadway Street and tube counts were collected at four locations along the corridor as shown in Figures 3.1, 3.2, 3.3, and 3.4. Between First Avenue and Fourth Avenue in the downtown core, the Broadway Street corridor experiences poor LOS. Average vehicle speeds drop through this area and the corridor LOS is based on this speed. Such low LOS may not be truly representative of this corridor as the intersection LOS's are typically much higher in the downtown area when signal timings are optimized along Broadway Street. The concern for this corridor is the poor operation of the existing traffic signals. It is suspected that the computer software operating the coordinated traffic signals from Myrtle Avenue to Fourth Avenue is not functioning properly. Optimizing these signals and providing the appropriate coordination would greatly improve the corridor LOS, however, any detailed coordination recommendations are outside of the scope of this report. See discussion in Section 2.4 of this report. Recommended improvements to the Broadway Street corridor are discussed in Section 7.1.
- **Queen Street (Highway 10) –** Queen Street has seen significant increases in traffic in recent years and is expected to see much more as the result of proposed developments to the south. Traffic counts were carried out at two locations along Queen Street and one tube count was obtained along the corridor. Overall, the Queen Street corridor performs well under existing operational analysis. The only area of concern is near the intersection of Queen Street & Highway 9. Average vehicle speeds in this location drop bringing the LOS down to LOS C, however, this is the busiest intersection along the

Queen Street corridor and lower speeds are to be expected. In addition, improvements to the Queen Street and Highway 9 intersection greatly improve the intersection LOS, but the corridor LOS remains largely unchanged. This may indicate that the corridor performs better than its average arterial speeds suggest. Recommended improvements to the Queen Street corridor are discussed in Section 7.3.

- **Highway 9 –** Highway 9 has seen improvement in recent years, primarily at its intersections with Broadway Street and Hamilton Road. Highway 9 has also seen significant increases in traffic volumes over time. Traffic counts were carried out at five locations along Highway 9. Tube counts were not collected along this corridor. Highway 9 experiences issues with arterial LOS at almost every intersection on the corridor. Near its intersection with York Road, the corridor LOS drops to LOS C. At its intersection with Broadway Street, the corridor is operating at LOS E. Recommended improvements to the Highway 9 corridor are discussed in Section 7.2.

4.6 DANGEROUS GOODS ROUTES

4.6.1 Background

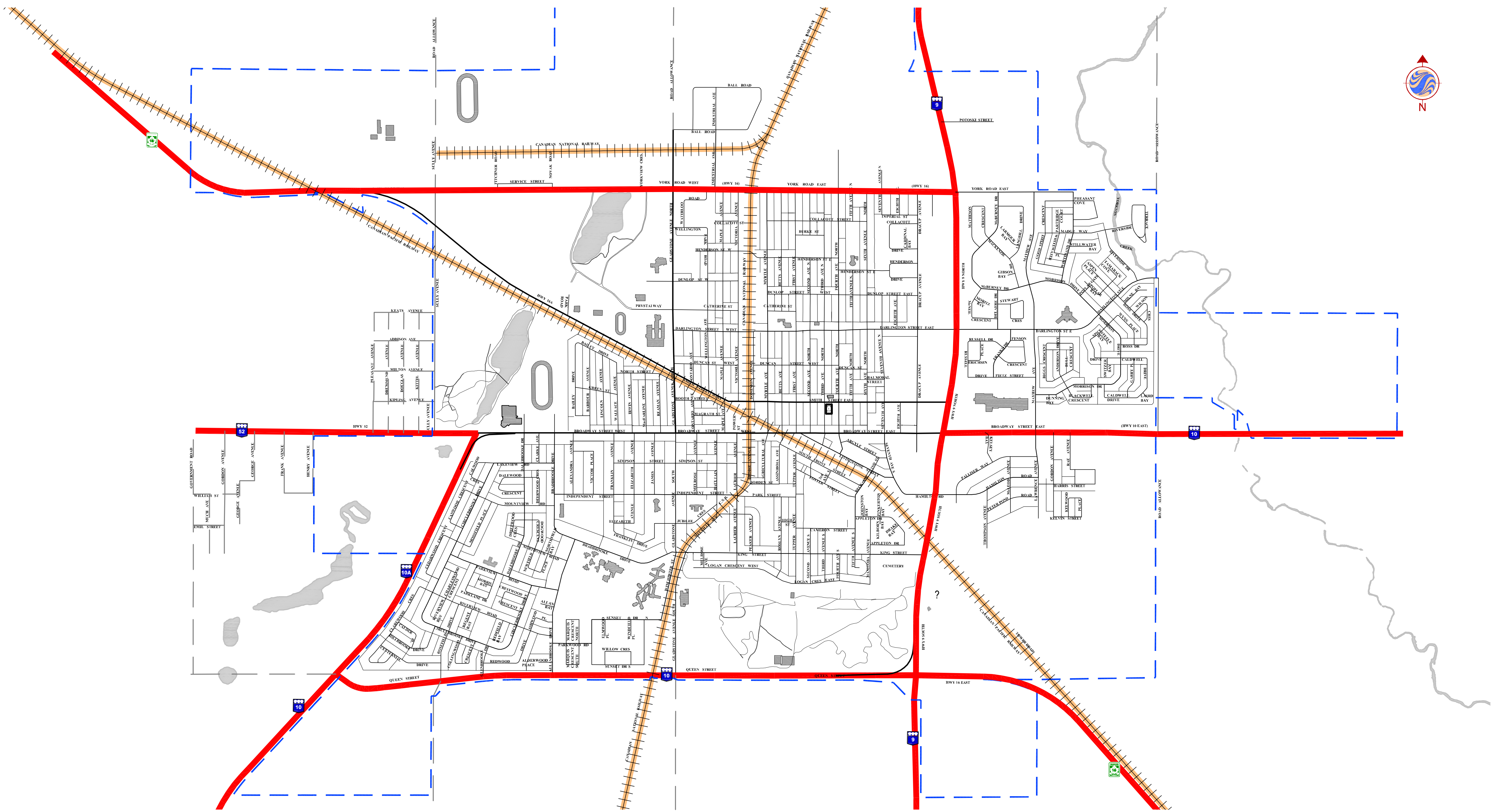
The three provincial highways that pass through Yorkton, as well as the secondary highway that terminates in Yorkton, are currently posted as Dangerous Goods Routes within the City. The existing routes are illustrated in Figure 4.1 and include:

- Highway 9;
- Highway 10;
- Highway 10A;
- Highway 16; and
- Highway 52.

In addition to the dangerous goods routes, there are also hazardous materials routes identified along each of the respective railway lines that pass through and around the City of Yorkton. These routes are also illustrated in Figure 4.1 and include:

- CP Railway Wynyard Subdivision which bisects the City from NW to SE; and
- CN Railway Yorkton Subdivision which bisects the City from north to south.

Dangerous goods are defined as any product, substance or organism that may constitute a hazard to the environment, property, or the general public. These include explosives, flammable liquids, and poisonous substances. Shipment of dangerous goods on the streets of Yorkton is a necessary risk for continued economic prosperity and to support the lifestyle citizens have come to expect. The development and maintenance of a dangerous goods route network and for recommending roadways for inclusion is an exercise in risk management to ensure the network is as safe as possible while providing for the need to transport these goods through and within the community.



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ORIGINAL SHEET - ANSI B

Stantec

City of Yorkton

Legend

DANGEROUS GOODS ROUTE

HAZARDOUS MATERIALS ROUTE

Client/Project

CITY OF YORKTON
TRANSPORTATION MASTER PLAN UPDATE

Figure No.
4.1

Title
DANGEROUS GOODS ROUTES

Dangerous goods routes should not be confused with truck routes. Truck route systems are designed to accommodate all delivery types and are usually much more extensive than a dangerous goods route. The criteria for the selection of roadways to be included in a dangerous goods route are more stringent than for truck routes and may include:

- Minimum population exposure;
- Minimum crash frequency;
- Minimum travel distance;
- Most practical route (combination of trip length and duration); and
- Catastrophe minimization.

In smaller cities without a ring road system, usually only major routes within the urban area are included in a dangerous goods route. Some typical requirements for carriers on dangerous goods routes are as follows:

- Vehicles transporting placardable quantities of dangerous goods are required to travel on the designated dangerous goods routes;
- When it becomes necessary to leave the designated dangerous goods route for the purpose of making a delivery or supplying a service, a carrier must proceed on the dangerous goods route to the truck route that forms the most direct, accessible connection to the destination point and, if necessary, proceed on the truck route to the street that forms the most direct accessible connection to the destination point;
- The carrier must return to the dangerous goods route using the same street or truck route; and
- A carrier may also leave a dangerous goods route to obtain emergency repairs or service at the nearest service station or repair depot located on or near a truck route.

4.6.2 Dangerous Goods Routes Recommendations

As discussed in Section 4.6.1, currently only provincial highway routes are posted as dangerous goods routes within the City of Yorkton. Based on the selection criteria and carrier requirements listed above, the dangerous goods routes currently identified within the City of Yorkton are adequate.

Because Yorkton does not currently have a ring road system it is necessary to maintain transportation of dangerous goods through the City, however, they should be limited to the major routes as is the case in Yorkton. It is recommended to maintain the existing dangerous goods routes within the City in the short term, however, changes in the long term are recommended as other routes become available, i.e. the completion of the West Truck By-Pass and/or upgrading Grain Millers Drive as discussed in Section 4.11.

4.7 COLLISION ANALYSIS

One of the major goals of any traffic study is to improve the safety of traffic operations and minimize un-acceptable impacts to road users. In particular, collisions have a large negative impact on traffic safety, driver confidence, and peoples' well-being. Collisions are a recognized part of daily driving. Some are a result of poor signage, poor road geometry, improper signal timing, or intersection controls. Most collisions, however, are the result of driver error.

The collection and analysis of data on traffic collisions is fundamental to the development of measures that improve overall traffic safety. Collision data is useful in determining why collisions occur, helping to identify collision prone locations, determining which countermeasures should be implemented, and assisting in the evaluation of countermeasure effectiveness.

4.7.1 Collision Data

Collision data for the City of Yorkton was obtained from Saskatchewan Government Insurance (SGI) for a three-year period from 2007 to 2009. The data was obtained from a database that includes information such as time, date, location, and type of collision as well as collision severity. Stantec used a series of queries to determine the location and number of collisions at both intersection and mid-block locations. This information was further divided by collision severity (fatality, injury or property damage only). Stantec did not verify the collision data and only used information provided by SGI. A breakdown of the total collisions in the Yorkton area over the three year period is shown in Table 4.6. Note that collisions with no specified location were excluded from further analysis.

Table 4.6 Yorkton Area Collision Summary (2007-2009)

Collision Type	Total Number of Collisions	Intersection Collisions	Mid-Block Collisions[1]	Highway Collisions
Single Vehicle	241	96	124	21
Two Vehicles	1,110	552	519	39
Three Vehicles	33	13	18	2
More than Three Vehicles	30	30	0	0
Total Collisions	1,414	691	661	62

[1]Mid-block collision assumed if exact address was indicated and no intersection was specified.

Two different types of collision analyses were used to assist in determining potential problem locations within the City of Yorkton. These include collision frequency analysis and collision rate analysis.

The frequency analysis pin-points locations that have a high number of crashes while the collision rate analysis factors traffic volume into the analysis results to identify locations with higher than expected collisions. Problem locations identified using these two methods are further discussed in Sections 4.7.2 and 4.7.3.

4.7.2 Collision Frequency Analysis

Intersections which had five or more collisions over the three-year study period are shown in Table 4.7.

Table 4.7 Intersection Collision Frequency

Intersection Location	No. of Collisions (2007-2009)	Collision Severity	
		Property Damage	Personal Injury
Argyle St. & Fourth Ave.	7	6	1
Broadway St. & Bradbrooke Dr.	9	5	4
Broadway St. & Barbour Ave.	5	4	1
Broadway St. & Gladstone Ave.	49	38	11
Broadway St. & Maple Ave.	6	4	2
Broadway St.& Myrtle Ave.	30	23	7
Broadway St. & Betts Ave.	5	5	0
Broadway St. & First Ave.	13	10	3
Broadway St. & Second Ave.	8	4	4
Broadway St. & Third Ave.	10	9	3
Broadway St. & Fourth Ave.	28	22	6
Broadway St. & Seventh Ave.	8	4	4
Broadway St. & Dracup Ave.	33	28	5
Broadway St. & Hwy. 9	12	11	1
Broadway St. & Mayhew Ave.	10	9	1
Darlington St. & Gladstone Ave.	5	4	1
Darlington St. & Victoria Ave.	5	4	1
Darlington St. & Second Ave.	8	6	1
Darlington St. & Third Ave.	6	3	3
Darlington St. & Fourth Ave.	9	6	3
Hamilton Rd. & Hwy. 9	20	15	5
Independent St. & Gladstone Ave.	6	4	2
King St. & Hwy. 9	5	5	0
Livingstone St. & Beck Ave.	9	9	0
Smith St. & Gladstone Ave.	18	13	5
Smith St. & Myrtle Ave.	11	9	2
Smith St. & Second Ave.	8	5	3
Smith St. & Third Ave.	10	9	1
Smith St. & Fourth Ave.	9	4	5
York St. (Hwy. 16) & Gladstone Ave.	6	5	1

During the period analyzed there was one fatal injury accident recorded within the City of Yorkton which occurred at the intersection of Darlington Street & Second Avenue.

Mid-block locations which had five or more collisions over the three-year study period are shown in Table 4.8.

Table 4.8 Mid-block Collision Frequency

Mid-Block Location	No. of Collisions (2007-2009)	Collision Severity	
		Property Damage	Personal Injury
Broadway St. between First Ave. & Second Ave.	5	5	2
Broadway St. between Second Ave. & Third Ave.	7	6	1
Broadway St. between Fifth Ave. & Sixth Ave.	9	4	5
Broadway St. between Seventh Ave. & Eighth Ave.	6	6	0
Broadway St. between Eighth Ave. & Dracup Ave.	9	8	1
Broadway St. between Hwy. 9 & Mayhew Ave.	9	8	1
Gladstone Ave. between Darlington St. & Smith St.	5	4	1
Third Ave. between Smith St. & Broadway St.	9	9	0
Bradbrooke Dr. between Allanbrooke Dr. & Gladstone Ave.	7	5	2

4.7.3 Collision Rate Analysis

Collision rates are used to compare the magnitude of collisions at a particular location against average rates for similar locations. Rather than comparing the total number of incidents, the volume of traffic is factored in to determine the number of collisions per 1,000,000 vehicles entering an intersection or per 1,000,000 kilometres driven on a roadway segment. Collision rates for intersections and mid-block locations are calculated using the equations listed below.

Intersection Collision Rate Equation

$$\text{Collision Rate} = \frac{(1{,}000{,}000)(A)}{(365)(T)(V)}$$

where A = no. of reported collisions
T = no. of years
V = AADT

(measured in collisions per million vehicles entering an intersection)

Mid-block Collision Rate Equation

$$\text{Collision Rate} = \frac{(1{,}000{,}000)(A)}{(365)(T)(V)(L)}$$

where L = length of road section (km)

(measured in collisions per million vehicle-km)

4.7.3.1 Intersection Collision Rate Analysis

The data provided by SGI was used with the equation listed above to calculate collision rates for all intersections that experienced five or more collisions per year. The resulting rates are shown in Table 4.9.

Table 4.9 Intersection Collision Rates

Intersection Location	No. of Collisions (2007-2009)	Collision Rate per Million Vehicles Entering
*Argyle St. & Fourth Ave.	7	n/a
Broadway St. & Bradbrooke Dr.	9	0.78
*Broadway St. & Barbour Ave.	5	n/a
Broadway St. & Gladstone Ave.	49	2.68
*Broadway St. & Maple Ave.	6	n/a
Broadway St. & Myrtle Ave.	30	1.69
*Broadway St. & Betts Ave.	5	n/a
Broadway St. & First Ave.	13	1.17
Broadway St. & Second Ave.	8	0.81
Broadway St. & Third Ave.	10	0.81
Broadway St. & Fourth Ave.	28	1.86
Broadway St. & Seventh Ave.	8	0.63
Broadway St. & Dracup Ave.	33	1.89
Broadway St. & Hwy. 9	12	0.69
Broadway St. & Mayhew Ave.	10	1.01
Darlington St. & Gladstone Ave.	5	0.86
*Darlington St. & Victoria Ave.	5	n/a
*Darlington St. & Second Ave.	8	n/a
*Darlington St. & Third Ave.	6	n/a
*Darlington St. & Fourth Ave.	9	n/a
Hamilton Rd. & Hwy. 9	20	1.98
*Independent St. & Gladstone Ave.	6	n/a
King St. & Hwy. 9	5	0.47
*Livingstone St. & Beck Ave.	9	n/a
Smith St. & Gladstone Ave.	18	2.83
Smith St. & Myrtle Ave.	11	1.38
Smith St. & Second Ave.	8	1.32
*Smith St. & Third Ave.	10	n/a
Smith St. & Fourth Ave.	9	1.02
York St. (Hwy. 16) & Gladstone Ave.	6	0.94

* Intersection collision rate could not be calculated as no volume entering information was available.

Intersection collision rates vary considerably depending on whether the intersection is in a rural or urban area and on the size of urban area. There was no available intersection collision rate data for cities similar in size to the City of Yorkton, however, a typical collision rate experienced in urban centers at signalized intersections is approximately 1.1 collisions per 1,000,000 vehicles entering an intersection. This typical rate was used to identify intersections within the City of Yorkton for further collision analysis.

4.7.3.2 Mid-Block Collision Rate Analysis

Collision rates were also calculated for mid-block locations that experienced five or more incidents per year. These can indicate problems with congestion, parking, signage, and private approaches but are not as widely used in traffic analysis because the exact locations of collisions are difficult to determine and more assumptions must be made in interpreting the data. The mid-block collision rates, which are measured in collisions per 1,000,000 vehicle kilometres (Mvk) driven on the roadway, are shown in Table 4.10.

Table 4.10 Mid-block Collision Rates

Mid-Block Location	No. of Collisions (2006-2008)	Collision Rate per Mvk
*Broadway St. between First Ave. & Second Ave.	5	0.87
Broadway St. between Second Ave. & Third Ave.	7	0.92
*Broadway St. between Fifth Ave. & Sixth Ave.	9	1.56
*Broadway St. between Seventh Ave. & Eighth Ave.	6	0.98
Broadway St. between Eighth Ave. & Dracup Ave.	9	0.93
Broadway St. between Hwy. 9 & Mayhew Ave.	9	1.38
*Gladstone Ave. between Darlington St. & Smith St.	5	1.94
Third Ave. between Smith St. & Broadway St.	9	n/a
Bradbrooke Dr. between Allanbrooke Dr. & Gladstone Ave.	7	1.03

*AADT based on TMC data at the next closest intersection.

Note that the mid-block collision rates take into account the length of the roadway segment where the incident occurred. For this reason, mid-block rates are not directly comparable to the intersection collision rates calculated in Section 4.7.3.1 above. Also, this method can lead to unrealistic results where short blocks are encountered and a minimum block length of 0.5 km was assumed for analysis purposes.

No data was available for mid-block collision rates in communities similar in size to the City of Yorkton and as such, there are no rates for comparison.

4.7.4 Collision Types

4.7.4.1 Intersection Collisions

Examining the types of collisions that occur at a particular intersection is useful in identifying potential problems that may exist with the intersection's geometry or traffic control. This analysis identifies intersections with unusually high accident trends and serves as a starting point in identifying areas that warrant further study. Table 4.11 describes the types of collisions at those intersections within the study area which experienced five or more accidents during the three-year study period from 2007 to 2009.

Table 4.11 Collision Types by Intersection

Intersection Location	Rear End	Side Swipe Same Direction	Right Angle	Left Turn Opposing Direction	Other*	Total
Argyle St. & Fourth Ave.	2		2	1	2	7
Broadway St. & Bradbrooke Dr.	2		3	3	1	9
Broadway St. & Barbour Ave.	1	1			3	5
Broadway St. & Gladstone Ave.	18	6	9	6	10	49
Broadway St. & Maple Ave.	3			1	2	6
Broadway St. & Myrtle Ave.	11	6	6	2	5	30
Broadway St. & Betts Ave.	1			3	1	5
Broadway St. & First Ave.	6	2		3	2	13
Broadway St. & Second Ave.	3	1			4	8
Broadway St. & Third Ave.	7			1	2	10
Broadway St. & Fourth Ave.	11	2	5	4	6	28
Broadway St. & Seventh Ave.	2	2	2		2	8
Broadway St. & Dracup Ave.	8	5	14	6		33
Broadway St. & Hwy. 9	5		2	1	4	12
Broadway St. & Mayhew Ave.	3		1	5	1	10
Darlington St. & Gladstone Ave.		2	2		1	5
Darlington St. & Victoria Ave.			5			5
Darlington St. & Second Ave.	1	1	2	1	3	8
Darlington St. & Third Ave.	2		1	2	1	6
Darlington St. & Fourth Ave.	2	1	5	1		9
Hamilton Rd. & Hwy. 9	6	1	3	9	1	20
Independent St. & Gladstone Ave.	2		4			6
King St. & Hwy. 9	4	1				5
Livingstone St. & Beck Ave.	1	1	6		1	9
Smith St. & Gladstone Ave.	8	3		4	3	18
Smith St. & Myrtle Ave.	2		7	1	1	11
Smith St. & Second Ave.	2		4	1	1	8
Smith St. & Third Ave.	2		2	1	5	10
Smith St. & Fourth Ave.	2		6	1		9
York Rd. & Gladstone Ave.			3	1	2	6

*"Other" accidents include: striking a fixed/movable object, leaving the roadway, unsafe passing of turning vehicle, etc.

The most prevalent accident type within the study area was rear-end collisions. These are typically attributable to driver error, however, the possibility also exists that there is insufficient yellow time at signalized intersections causing vehicles to stop abruptly thus increasing the risk of rear-end collisions.

Right angle collisions normally occur as a result of drivers disobeying traffic signals or signs. Potential improvements include adjusting yellow times and improving signal visibility.

Left turn opposing direction collisions occur when left turning traffic crosses the oncoming lanes and is either struck by an oncoming vehicle or strikes and oncoming vehicle. This type of collision may often be attributed to potential problems with the configuration of left-turn lanes or the left turn signal timing. There may also be issues with sightlines. Improvements may include adding a protected/permissive left turn stage and/or modifying the intersection geometry to improve sightlines for left-turning vehicles.

Sideswipe collisions are usually attributable to driver inattention, failing to check blind spots, and are typically associated with lane merging. Narrow lanes or poor lane markings often make it difficult for drivers to maintain their lane positioning. A suggested improvement is to provide clearer lane delineation and/or roadway lighting conditions.

4.7.4.2 Problem Intersections

- **Broadway Street & Gladstone Avenue –** This intersection was the site of the most accidents in the City of Yorkton over the three-year study period from 2007 to 2009. The most frequent accident type was rear end collisions, which accounted for nearly 40% of all accidents at this location. Rear end collisions can be attributed to the high volumes of through traffic on Broadway Street. A common issue associated with these types of accidents is often short yellow times in the signal phasing. The next most common accident type was right angle collisions with accounted for nearly 20% of all accidents at this location. Right angle collisions typically occur when one or more vehicles run a red light, often while making a left hand turn. These accident types can also often be associated with poor signal timings. Recommendations for improvement at this location are provided in Section 7.1 of this report.

- **Broadway Street & Dracup Avenue –** This intersection was the site of the most right-angle collisions in the City of Yorkton over the three-year study period from 2007 to 2009. Right-angle collisions accounted for over 40% of all accidents at this location. Dracup Avenue serves as access to many of the businesses immediately west of Highway 9. Lane delineation, signs, and markings would help to improve traffic flow as there is currently no delineation between the two lanes of NB and SB traffic.

- **Broadway Street & Myrtle Avenue/Agricultural Avenue –** There is only one through lane in each direction crossing Broadway Street. This causes delays for all through traffic when a left-turning vehicle must wait for opposing traffic to clear. The skewed geometry of the side street approaches also increases the risk of collisions at this intersection. The presence of a parking lane on Myrtle/Agricultural Avenue allows for the possibility of reconfiguring this intersection with shared thru/left and thru/right lanes by removing the parking lanes for a pre-determined length to allow vehicles the opportunity to by-pass left turning traffic in order to proceed through the intersection. It is recommended that the parking lanes on Myrtle Avenue and Agricultural Avenue be removed for at least 30 m on either side of the intersection to allow for right turning and thru traffic to bypass left turning traffic.

- **Broadway Street & First Avenue –** The south approach of First Avenue serves as an entrance to the York City Plaza shopping center. The shopping center entrance is intended to be one-way, entrance only, though vehicles have been observed exiting the parking lot through this intersection. Right-turning traffic from EB Broadway Street also tends to enter the parking lot at a relatively high speed as there are no measures in place to encourage drivers to reduce speed. This is a safety risk for drivers within the parking lot, especially drivers leaving the employee parking lot to the west of this intersection, and also creates a safety hazard for pedestrians crossing the entrance. Sightlines between Broadway Street EB and the parking access lane are poor when there are vehicles parked near the sidewalk separating Broadway and the parking lot. It is recommended that a bulb out be provided on EB Broadway Street west of the intersection to create an immovable obstruction that vehicles must navigate around to make a proper right hand turn into the parking lot as opposed to the existing free flowing condition. Recommendations for improvement to the Broadway Street corridor are provided in Section 7.1.

- **Broadway Street & Third Avenue –** This is a four-legged intersection with traffic signals on three of the four legs. The south leg of the intersection provides for movement in the SB direction only and is signed as such at Livingstone Street and Third Avenue, however, there is no signage indicating one-way traffic adjacent to the two parking lot exits on the east side of Third Avenue. These two exits currently have signage indicating that a left turn is the only permissible movement, but the signs are located on the right side of the exit creating a potential for confusion amongst drivers. Installing “one-way” signs across from these exits as well as re-aligning the exits with a slight skew to the roadway would reduce the possibility of drivers going the wrong direction on Third Avenue.

- **Broadway Street & Fourth Avenue –** NB traffic on Fourth Avenue has a dedicated left-turn lane with a protected left-turn phase. SB traffic, however, does not have any such provision. NB traffic uses the parking lane as a combined thru/right turning lane. It is recommended that the same be provided for SB traffic in order to help reduce the number of collisions at this location.

- **Broadway Street & Highway 9 –** The primary concern at this intersection are rear end collisions. The intersection is already fully channelized with dedicated turning lanes so it is impractical to recommend any further changes to the intersection geometry, however, adjusting the signal timings may help mitigate some of the accidents at this location.

- **Broadway Street & Mayhew Avenue –** This intersection experienced a number of left turn opposing direction collisions. Mayhew Avenue does not have a protected left turn phase in either direction. SB thru and left turning traffic on Mayhew Avenue must also share the same lane, potentially leading to delays when left turning vehicles must wait for NB traffic to clear. Enough room is provided within the existing median to provide for a dedicated left turning bay in the SB direction which will help mitigate the potential for left turning collisions.

- **Darlington Street & Victoria Avenue –** This intersection is stop controlled on Victoria Avenue and experienced a high number of right-angle collisions. This likely stems from vehicles running the stop signs on Victoria Avenue or misjudging traffic gaps as they attempt to turn onto Darlington Street. It may be possible to configure this intersection with a roundabout. The 2003 study recommended a roundabout be constructed at the intersection of Darlington Street & Dracup Avenue. That recommendation is still valid and it is recommended that construction of a roundabout at Darlington Street & Victoria Avenue be carried out at the same time.

- **Darlington Street & Fourth Avenue –** Fourth Avenue is stop controlled at this intersection. Darlington Street is a four-lane roadway with a landscaped boulevard. This intersection experiences a high number of right-angle collisions. Similar to Darlington Street & Victoria Avenue, this is likely due to drivers disobeying the stop signs on Fourth Avenue. Darlington Street is also very wide, so judging gaps for left-turning and thru traffic is more difficult. Potential changes include traffic calming on Darlington Street to reduce vehicle speeds making it easier for traffic on Fourth Avenue to proceed safely across the intersection. Parking is also currently allowed on both sides of Darlington Street on either side of the intersection. Imposing parking restrictions for a minimum of 10 m on either side of the intersection will help improve sightlines for vehicles crossing or making left hand turns onto Darlington Street.

- **Hamilton Road & Highway 9 –** Hamilton Road serves as access to several major businesses along Highway 9, including Wal-Mart and Staples, however; Hamilton Road is only a two-lane roadway. Both the EB and WB directions share a thru/left lane at the intersection of Highway 9. This is likely a source of delay and likely contributes to the elevated level of left turn opposing direction collisions at this intersection. Recommendations for improvements at this location are provided in Section 7.1.

- **Livingstone Street & Beck Avenue –** This intersection is stop controlled along Livingstone Street. The excess of right-angle collisions at this intersection is again likely attributable to disobeying the stop signs on Livingstone Street. This intersection would likely accommodate a roundabout, but with the excess of truck traffic in this industrial area it may not be the most practical solution. It is recommended that a four-way stop be provided at this location.

- **Smith Street & Gladstone Avenue –** Despite the skewed intersection geometry and the presence of a rail line immediately adjacent to the south approach, this intersection's primary accident type was rear-end collisions. Reviewing signal timings and improving signal visibility are likely the best strategies to reduce the frequency of collisions at this intersection. Interconnection of the traffic signals with the railway signals is also recommended to improve traffic flow when trains are operating in the area. The high speeds approaching the intersection from the west may also be a contributing factor as the posted speed leading up to the intersection is 70 km/hr. On the east side of the intersection, the speed on Smith Street is reduced to 50 km/hr. It may be beneficial to reduce the speed from 70 km/hr to 50 km/hr in advance of the intersection. This will cause drivers to slow sooner and may help reduce the potential for rear-end collisions.

- **Smith Street & Myrtle Avenue –** This intersection is presently configured a four-way stop. Smith Street is a four-lane road with separate left-turn bays. Myrtle Avenue is a two-lane road with a shared left/through/right-turn lane. This means up to eight vehicles may approach the intersection at one time. It is difficult for drivers to determine right-of-way precedence in a situation where more than four vehicles approach a four-way stop intersection at one time. Drivers entering the intersection out-of-turn may be the cause of the elevated level of right-angle collisions at this intersection. Traffic signals would help alleviate the concerns at this location. Recommendations for improvements at this location are provided in Section 7.3 of this report.

- **Smith Street & Fourth Avenue –** This intersection is already signalized and Smith Street is configured with left-turn bays, however, an excess of right-angle collisions have occurred at this location. It may be beneficial to improve the visibility of the signals at this intersection, as the current signals do not have twelve inch lenses.

4.7.4.3 Mid-Block Problem Areas

Midblock collisions occurred much less frequently than intersection collisions and were typically rear-end or sideswipe collisions. These collision types are difficult to prevent and all collisions may not have occurred at exactly the same location. As there were no more than eleven midblock collisions (five of which were rear-end collisions and four were due to unsafe driving) along any one-road segment within the city, it is impractical to recommend changes based on the low numbers of incidents.

4.7.5 Potential Collision Mitigation Measures

While many collisions are due to driver error, a number of factors related to roadway design, congestion, and traffic control can have a significant impact. As part of the collision analysis, intersections with high collision frequencies and rates have been further examined to determine if the number of collisions can be reduced through changes in roadway geometry or traffic control. This included an examination of turning lanes, signage, and access control.

4.7.5.1 Intersection Collision Potential Mitigations

A large number of the collisions that occurred at intersections involve left turn movements, right angle collisions, and/or rear-ends. Potential countermeasures to address these primary collision types include:

Left Turn Collisions

- Improve roadway lighting;
- Improve sightlines by imposing parking restrictions near intersections;
- Ensure yellow phase is adequate to clear intersection;
- Provide separate left turn storage lane; and
- Provide left turn signal phase.

Right Angle Collisions

- Improve roadway lighting;
- Improve sightlines by imposing parking restrictions near intersections;
- Improve signal head visibility by installing twelve inch signal lenses, signal back plates, and/or relocating signal heads;
- Improve signal timing including providing actuation and signal progression; and
- Install intersection advance warning signs.

Rear-End Collisions

- Improve roadway lighting;
- Provide separate turn lanes for left/right turn traffic as applicable
- Provide left turn signal phase;
- Improve pedestrian crossing traffic control devices
- Improve signal head visibility by installing twelve inch signal lenses, signal back plates, and/or relocating signal heads;
- Improve signal timing including providing actuation and signal progression; and
- Install intersection advance warning signs.

4.7.5.2 Mid-Block Collision Potential Mitigations

A majority of the incidents that occurred are within the CBD and involved rear-end collisions likely associated with parking manoeuvres.

Developing effective countermeasures for mid-block collisions can be challenging. The incidents can be the result of turning movements at high volume commercial accesses, speed, and congestion or even related to intersection collisions but not classified as such. Some measures that have been used in other areas to reduce mid-block collisions include:

- Improved roadway lighting;
- Improved pavement markings and lane delineation;
- Turn restrictions at mid-block accesses;
- Speed reductions;
- Streetscaping/landscaping improvements;
- Traffic calming; and
- Parking prohibitions.

All mitigation measures discussed above are recommendations only and are not reflected in the Transportation Improvement Plan in Section 7.

4.8 DOWNTOWN PARKING

There are approximately 1,100 parking stalls throughout the CBD. These include both on street stalls and parking lot stalls. The extents of the CBD include those areas along Smith Street, Broadway Street, Argyle Street, and Livingstone Street from Myrtle Avenue to Seventh Avenue. All parking stalls within the CBD are illustrated in Figure 4.2.

4.8.1 On-Street Parking

There are a total of 480 on-street parking stalls in the CBD. Nine spaces consist of 15-minute metered parking, seven spaces belong to the RCMP, and four spaces are designated as handicap stalls. The remaining on-street parking stalls are free with a two hour parking limit.

A study of the occupied stalls was carried out by Stantec during the morning of February 17, 2011. A comparison of on-street parking availability between current parking volumes collected in 2011 and the 2003 volumes collected as part of the previous master plan are shown in Table 4.12.

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OFF STREET PARKING

- PERMIT
- METERED / PERMIT
- RENTED
- PRIVATE
- FREE

Client/Project

CITY OF YORKTON
TRANSPORTATION MASTER PLAN UPDATE

Figure No.
4.2

Title
DOWNTOWN PARKING

Table 4.12 – On-Street Parking Summary

Location	2011			2003		
	Occupied Stalls	Total Stalls	Percent Occupied	Occupied Stalls	Total Stalls	Percent Occupied
Betts Ave. between Smith St. & Broadway St.	17	39	44%			
First Ave. between Smith St. & Broadway St.	14	37	38%	22	37	59%
Second Ave. between Smith St. & Broadway St.	24	36	67%	32	36	89%
Third Ave. between Smith St. & Broadway St.	21	38	55%	30	38	79%
Fourth Ave. between Smith St. & Broadway St.	14	35	40%			
Fifth Ave. between Smith St. & Broadway St.	25	33	76%			
Sixth Ave. between Smith St. & Broadway St.	8	28	29%			
Broadway St. between Betts Ave. & First Ave.	5	17	29%	6	17	35%
Broadway St. between First Ave. & Second Ave.	7	15	47%	6	15	40%
Broadway St. between Second Ave. & Third Ave.	7	15	47%	6	15	40%
Broadway St. between Third Ave. & Fourth Ave.	12	18	67%	6	18	33%
Broadway St. between Fourth Ave. & Fifth Ave.	5	8	63%			
Broadway St. between Fifth Ave. & Sixth Ave.	5	17	29%			
Livingstone St. between Broadway St. & Fourth Ave.	24	34	71%			
Fourth Ave. between Broadway St. & Livingstone St.	8	8	100%			
Smith St. between Myrtle Ave. & Betts Ave.	3	12	25%			
Smith St. between Betts Ave. & First Ave.	4	18	22%	7	18	39%
Smith St. between First Ave. & Second Ave.	3	15	20%	7	15	47%
Smith St. between Second Ave. & Third Ave.	1	12	8%	6	12	50%
Smith St. between Third Ave. & Fourth Ave.	0	12	0%	2	12	17%
Smith St. between Fourth Ave. & Fifth Ave.	8	18	44%			
Overall Total	**215**	**465**	**46%**	**130**	**233**	**56%**

The 2003 parking survey did not cover as large of an area as the survey completed in 2011. In addition, the 2003 survey combined all parking on Broadway Street between Betts Avenue & Fourth Avenue into a single value so some assumptions were made to split the number of parked vehicles among each block. Overall, the number of occupied parking stalls in CBD is shown to have decreased from 2003 to 2011, especially along the Smith Street corridor. This could largely be attributed to the relocation of the Casino from the corner of Smith Street & Third Avenue to the western limits of the City.

4.8.2 Off-Street Parking

There are a total of 606 off-street parking stalls in the CBD, 447 of which are in private parking lots (twenty five for handicap parking only), 100 are in metered lots, 52 are permit only stalls, and seven are rented parking stalls. An off-street parking evaluation was not included as part of this study.

4.8.3 Parking Recommendations

Based on the data provided in the previous sections, it is concluded that the current allocation for both on-street and off-street parking are adequate for the City of Yorkton's needs throughout the CBD. Parking statistics over the weekend period was not analyzed as part of this report. It may be beneficial to conduct a similar parking review on a Saturday between the hours of 9:00 am and 4:00 pm to gain perspective on the parking situation over a weekend. In most large urban centers, the CBD generally experiences increases in traffic and parking demand over the weekend with the increase of visitors and shoppers.

4.9 TRANSIT SYSTEM REVIEW

4.9.1 Existing Transit System

The existing transit system in the City of Yorkton operates on a dial-a-bus system called the Yorkton Community Dial-a-Bus and offers a convenient and personalized transportation alternative tailored to meet the needs of individual riders.

The current system operates six days a week as follows:

- Monday to Friday – 8:00 am to 7:00 pm
- Saturday – 9:00 am to 4:00 pm

The bus operates on two routes, a north route and a south route.

The bus service has been designed to operate on a fixed route, but on a varying schedule. In order to plan a trip on the bus, residents follow the four steps outlined below:

1. Find your location on the map and the stop number where you would like to be picked up.
2. Find your destination on the map and note the number of the stop.
3. Call the Dispatch Centre at 306-786-1789 and inform the dispatcher from which location you would like to be picked up and which location you would like to be dropped off at.
4. The dispatcher will then notify you when to expect the bus at your stop, noting that the times are approximate and that riders should be at least five minutes early.

Dispatch is not available after 5:00 pm on weekdays and after 4:00 pm on Saturdays, however, rides can be pre-booked or messages left with the bus driver.

Based upon the 2009-ridership numbers there were a total of 46,507 pick-ups or approximately 150 riders per day. This is down from the 200 riders per day reported in the 2003 report.

The rates for the Transit system in 2003 and 2010 are shown in Table 4.13.

Table 4.13 Bus Fare Comparison

	2003	2010
Adults and Seniors		
Cash	$1.50	$2.75
Ticket books (20 per book)	$30.00	$49.00
Monthly pass	-	$55.00
Students (under 16 years of age)		
Cash	$1.00	$1.75
Ticket books (20 per book)	$20.00	$23.00
Monthly pass	-	$30.00

4.9.2 Limitations of the System

The City has indicated that the bus does not tend to follow the pre-determined routes but rather follows a path driven by the origin and destination of the rider(s) on board at any given time. The most consistent scheduled service occurs between the main terminal downtown and the Hospital on the south route and the Parkland Mall on the north route. As these are two of the most utilized stop locations along the entire system, the bus stops at five minutes past the hour and forty minutes past the hour at the Hospital and the Parkland Mall respectively.

Table 4.14 outlines some of the limitations of the existing system and possible mitigation measures.

Table 4.14 Limitations and Possible Mitigation Measures

Limitations	Possible Mitigation Measures
Hours of operation	Extend hours to cover early morning commutes as well as after work/school activities (i.e. 7:00 am to 9:00 pm on weekdays)
No service on Sundays	Offer service on Sundays (same time as on Saturdays)
Number of buses	Increase the size of the fleet (i.e. one bus per route at minimum)
Style of bus	Use a newer, standard transit style bus
Cost to riders	Subsidize seniors and persons with disabilities
Response time	Decrease response times by improving route efficiency
Low ridership	Increase awareness and educate the public
Operational costs	Sell advertising on the sides of buses, bus bays, and on benches to help offset operational costs
Route limitations	Extend the route to cover those areas not already serviced (i.e. north industrial area)
System capacity during peak hour time periods	Offer express buses with limited stops (i.e. between Hospital, transit terminal, and Parkland mall)

4.9.3 Recommended Improvements

Ridership is quite low over the entire city and evidence has shown that it has dropped significantly over a six-year span from 2003 to 2009. One of the reasons for the drop in numbers could be directly attributed to the cost to riders which, over the same time span, has seen an 83% increase in individual fares. Current fares are comparable to larger centres like Saskatoon and Regina which have far more extensive transit systems servicing a much larger population. People may not be willing to pay similar prices for a smaller system.

One recommendation would be to reduce fares, or at minimum, put a fare freeze in place where fares will not go up from year to year in the foreseeable future. Implementing advertising sales on city buses, transit booths, and benches could offset fare and operational costs.

A second recommendation would be to encourage awareness and educate the public on the benefits of using the transit system. An advertising campaign could be set up to help motivate people to look to public transit as an alternate means of travel.

4.10 RAILWAYS REVIEW

The City of Yorkton has two primary railway lines operating in and around the City, both of which pass through the downtown core. The Canadian National Railway (CN) Yorkton Subdivision bisects the City from North to South while the Canadian Pacific Railway (CP) Wynyard Subdivision bisects the City from NW to SE. CN also operates a small spur line north of York Road that services the grain terminals west of the city limits. Current train volumes were obtained from both CN and CP and indicate that two and six trains per day pass through the city on the CN and CP lines respectively.

The railways played a vital role in the settlement of the Prairies in the early 1900's and as such, the railways were typically the focal point of all major centers and were centrally located as they provided the primary means for the movement of goods and services as well as people. With the development of the automobile came an increased demand for roadways and highways and a major shift developed where it became far more common to transport goods and services as well as people through the expanding network of roads and highways. As a result, the centrally located railways became more of a nuisance to motorists as they tend to cause lengthy delays in traffic when trains are operating.

One of the biggest concerns today with the railways passing through the center of the city is emergency vehicle access. The CP Railway essentially bisects the City of Yorkton separating the north and south halves of the city when trains are present. This has been cause for concern for a number of years in that passing trains block access from one side of the city to the other. A particular concern is that of getting emergency vehicles across the tracks when a train is present. Both the police and fire stations reside on the north side of the tracks while the hospital resides on the south side.

As in the case in nearly every major center across North America, the topic of railway relocation has been reviewed extensively in the past for the City of Yorkton. The most recent report, "The City of Yorkton Rail Relocation and Evaluation" was completed in 1985. The 1985 report evaluated three options which included doing nothing, a grade separation downtown, and relocation of the railway lines outside of City limits. At the time of the 2003 study, rail relocation was not recommended as few trains were present in a given day and the cost of relocation would have been extremely high.

As recommended in 2003, relocation of the railways is still not a practical option. Train volumes continue to be relatively low and the benefit to cost ratio of such a large-scale relocation would not be favourable. In both the short and intermediate term, the 'do nothing' approach is still recommended. A grade separation of the CP rail line downtown may still be feasible in the long term and is further discussed in Section 7.3. A grade separation of the CN rail line at York Road is not recommended and is discussed in Section 7.1.

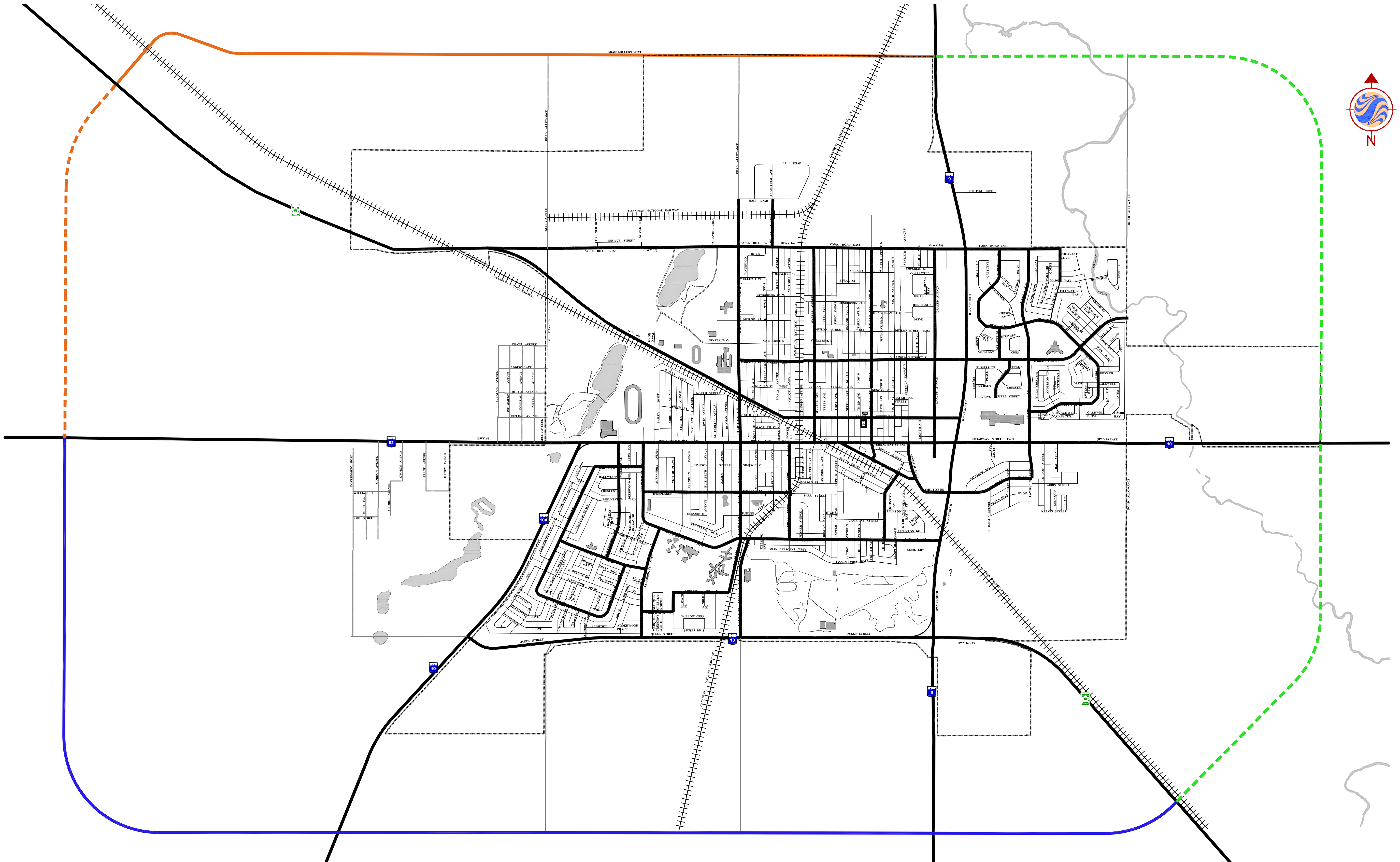
4.11 TRUCK BY-PASS ROUTES

4.11.1 West Truck Bypass

The 2003 report presents several options regarding the routing of the West Truck Bypass Route. The recommended route at that time was constructing a by-pass road proceeding to the NW from the intersection of Queen Street and Highway 10. The road would then continue to the north west of the Range Road 2045 road allowance for approximately one and a half miles, cross Highway 52, and eventually turn north to intersect Highway 16. This would allow heavy truck traffic to bypass the City via Queen Street and would alleviate many of the concerns on York Road regarding traffic noise and safety issues, however, truck traffic would then be relocated to the Queen Street corridor and only relocating the problems. This area of the city is expected to see substantial residential development as the city continues to grow. It is likely that the future residents of this area would have similar concerns with heavy truck traffic being relocated through their neighbourhood as those residents along York Road currently do.

A segment of the West Truck Bypass between Highway 16 and Highway 52 has recently been completed. The current alignment is 800 m west of the Range Road 2045 road allowance for most of its length with the exception of a segment at the north end where the road curves to intersect Highway 16 at a right angle.

Instead of connecting this road to the intersection of Highway 10 and Queen Street as recommended in the 2003 study, it is recommended that the route be constructed one mile south of Queen Street and intersect Highway 10 at the intersection of Highway 10 and Township Road 254. The route would then continue east along Township Road 254, cross Highway 9 and terminate at Highway 16 just east of the city limits. Township Road 254 is presently a gravel road between Highways 9 and 10. The road is not built up between Highway 9 and Highway 16. This new route represents additional costs in constructing and upgrading roadways but allows truck traffic to bypass all existing and planned residential development areas. The proposed West Truck Bypass route is shown in Figure 4.3 and discussed in Section 7.3.



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City of Yorkton

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(solid blue line)	**PROPOSED WEST BY-PASS**
(dashed green line)	**PROPOSED EAST BY-PASS**
(dashed orange line)	**WEST BY-PASS (UNDER CONSTRUCTION)**
(solid orange line)	**GRAIN MILLERS DRIVE**

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TRANSPORTATION MASTER PLAN UPDATE

Figure No.
4.3

Title
TRUCK BY-PASS ROUTES

4.11.2 Grain Millers Drive

Grain Millers Drive (Township Road 262) is a gravelled roadway that runs in an east-west direction one mile north of York Road. This road provides access to many of the industrial sites north of the existing city limits. New industrial development in this area is going to create an increase in truck traffic, and upgrading this road between Highways 9 and 16 will enable heavy truck access to these new sites. This road will also serve as a northern bypass connection between the two major highways. Using Grain Millers Drive as the primary bypass route would be a less costly option compared to developing the West Truck Bypass route, as the Grain Millers Drive route is much shorter. The drawback to this route is that heavy truck traffic from Highway 16 must still travel through the city on Highway 9, which is still a relatively busy corridor. It is recommended that Grain Millers Drive be up-graded in the short term to serve as the City's primary by-pass route until the West Truck Bypass is completed.

Over time, it is expected that both the West Truck Bypass and Grain Millers Road will be developed as heavy truck routes. Having both of these roads available for truck traffic will reduce delays on the inner-city roads, most notably York Road, Highway 9, and Highway 10. It is recommended that both the West Truck Bypass Route and Grain Millers Drive become part of the Dangerous Good Route through the City of Yorkton once they are constructed. Recommendations for improvement to the Grain Millers Drive corridor are discussed in Section 7.2.

4.11.3 East Truck Bypass

Provided the West Truck Bypass is extended to the south and east to Highway 16 and Grain Millers Drive is developed between Highway 9 and Highway 16, it may be beneficial to connect the terminus of Grain Millers Drive at Highway 16 north of the city to the terminus of the West Truck By-Pass at Highway 16 and Township Road 254 south of the city. This would allow truck traffic entering the city from any one direction to proceed along one of the routes to bypass the City altogether. Developing this route along with the West Truck Bypass and Grain Millers Drive would form a perimeter highway around the city, however, current traffic volumes do not support the development of this roadway and this route is not likely to be warranted until well beyond the 2040 timeframe if at all. A potential alignment for the East Truck By-Pass route is also shown in Figure 4.3.

4.12 PEDESTRIAN AND CYCLIST FACILITIES

Cycling is becoming increasingly popular as an alternate mode of transportation. Many large centers throughout North America have seen a shift in attitudes towards pedestrian and cyclist friendly facilities in recent years and have begun to implement extensive pathway and bikeway systems as part of their overall transportation networks. Yorkton is no different.

In 2006, a community committee called "Yorkton in Motion" sponsored a series of workshops focused on active transportation with support from "Saskatchewan in Motion". Key partners that make up the collaborative include the Sunrise Health Region, Yorkton in Motion, Yorkton Business Improvement District, the City of Yorkton, SGI, Royal Canadian Mounted Police

(RCMP), Society for the Involvement of Good Neighbours (SIGN), and other non-profit organizations and community champions.

At the time the last Transportation Master Plan was completed, Yorkton did not have a well-defined bicycle and pathway system. Since that time, the Yorkton Active Transportation Collaborative has been working hard to promote awareness and encourage cycling throughout the city by implementing a plan to create an extensive, active transportation system.

4.12.1 Proposed Pathway Network

Associated Engineering developed a Network Plan for the City of Yorkton in 2008. The plan included recommendations for immediate (2009) improvements as well as recommendations for short term (2010 – 2011) and long-term (beyond 2011) improvements. One recommendation for immediate improvement from that plan was the addition of on-street bike paths on Darlington Street and Gladstone Avenue. On-street bike paths were implemented on both of these roadways in 2010 and are currently in use. It is expected that the on-street bike paths proposed for Hamilton Road and Seventh Avenue will be implemented by 2012. The recommended pathway network is illustrated in Figure 4.4.

The proposed plan provides for both commuter and recreation routes throughout the city linking many of its major venues including the CBD, the Parkland Mall, the Hospital, the Painted Hand Casino, Gallagher Centre, Jaycee Beech, the city campground, and several of the city's parks to name a few. Overall, the plan is quite comprehensive and few changes or recommendations are proposed.

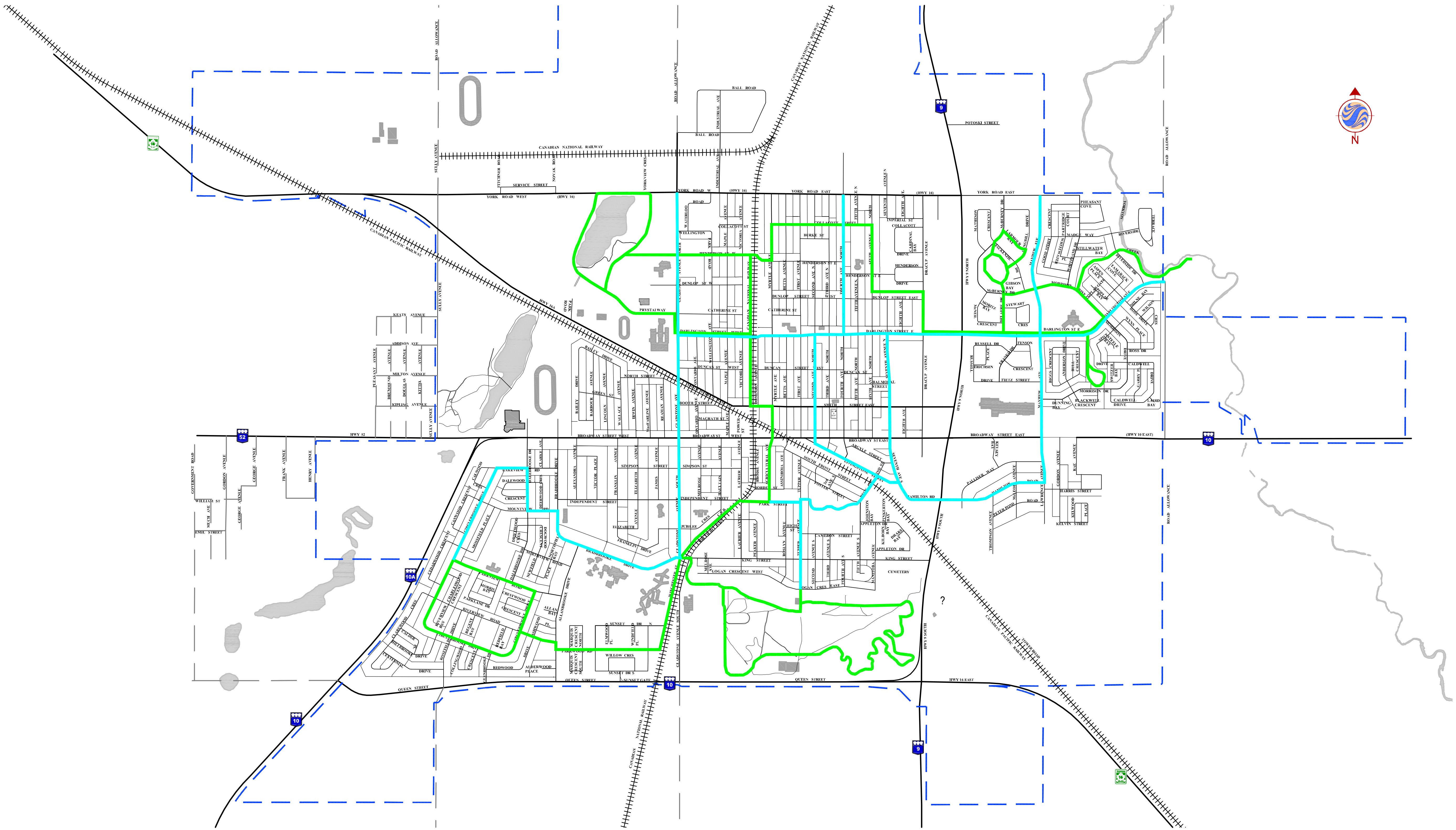
It is recommended that the already proposed Network Plan for the City of Yorkton be implemented on an as needed basis. Bicycle lanes and pathways should be expanded from those already proposed into new areas of the City as they develop.

4.12.2 Recommended Improvements

It is recommended that all proposed commuter routes be 1.5m wide separate bicycle lanes provided on the outside of those roadways for which they are proposed separated by a painted line. It is recommended that all proposed recreational routes be 3.0m wide multi-use pathways for both pedestrian and cyclists.

The proposed commuter routes, in addition to those already defined, to service both new and existing areas of the City include:

- An extension of the Gladstone Avenue route north of York Road;
- A new route between the CN Railway and Melville Avenue from Independent Avenue to King Street;
- A new route along Gladstone Avenue from King Street to south of Queen Street;
- An extension of the Mayhew Avenue route north of York Road;
- An extension of the Lawrence Avenue route south of Highway 10; and



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City of Yorkton

Legend

PROPOSEDCOMMUTER ROUTE (~17.5km)

PROPOSED RECREATIONAL ROUTE (~21km)

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CITY OF YORKTON
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Figure No.
4.4

Title
PROPOSED PATHWAY NETWORK

- An extension of the Darlington Street route east of Range Road 2040.

The proposed recreational routes, in addition to those routes already defined, to service both new and existing areas of the City include:

- Extending the route along Yorkton Creek both north and south;
- A new route along Weinmaster Street from Yorkton Creek to Mayhew Avenue;
- A new route along the east side of Mayhew Avenue from the Parkland Mall to Darlington Street;
- A new route along Rosefield Drive from Circlebrooke Drive across Queen Street;
- A new route extending from Smith Street, across the CP Railway at Maple Avenue, and along the south side of the CP Railway to the park north of the Exhibition Grounds;
- A new route around the ponds at the Exhibition Grounds; and
- A new route from the exhibition grounds crossing Sully Avenue and continuing along Milton Avenue.

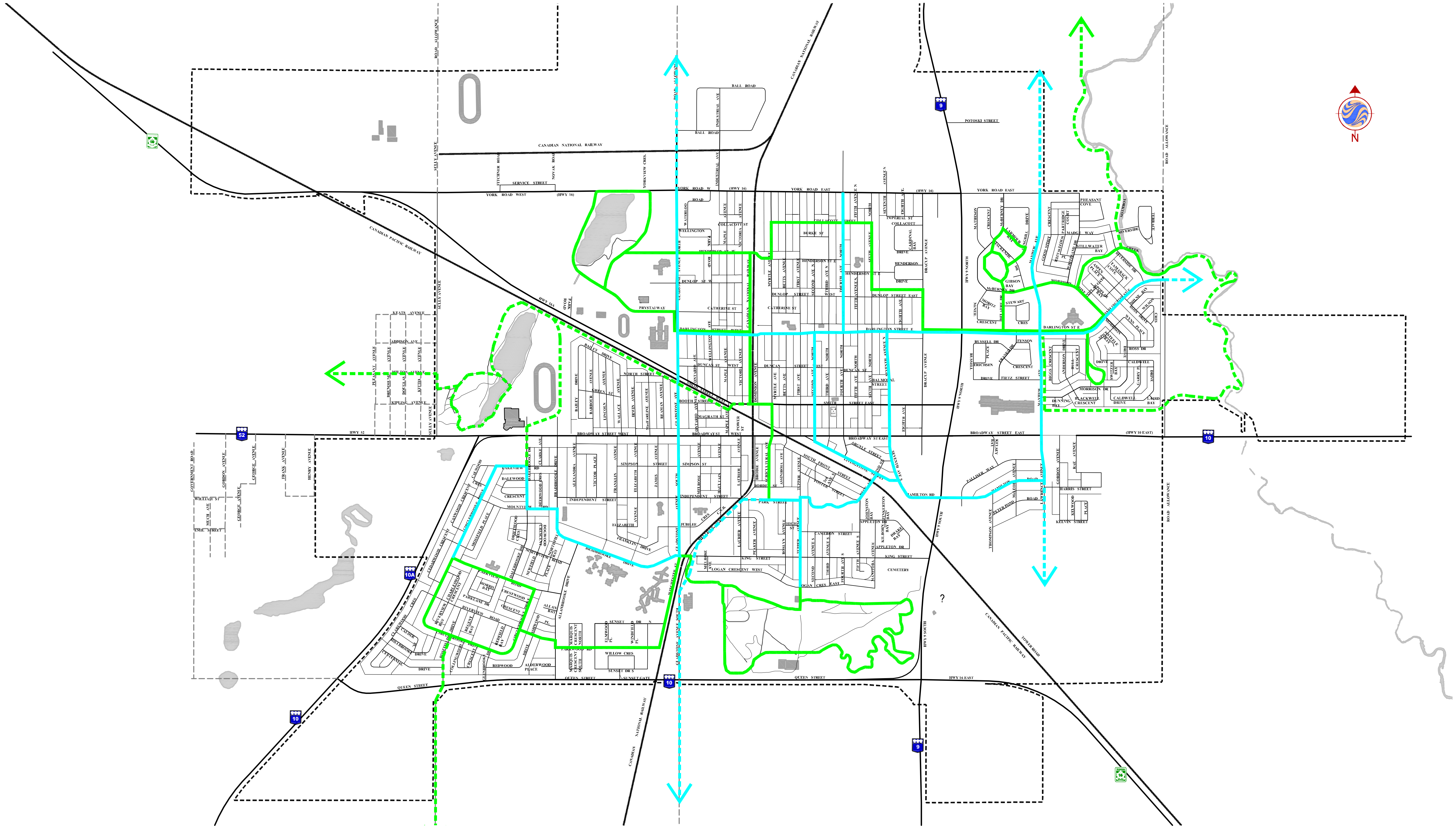
It is also recommended to remove one of the routes already defined. As a new commuter route is proposed between the CN Railway and Melville Avenue between Independent Street and King Street, the proposed recreational route on the west side of the CN Railway between Independent Street and Melville Avenue is redundant. The reason for the change is such that the commuter route may follow the proposed Melville Avenue upgrade discussed in Section 7.2 of this report.

When constructing on street bicycle pathways, it is important to maintain consistency in the lane widths, markings, and intersection treatments. Understanding that road widths often vary from one block to the next, it may be necessary in cases to increase or decrease the overall roadway width in order to ensure consistency throughout the roadway cross section. When on street bicycle lanes are offset, particularly at intersections, it is often confusing for cyclists to adjust. This should be kept in mind when designing and implementing all on-street pathways.

In total, it is recommended that an additional 5 km of commuter route and 12 km of recreational route be added to the already proposed 17.5 km of commuter route and 21 km of recreational route in order to service future development areas. Assuming an average cost of $0.60 per lineal meter for commuter routes and $200 per lineal meter for recreational routes, the cost of implementing the additional routes is approximately $2.4 million or $800,000 per Stage assuming an even distribution across all Stages in addition to that estimated for implementing the proposed route which has already been defined. Figure 4.5 shows the recommended improvements to the proposed pathway network plan.

4.13 TRAFFIC NOISE ATTENUATION STRATEGY

Recommendations were made as part of the 2003 study for the construction of traffic noise attenuation devices along the south side of the York Road corridor in order to reduce traffic noise for adjacent residents. Several large centers throughout North America have traffic noise attenuation strategies or bylaws in place to determine where such devices are warranted. Currently, the City of Yorkton has no such strategy. Part of the scope of this study is to identify



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City of Yorkton

Legend

PROPOSED COMMUTER ROUTE (~17.5km)
PROPOSED RECREATIONAL ROUTE (~21km)
RECOMMENDED COMMUTER ROUTE (~5km)
RECOMMENDED RECREATIONAL ROUTE (~12km)

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TRANSPORTATION MASTER PLAN UPDATE

Figure No.
4.5

Title
RECOMMENDED PATHWAY IMPROVEMENTS

standards for noise appropriate to the community and to establish thresholds at which certain upgrades will be triggered.

4.13.1 Background Information

Traffic noise, as with other forms of noise, is measured in decibels. Table 4.15 shows some of the typical noise levels observed in daily life.

Table 4.15 Typical Noise Levels

Source	Decibel Level (dBa)	Source	Decibel Level (dBa)
Threshold of Hearing	0	Business Office	65
Soft Whisper at 5 m	20 - 35	Large Truck at 15 m	65 - 70
Library	35	Highway Traffic at 30 m	75
Living Room	40	Aircraft at 300 m Altitude	90
Light Traffic at 30 m	50	Thunder	120
Normal Speech at 1 m	60	Threshold of Pain	140

Typically, a change in decibel level of 3 dBa is just noticeable to the human ear, a 5 – 6 dBa change is clearly noticeable, while a 10 dBa change is effectively twice, or half, as loud.

4.13.2 How Noise Attenuation Works

Noise attenuation devices are typically in the form of a noise wall but can also be constructed as an earthen berm or a combination of the two. Wooden fences, trees, shrubs, etc. are not effective means of reducing traffic noise.

In order to be effective, a noise attenuation device must, at minimum, block the line of site from the noise source (traffic) to the receiver (residence). Traffic noise generally consists of two sources; wheel noise created by the interaction of the tires with the roadway surface and the vehicles exhaust system. When the line of sight is blocked, a noise reduction of 5 dBa is typically achieved. Extending past the height required to block the line of sight will further reduce noise levels. As a general rule of thumb, each additional 0.3 m (1 ft.) above the height that breaks the line of sight between the source and the receiver reduces the noise level by 0.5 dBa.

Traffic noise levels are typically measured and analyzed in one of two ways; using a weighted equivalent, continuous sound level over a predetermined period (Leq) or a weighted day-night level (Ldn).

Leq – is defined as the level of a hypothetical source at a constant level which would give the same total sound energy. Essentially it is the average noise level over a predetermined amount of time. It is common to use a sampling period of one hour, an evening (9 hours), or one day (24 hours) for the purpose of analyzing traffic noise.

Ldn – is defined as the day-night level and is similar to the Leq only it is derived by averaging sound energy over the daytime Leq period with the sound energy over the nighttime Leq period to which a 10 dBa penalty is applied to account for greater sensitivity of people to noise during hours when they are normally asleep. The Ldn is a more commonly used method for the purpose of analyzing traffic noise.

In most centers, it is typically acceptable for residences to experience traffic noise levels in the 60 to 65 dBa range. Above this level most centers will warrant noise attenuation. As an example, the target noise level for the City of Saskatoon is 65 dBa, Ldn. The City of Calgary uses two criteria depending on the characteristics of the roadway; 60 dBa, Leq(24) if the roadway is a non-truck route and 65 dBa, Leq(peak hour) if the roadway is a truck route.

Most centers dictate areas that are and areas that are not eligible for sound attenuation. For instance, apartment buildings, second level balconies, commercial land uses, industrial land uses, and park spaces are generally not eligible. Most large centers also only protect back yards, i.e. backing onto a given roadway, while front and side yards are typically not eligible for noise attenuation.

It is also good practice to allow residents the opportunity to vote whether or not they want noise attenuation where it may be warranted. The City of Calgary's policy states that, if noise attenuation is warranted for a given eligible area, attenuation will only be provided if two thirds (67%) of those residents directly impacted by the device are in favour of it. Not allowing those affected residents the opportunity to provide their input is not good practice as the noise attenuation devices are commonly constructed on the property line and often replace their existing fence. Many residents feel closed in or Closter phobic with construction of a solid, often higher than the average fence, attenuation devise.

4.13.3 Recommended Strategy

It is recommended that the City of Yorkton implement a traffic noise attenuation strategy with the following parameters:

- Target noise level of 60 dBa, Ldn;
- Only back yards and side yards be eligible;
- Commercial, industrial, and recreational spaces not be eligible;
- Residential apartments and second level balconies not be eligible;

- Railways and rail yards not be included; and
- Two thirds (67%) of those residents directly affected by the attenuation device are in favour.

In order to determine which areas are eligible, a traffic noise analysis study needs to be prepared by a qualified acoustical engineering consultant. A consultant will generally take sample readings at various locations along the study area and calculate the noise levels through the use of computer based software. Information required for modelling will include a survey of the area and current traffic volumes as the model accounts for various parameters including topography, location of the residence to the roadway, traffic speed, number of traffic lanes, other solid obstructions between the source and the receiver, etc.

Existing areas to consider for a traffic noise study are as follows:

- South side of York Road from Gladstone Avenue to Dracup Avenue;
- East side of Highway 9 from York Road to Smith Street;
- East side of Highway 10A from Broadway Street to Queen Street; and
- North side of Queen Street from Highway 10A to Gladstone Avenue.

As the City continues to grow, it may become necessary to include additional areas to be studied. A final recommendation would be to have traffic noise analysis completed by the Developer for all new developments and include provision for the construction of such devices as part of their development costs.

Sound walls are the most common form of noise attenuation devices in urban areas as they take up far less space than earthen berms and are easy to retro-fit into existing locations. Sound walls are typically 1.8 m (6 ft.) in height and generally increase in 0.3 m (1 ft.) increments as warranted. On average, a typical sound wall will cost approximately $1,000 per square meter of wall area.

5.0 Land Use & Population Projections

5.1 LAND USE

Yorkton has experienced a significant change in land development since the 2003 land use analysis for the Transportation Master Plan. Recent land developments within the City are summarized below:

5.1.1 Recent Land Development

- **West Broadway Corridor –** There has been relatively little commercial development along Highway 52 west of Yorkton. The commercial development that was expected to occur has not, the exception being the Casino at the intersection of Broadway Street & Dalebrooke Drive. There is, however, the possibility of a hotel being developed which would be linked to the Casino in the near future. The area has, for the most part, remained in a mixed development setting with mostly older style homes and existing commercial development.

- **Highway 10 –** There has been some commercial development along Highway 10 in a strip development format. This development includes two car dealerships, a single story retail building, and a single story professional office building.

- **Yellowhead Subdivision –** The commercial lots within this subdivision immediately south of Broadway Street and east of Highway 9 are almost fully occupied. Recent development includes a Wal-Mart, gas station/car wash, four commercial/retail stores, a small restaurant, two professional office buildings, an RCMP detachment, two tire service shops, and a 90-room Best Western hotel.

5.1.2 Future Development Areas

- **York Road adjacent to the CP Railway –** This area is expected to see commercial development within the 2014 to 2019 timeframe.

- **York County –** This area is expected to see commercial node developed in the 2020 to 2025 timeframe. The residential area to the east is also expected to see development in the 2014 to 2025 timeframe.

- **Riste Development –** This residential development, directly east of Riverside Terrace, has not occurred. At present, it is unknown as to when this land will be developed.

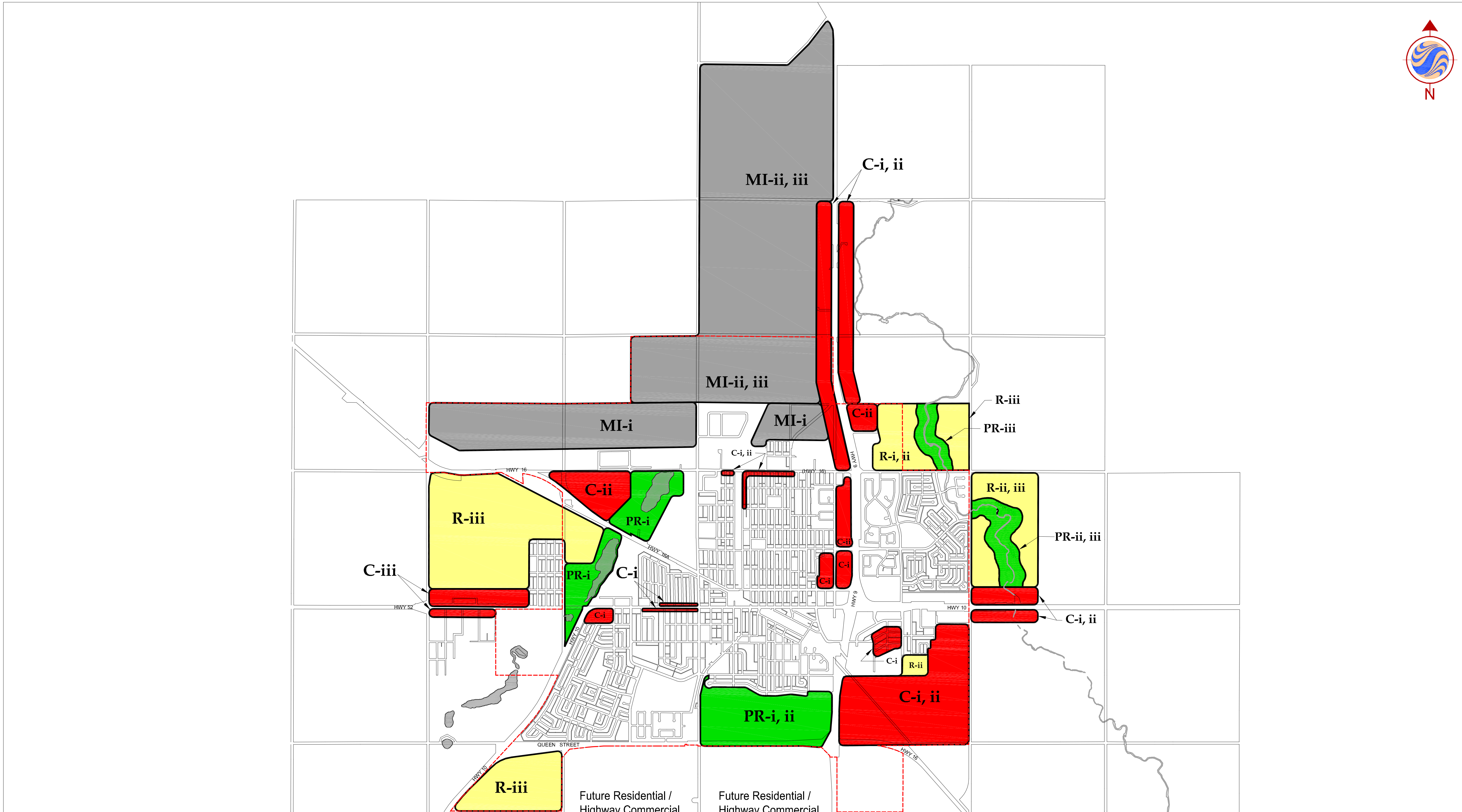
- **Parkland Mall Development –** This new proposed commercial development is a multi-staged project including two hotels with a total of 225 rooms (total area of buildings is approximately 24,000 ft^2), a restaurant (5,330 ft^2), commercial retail units (41,000 ft^2), and a bank (4908 ft^2). Access to the site will be from Highway 9 via a right-in/right-out access and from Broadway Street where the existing mall entrance is proposed to be a signalized intersection connecting the mall to Kelsey Bay south of Broadway Street. The intersection improvements are projected to occur within the 2011 to 2012 time frame dependent upon the developer's decision to proceed. It is assumed that development will drive potential improvements to the intersection of Broadway Street & the mall access and as such they are not discussed in Section 7.

- **City Commercial Development –** The area to the south of the Yellowhead Subdivision shown as Parks and Recreation will be developed as commercial land by the City. The area is located to the east of Highway 9, north of Highway 16 and south of the CP Railway. This development is projected to come on stream in the 2011 to 2012 time period.

- **South of Queen Street –** The quarter sections to the south of Queen Street will be developed as residential at some point in the future. The City currently has an option to purchase these lands. Given the amount of space available for residential development within the City, these lands are not expected to develop until 2025 or beyond.

- **West of Highway 9 –** The land west of Highway 9 between Smith Street and York Road will have mixed development. The parcel between Smith Street and Darlington Avenue will have a four acre automotive dealership, a six acre storm water retention pond, and an approximately ten acre commercial complex. The land north of Darlington Avenue and south of York Road will consist of a new campus for the Parkland College and a six-acre storm water retention pond. The land to the west of Dracup Avenue and Seventh Avenue will consist of a six-acre storm water retention pond and a future commercial development.

The current future phasing for the City of Yorkton is illustrated in Figure 5.1.



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ORIGINAL SHEET - ANSI B

Stantec

City of Yorkton

LEGEND

TYPE

RESIDENTIAL (R)
COMMERCIAL (C)
INDUSTRIAL (MI)
PARKS AND RECREATION (PR)
CITY BOUNDARIES

STAGE

i - 2010 - 2014
ii - 2015 - 2019
iii - 2020 - 2024

Client/Project

CITY OF YORKTON
TRANSPORTATION MASTER PLAN UPDATE

Figure No.
5.1

Title
FUTURE PHASING

5.2 POPULATION PROJECTIONS

The 2008 population of Yorkton was estimated at 17,603 while the 2000 population was estimated at 16,747. The average growth over rate over that ten-year span is therefore 0.51% per year, however, over the past four years, the growth rate has been calculated as approximately 1.2% per year. Growth rates vary over time and can be highly dependent on planned future developments. The analysis of growth trends and traffic generation from those trends will be completed for each of the three stages up to a population of 35,000.

The *City of Yorkton Future Growth Needs Analysis* report completed in 2009 by Crosby, Hanna & Associates provided a growth rate of 1.97%. The population projection also includes an additional 274 persons per year up to the year 2013. This addition to the 1.97% growth rate for the respective years is to anticipate the expected accelerated growth between 2009 and 2013. Using this projection, a target population of 35,000 will be reached in the year 2040. The stages developed to illustrate the various population milestones are as follows:

- Stage 1 – 2011 to 2020
- Stage 2 – 2021 to 2030
- Stage 3 – 2031 to 2040

Table 5.1 identifies the year that the target population will likely be reached for each anticipated stage of development, based on a 1.97% growth rate.

Table 5.1 Projected Populations

Stage	Year	Projected Population
1	2011	19,500
	2012	20,158
	2013	20,829
	2014	21,239
	2015	21,657
	2016	22,083
	2017	22,518
	2018	22,961
	2019	23,413
	2020	23,874
2	2021	24,344
	2022	24,823
	2023	25,312
	2024	25,810
	2025	26,318
	2026	26,836
	2027	27,364
	2028	27,903
	2029	28,452
	2030	29,012
3	2031	29,583
	2032	30,165
	2033	30,759
	2034	31,364
	2035	31,981
	2036	32,611
	2037	33,253
	2038	33,908
	2039	34,575
	2040	35,256

Stage 1 was assumed to start in 2008 to match the Crosby report from 2009, however, is only illustrated from 2011 onwards to reflect the date of this report. Additionally, the population of Yorkton in January 2011 was estimated to be 19,800, this represents an additional 300 people or 1.5% beyond the current 201 projection, however, to ensure consistency between this report and the 2009 growth report, the 2008 population was used as a baseline for the city growth model. If population growth continues to outpace the assumed growth rate, it may become necessary to implement the recommendations from each stage on an accelerated timeline.

5.3 CITY GROWTH PROJECTIONS

Based on the future development map provided by the City of Yorkton and the new land requirements taken from the 2009 growth report, new development areas were assigned to each of the three city growth stages previously identified. Areas closest to the downtown core were assumed to develop first and the largest zones were assumed to gradually develop over all three stages. Using the approximate area of each new zone in conjunction with the average zone densities, the percentage of development in each new zone could be estimated for each stage. Once all available area identified by the City has been consumed, it was assumed that areas adjacent to the city were annexed for further development.

Based upon the projections, residential zoning required substantial additional space beyond that identified by the City of Yorkton. A small amount of additional commercial land was also needed to meet the space requirements. Conversely, not all of the identified industrial space was required for development. The large industrial zone north of city limits will not be required based on the average industrial employment density in the City. A revised version of the future development map, including the assumed annexation areas, is shown in Figure 5.2. The total space requirements for each development stage are shown in Table 5.2.

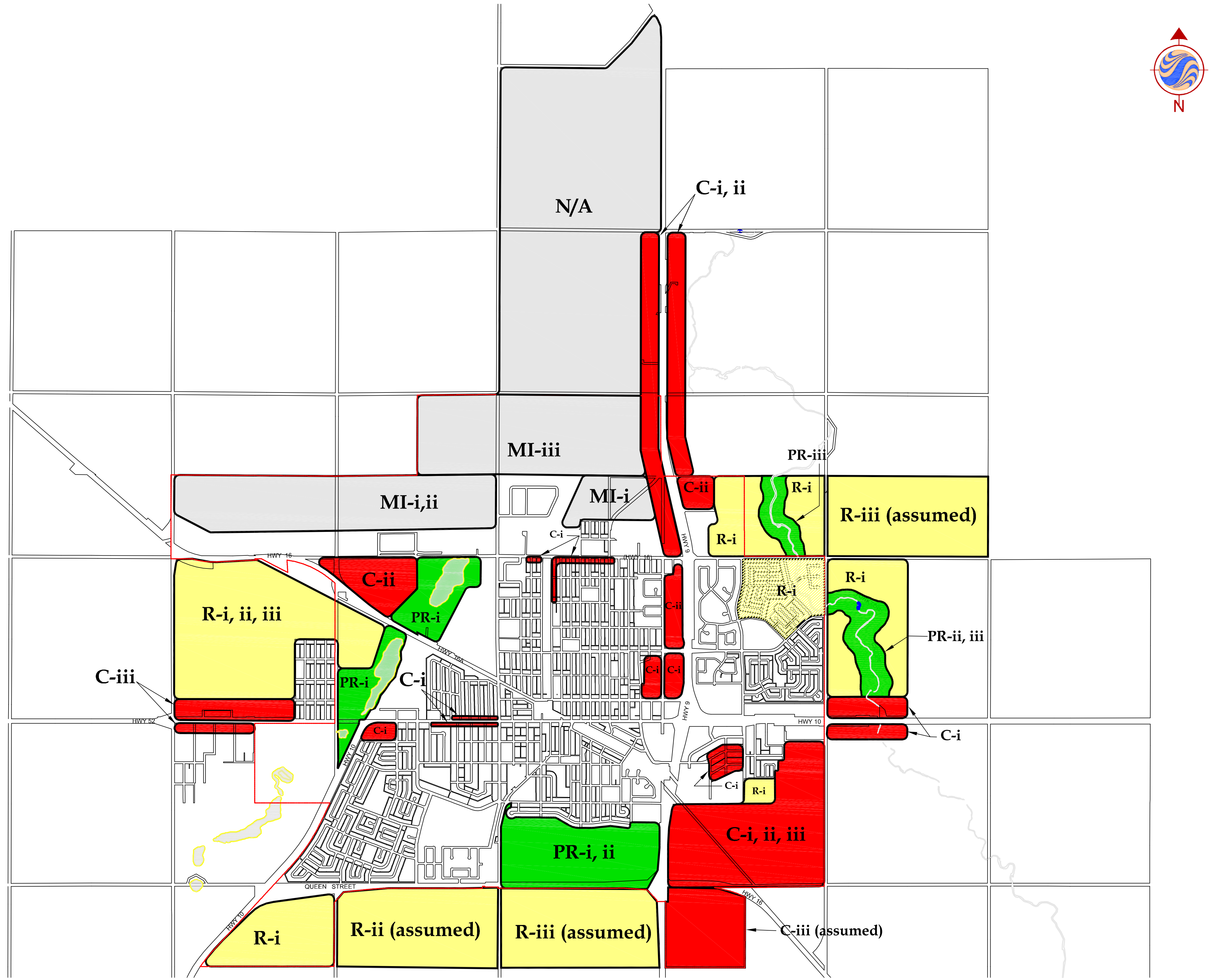
Table 5.2 New Area Requirements

Stage	Year Ending	New Population	Total Population	Residential Area (acres)	Commercial Area (acres)	Industrial Area (acres)
1	2020	6271	23874	714.0	392.2	308.3
2	2030	5138	29012	584.8	321.4	252.6
3	2040	6244	35256	710.5	390.5	307.0

Data is based on assumptions from the 2009 *Future Growth Needs Analysis* report and include:

- 8.8 persons per residential acre;
- 5.5 employees per commercial acre;
- 3.6 employees per industrial acre;
- 34.4% of population works in commercial zones; and
- 17.7% of population works in industrial zones.

A breakdown of the newly developed areas within each stage is presented in Figures 5.3, 5.4 and 5.5 for Stages 1, 2 and 3, respectively. The percentage of each zone that has developed is shown on each zone. Areas fully developed in a previous stage have been shaded for clarity.



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JUNE, 2011
113154417

ORIGINAL SHEET – ANSI B

Stantec

City of Yorkton

LEGEND

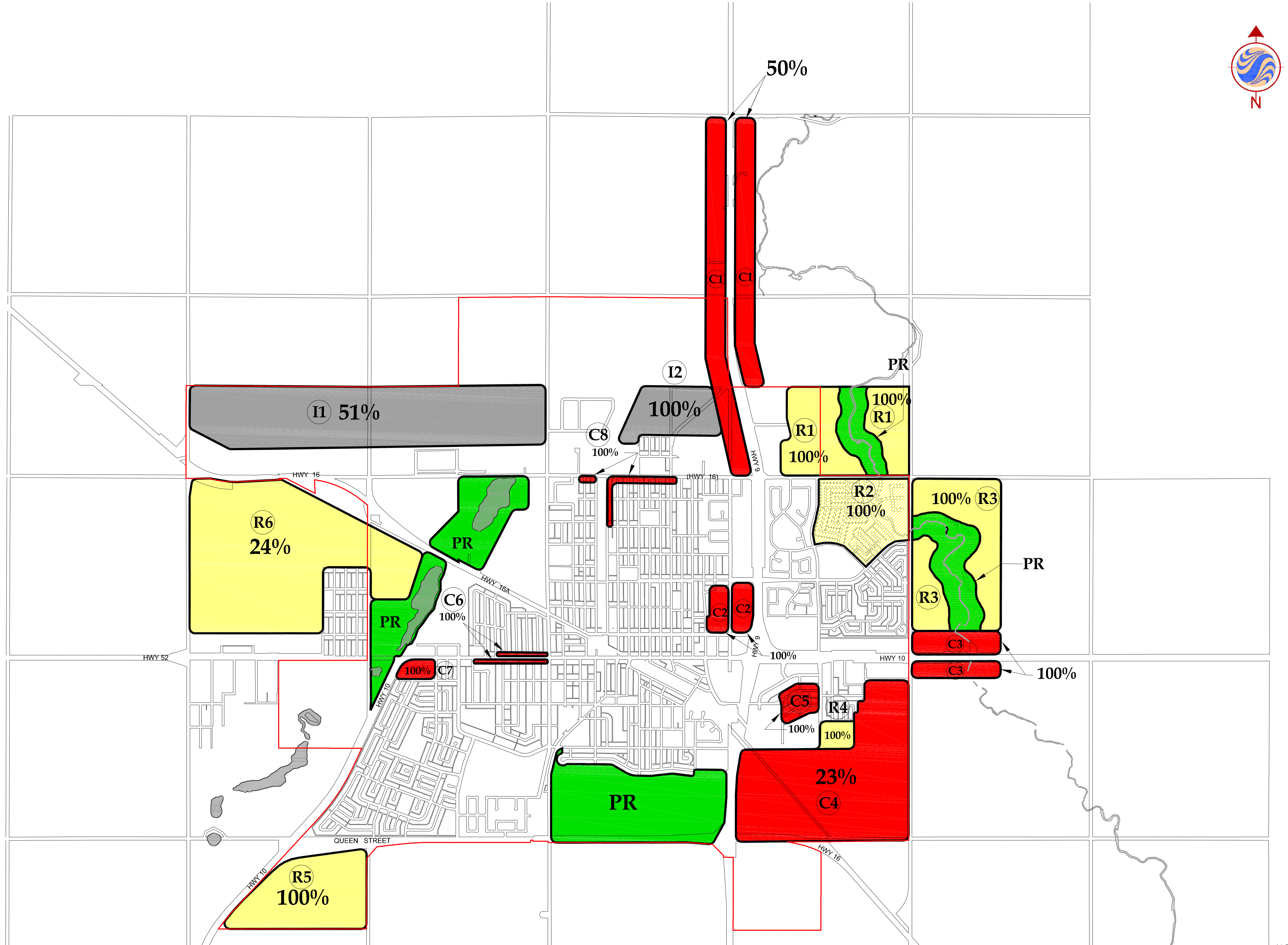
TYPE
- RESIDENTIAL (R)
- COMMERCIAL (C)
- INDUSTRIAL (MI)
- PARKS AND RECREATION (PR)
- CITY BOUNDARIES

STAGE
- i - 2008 - 2020
- ii - 2021 - 2030
- iii - 2031 - 2040

Client/Project
CITY OF YORKTON
TRANSPORTATION MASTER PLAN UPDATE

Figure No.
5.2

Title
REVISED FUTURE PHASING



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City of Yorkton

LEGEND

TYPE

- RESIDENTIAL (R)
- COMMERCIAL (C)
- INDUSTRIAL (MI)
- PARKS AND RECREATION (PR)
- CITY BOUNDARIES

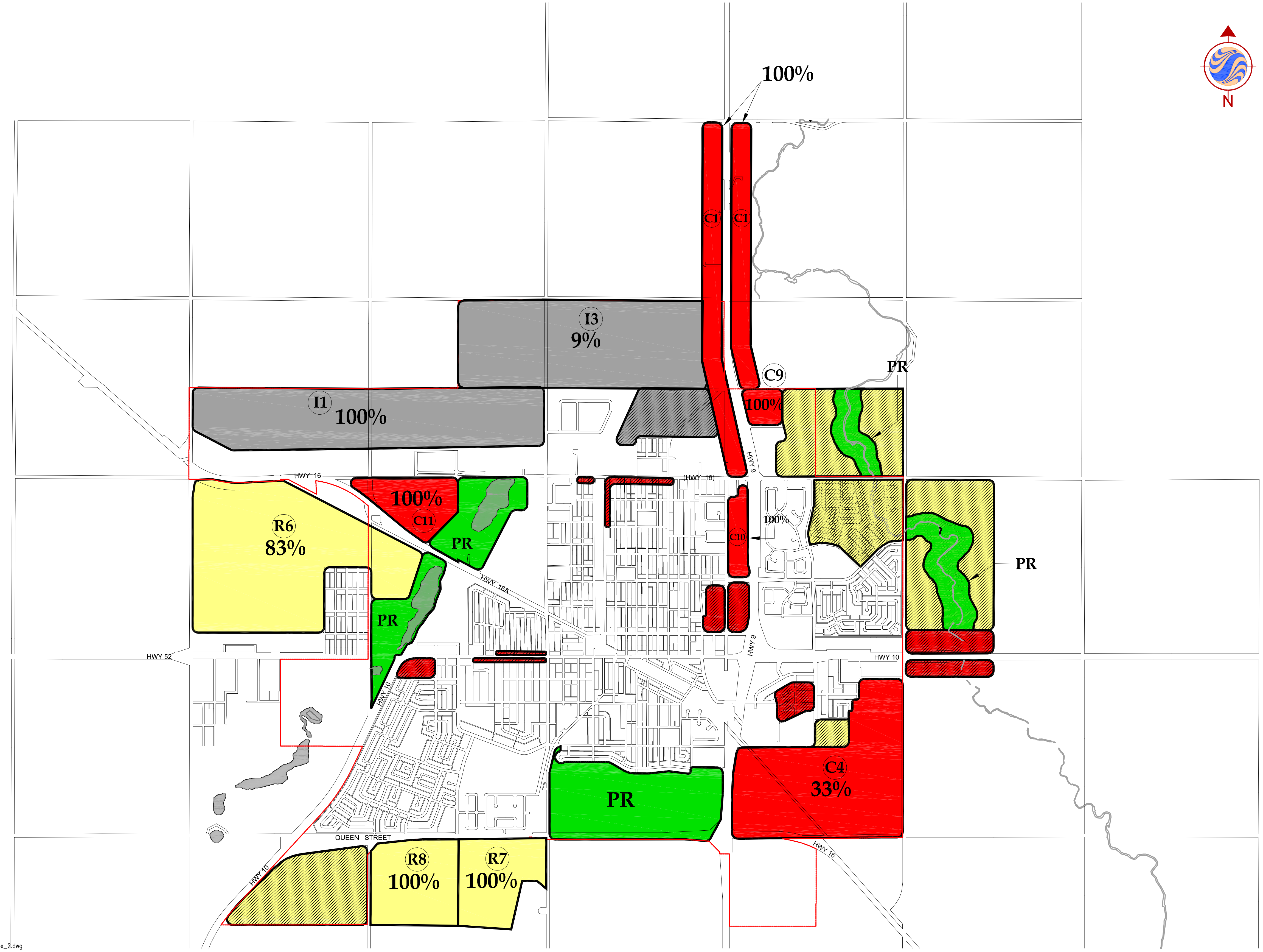
PERCENTAGE OF DEVELOPMENT IS INDICATED

Client/Project

CITY OF YORKTON
TRANSPORTATION MASTER PLAN UPDATE

Figure No.
5.3

Title
STAGE 1 DEVELOPMENT



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ORIGINAL SHEET - ANSI B

LEGEND

TYPE

RESIDENTIAL (R)
COMMERCIAL (C)
INDUSTRIAL (MI)
PARKS AND RECREATION (PR)
CITY BOUNDARIES

PERCENTAGE OF DEVELOPMENT IS INDICATED

PREVIOUS STAGES ARE SHOWN HATCHED

Client/Project

CITY OF YORKTON

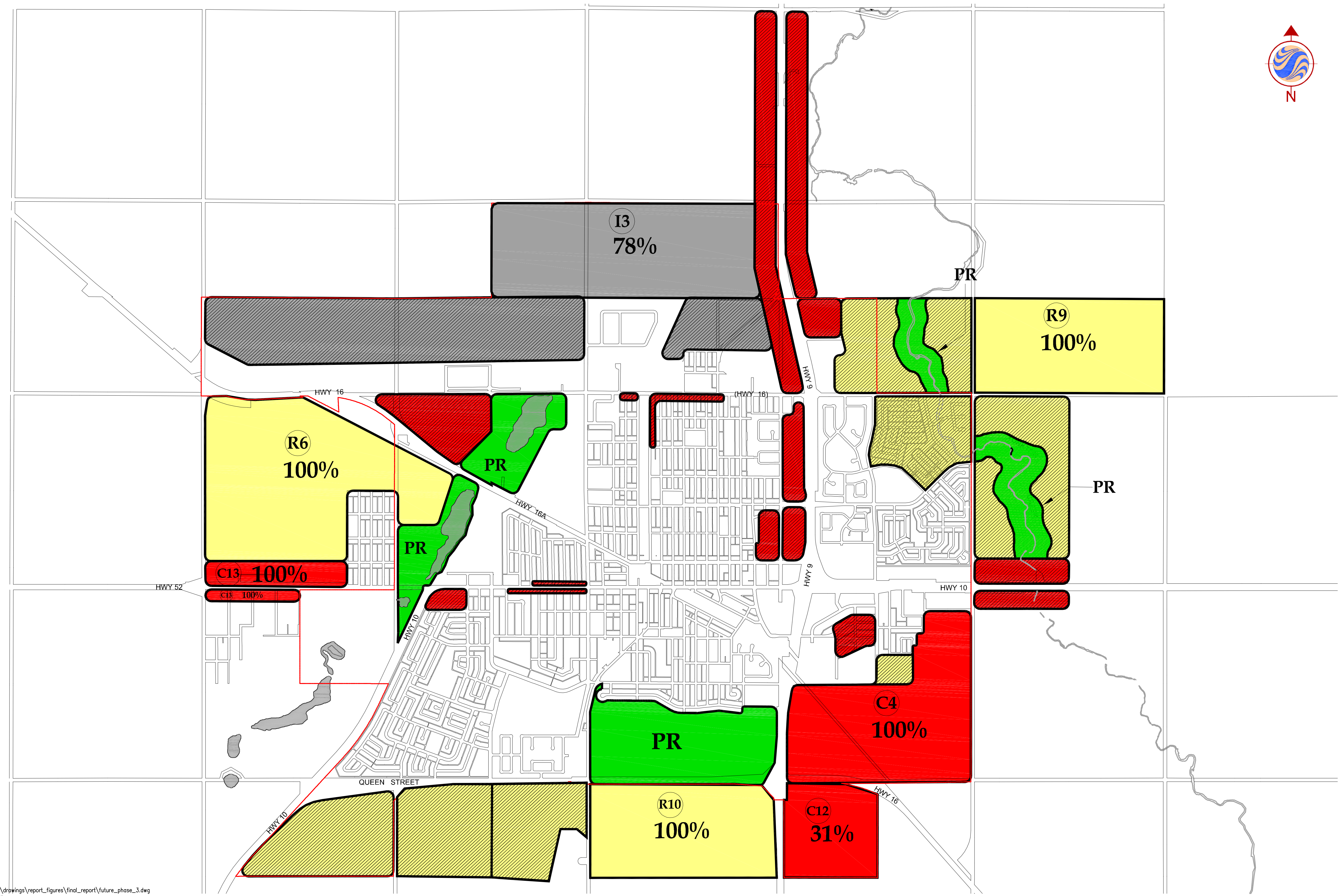
TRANSPORTATION MASTER PLAN UPDATE

Figure No.

5.4

Title

STAGE 2 DEVELOPMENT



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Stantec

City of Yorkton

LEGEND

TYPE

- RESIDENTIAL (R)
- COMMERCIAL (C)
- INDUSTRIAL (MI)
- PARKS AND RECREATION (PR)
- CITY BOUNDARIES

PERCENTAGE OF DEVELOPMENT IS INDICATED

PREVIOUS STAGES ARE SHOWN HATCHED

Client/Project

CITY OF YORKTON
TRANSPORTATION MASTER PLAN UPDATE

Figure No.

5.5

Title

STAGE 3 DEVELOPMENT

6.0 Future Conditions Operational Analysis

As the new areas within the City of Yorkton develop, new vehicle trips between the various areas of the City were added to the existing background traffic discussed in Section 3. Trips entering an area will be referred to as “In Trips” while trips leaving an area are referred to as “Out Trips”. New trips for each area were estimated using the ITE Trip Generation Manual, Eighth Edition. All new trip analysis was carried out on the PM peak hour of adjacent street traffic. The PM peak hour of adjacent street traffic is the most representative hour of traffic to use as it typical represents the busiest time of the day and therefore offers a conservative approach to predicting traffic volumes.

The new residential zoning was assumed to be single-family detached housing (ITE Land Use 210), generating 0.27 new trips per person. New commercial development was categorized as Business Park (ITE Land Use 770), generating 0.39 trips per employee. This type of development includes: “offices, retail and wholesale stores, restaurants, recreational areas, and warehousing, manufacturing, light industrial, and scientific research functions.” Lacking any detailed information regarding the future usage of the new commercial zones, this assumption provides for a variety of land uses. New industrial zoning was assumed as general light industrial (ITE Land Use 110), creating 0.42 trips per employee.

The land uses described above represent potential developments as a means to estimate future traffic volumes. The actual traffic volumes will vary based on the final usage of the developed zone and the type of development that ultimately occupies the space. The assumed land uses, however, do provide a fairly accurate estimate of future development and its associated traffic generation. It is recommended that the City impose legislation that all Developers, be it the City or private development companies, conduct individual Traffic Impact Studies (TIS’s) for each development site or phase prior to it developing. The purpose of the TIS is to determine the effects that the development will have on adjacent roadways and intersections and to recommend potential mitigation measures such that the development does not have an adverse effect on the overall transportation network.

6.1 STAGE 1 (2011-2020)

6.1.1 Trip Generation

A breakdown of the new trips generated during Stage 1 is shown in Table 6.1.

Table 6.1 Newly Generated Trips (Stage 1)

Zone	Trips In	Trips Out
Residential		
R1 – East of Hwy. 9 & North of York Rd.	268	138
R2 – East of Mayhew Ave. and South of York Rd.	79	41
R3 – East of Range Rd. 2040 and South of York Rd.	282	145
R4 – East of Lawrence Ave. & South of Harris St.	30	15
R5 – East of Hwy. 10 & South of Queen St.	269	139
R6 – East of Range Rd. 2044 & South of Hwy. 16	193	100
Commercial		
C1 – Hwy. 9 North Corridor	60	212
C2 – North of Smith St. on either side of Dracup Ave.	18	65
C3 – East of Range Rd. 2040 on either side of Hwy. 10	34	120
C4 – SE Commercial Area East of Hwy. 9 & North of Hwy. 16	42	150
C5 – Hamilton Rd. Commercial	12	41
C6 – Additional Development of Casino Site	6	23
C7 – Broadway St. Rezoning between Alexandra & Gladstone Ave.	5	16
C8 – York Rd. Rezoning between Victoria Ave. & Fourth Ave.	8	27
Industrial		
I1 – North of York Rd. between Range Rd. 2042 & 2044	70	263
I2 – North of York Rd. between Fourth Ave. & Hwy. 9	28	106

Residential development during Stage 1 was assumed to consume almost all of the available residential area identified by the City of Yorkton's development map. The only areas assumed to not completely develop during this timeframe are zones R6 on the west side of the City and zone C4 along the SE corner of the City. This first stage of growth also included the completion of development in Zone R2. Approximately 50 acres in Zone R2 we assumed to develop as part of Stage 1. This is approximately equal to the amount of undeveloped space remaining in this area.

6.1.2 Trip Assignment

In order to study the effects the newly generated trips have on the transportation system, vehicle trips were routed through various intersections located near each new zone. The proportions of trips assigned to each movement at each intersection were assumed based on the types of developments adjacent to the intersection and the proximity of the intersection to the downtown core. Traffic was assumed to favour the major highways and arterials within the City. Traffic leaving a new development zone was not routed to a specific destination. In addition, traffic in-bound to a new zone was not routed from a specific origin. This was done to ensure the traffic model remains valid for a variety of development scenarios. In effect, the major intersections adjacent to new development were assigned additional traffic, while areas further away did not see a major change in traffic volumes as a direct result of the particular development being analysed.

The percentage of new traffic routed through various study-area intersections in Stage 1 is shown in Table 6.2. The percentages routed in each direction are taken from the total number of trips generated by each new development. This calculation was performed for both the in-bound and out-bound trips.

Table 6.2 Assumed Directional Distributions In/Out of Developments (Stage 1)

Zone	North (%)	East (%)	South (%)	West (%)
Residential				
R1 – East of Hwy. 9 & North of York Rd.	35	0	50	15
R2 – East of Mayhew Ave. and South of York Rd.	35	0	50	15
R3 – East of Range Rd. 2040 and South of York Rd.	20	0	20	60
R4 – East of Lawrence Ave. & South of Harris St.	10	30	10	50
R5 – East of Hwy. 10 & South of Queen St.	30	70	0	0
R6 – East of Range Rd. 2044 & South of Hwy. 16	0	30	70	0
Commercial				
C1 – Hwy. 9 North Corridor	0	10	75	15
C2 – North of Smith Street on either side of Dracup Avenue	50	0	50	0
C3 – East of Range Road 2040 on either side of Highway 10	0	0	0	100
C4 – SE Commercial Area East of Hwy. 9 & North of Hwy. 16	35	0	20	45
C5 – Hamilton Rd. Commercial	40	0	20	40
C6 – Additional Development of Casino Site	0	85	15	0
C7 – Broadway St. between Alexandra Ave. & Gladstone Ave.	20	40	15	25
C8 – York Rd. Rezoning between Victoria Ave. & Fourth Ave.				
Industrial				
I1 – North of York Rd. between Range Rd. 2042 & 2044	0	45	55	0
I2 – North of York Rd. between Fourth Ave. & Hwy. 9	0	20	60	20

The primary access to Zone R1 was York Road East, which is assumed to be built up to Range Road 2040. Development in Zone R2 utilized existing roadways including Darlington Street, Mayhew Avenue, and York Road. Zone R3 trips used Darlington Street, York Road, or Highway 10 via Range Road 2040 to leave the area. Trips from Zone R4 favoured Mayhew Avenue and Hamilton Road. The primary exit from Zone R5 was assumed to be Range Road 2043 to the south of Queen Street. As Zone R6 is a relatively large area, preferred exits from this zone are expected to change over time. During Stage 1, most traffic leaving Zone R6 was routed on Highway 16 (York Road) and Highway 16A (Smith Street). Some traffic was routed along Sully Avenue to reach Highway 52 (Broadway Street) to the south.

Trips leaving Zone C1 were assumed to use Highway 9 exclusively. Zone C2 trips were assumed to use Dracup Avenue as the primary access while vehicles travelling from Zone C3 were assumed to use Highway 10 exclusively. Zone C4 is split into two areas by a section of railway. New development of this zone during Stage 1 is assumed to occur NE of the tracks in order to minimize the need for any new at-grade rail crossings. Trips from Zone C4 were assumed to use Range Road 2040, Mayhew Avenue, and Hamilton Road as preferred routes. Zone C5 traffic was also assumed to use Mayhew Avenue and Hamilton Road. Trips leaving Zones C6 and C7 were assumed to use Broadway Street almost exclusively, and Zone C8 trips to use York Road.

Range Road 2044, Sully Avenue, and Gladstone Avenue were assumed as accesses to Zone I1. Trips to Zone I2 were assumed to use Fourth Avenue (assumed to be extended to the north) and a Highway 9 access road assumed to be built approximately 800 metres north of York Road.

None of the new vehicle trips were routed within the CBD. The new zoning is quite far from the downtown core, and assigning trips to all of the intermediate intersections between the two areas would require assumptions that would invalidate the traffic model if new zoning development deviates from the current plan. To account for increased traffic in the CBD, traffic volumes along Broadway Street and Smith Street within the downtown core were increased by 2% per year to match population growth. This assumption provides a reasonable estimate of future traffic volumes within the CBD.

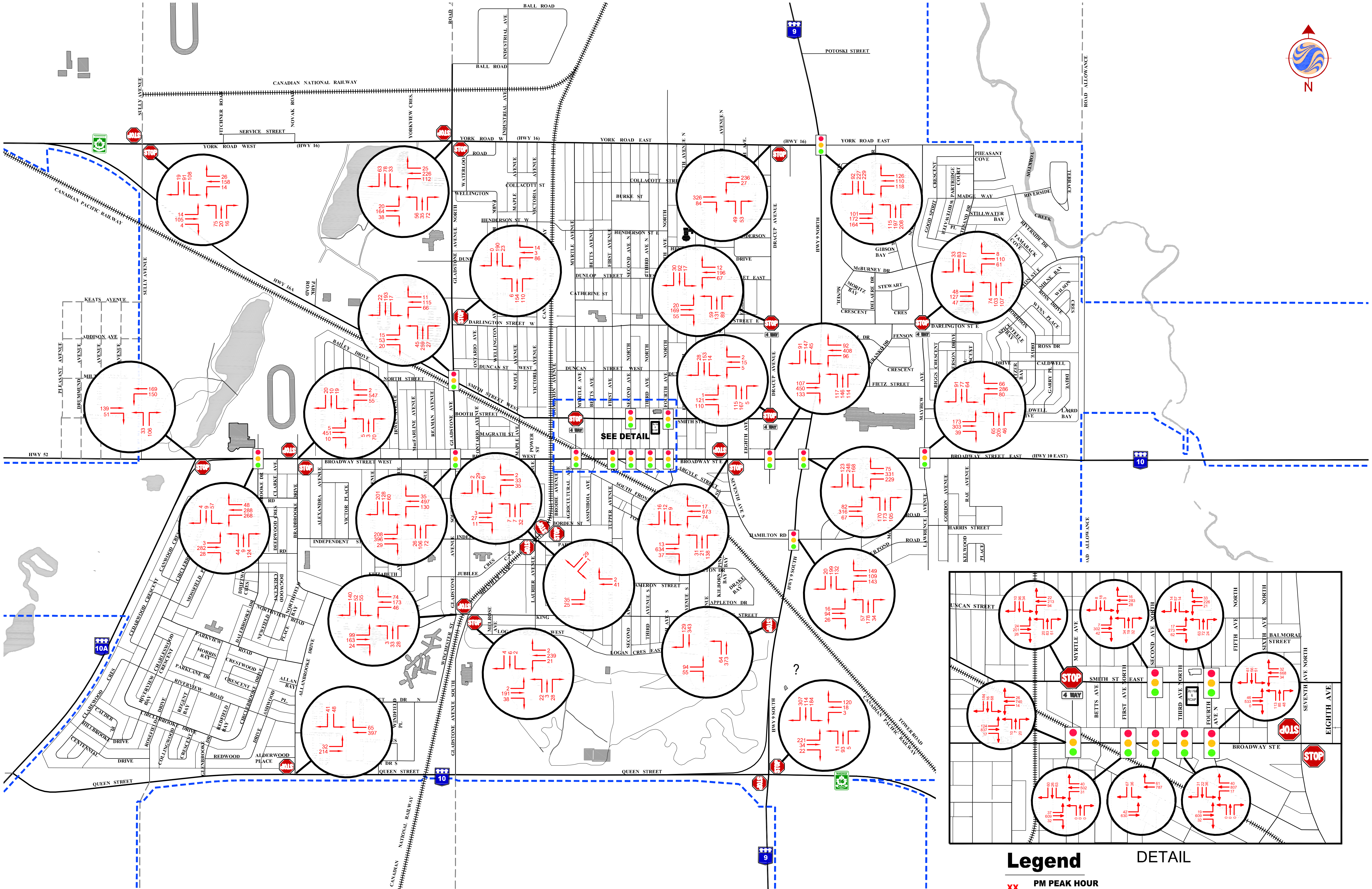
The projected traffic volumes for Stage 1, which consist of all new traffic volumes for each intersection generated by the Stage 1 developments plus the existing background traffic, are shown in Figure 6.1.

6.1.3 Traffic System Analysis

To determine the new traffic volumes for each intersection, newly generated and routed trips were added to existing traffic volumes. The routing directions determined which movements were increased as part of the projected traffic volumes.

Traffic conditions were studied by modifying the traffic volumes in the existing SYNCHRO model for the PM Peak hour. Improvements recommended as part of the current traffic conditions analysis were assumed to already be in place. Suggested improvements are discussed in Section 7.1. Areas experiencing un-acceptable delays during the PM peak hour during Phase 1 are as follows:

- **Broadway Street & Seventh Avenue –** Heavy traffic on Broadway Street causes the SB movements on Seventh Avenue to experience LOS D. In addition, the NB left operates at LOS E. Traffic signals are warranted at this location under current operating conditions.
- **Queen Street & Highway 9 –** Under existing conditions, all EB movements operate at LOS D. The delays stem from Queen Street being stop-controlled at Highway 9 as vehicles on Queen Street experience difficulty in crossing or turning onto Highway 9. Traffic signals are warranted at this location under current operating conditions.



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Client/Project
CITY OF YORKTON
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Figure No.
6.1

Title
STAGE 1
TRAFFIC PROJECTIONS

- **Hamilton Road & Highway 9 –** Delays at the existing signalized intersection are generally acceptable; however, queue lengths for the combined WB thru/left turning movement regularly exceed 30 m during the PM peak hour under existing conditions. All other movements operate at LOS C or better.
- **Broadway Street & Dalebrooke Drive –** The EB thru and right turning movements operate at LOS D under existing traffic conditions. All other movements operate at an acceptable LOS.
- **York Road & Gladstone Avenue –** The NB and SB thru and left turning movements experience significant delays operating at LOS E and LOS D respectively. Traffic signals are warranted at this location at the end of Stage 1 as a result of increased traffic generated by new development.
- **Darlington Street & Dracup Avenue –** Delays at this intersection are generally acceptable, with all movements operating at LOS A or B. Traffic signals are warranted at this location, however, at the end of Stage 1 as a result of increased traffic generated by new development.
- **Darlington Street & Mayhew Avenue –** Delays at this intersection are acceptable with the intersection configured as a four-way stop. All movements operate at LOS A or LOS B, however, traffic signals are warranted at this location at the end of Stage 1 as a result of increased traffic generated by new development.

6.2 STAGE 2 (2021-2030)

6.2.1 Trip Generation

Stage 2 applied the same methodology to generate and route trips as discussed in Stage 1. New trips generated in Stage 2 were added to existing trips and trips generated during Stage 1. All trips generated during development in Stage 2 are summarized in Table 6.3.

Table 6.3 Newly Generated Trips (Stage 2)

Zone	Trips In	Trips Out
Residential		
R6 – East of Range Rd. 2044 & South of Hwy.16	475	245
R7 – West of Range Rd. 2042 & South of Queen St.	240	124
R8 – East of Range Rd. 2043 & South of Queen St.	198	102
Commercial		
C1 – Hwy. 9 North Corridor	60	212
C4 – SE Commercial Area East of Hwy. 9 & N of Hwy. 16	18	65
C9 – East of Hwy. 9, North of York Rd. (North of SGI Salvage)	13	46
C10 – North or Darlington St. between Dracup Ave. & Hwy. 9	16	58
C11 – South of York Rd. & Northeast of Hwy. 16A	43	153
Industrial		
I1 – North of York Rd. between Range Road 2042 & 2044	67	253
I3 – South of Grain Millers Dr. between Range Rd. 2043 & Hwy. 9	13	48

Zones C4 and R6 continue to develop within Stage 2. It is assumed that zones I1 and C1 are fully developed within this stage. All other indicated areas, with the exception of Zone I3, are assumed to fully develop in Stage 2.

6.2.2 Trip Assignment

The same principles were applied in routing any new trips generated in Stage 2 as explained in Stage 1. Out-bound traffic was not routed to any specific destination and in-bound traffic was not routed from any specific origin. Major roadways and intersections were favoured with the strategy of producing worst-case scenario conditions for the roadway network. The percentage of new traffic routed through various study-area intersections in Stage 2 is shown in Table 6.4. The percentages of trips routed in each direction are taken from the total number of trips generated by each new development. This calculation was performed for both the in-bound and out-bound trips.

Table 6.4 Assumed Directional Distributions In/Out of Developments (Stage 2)

Zone	North (%)	East (%)	South (%)	West (%)
Residential				
R6 – East of Range Rd. 2044 & South of Hwy. 16	5	20	10	65
R7 – West of Range Rd. 2042 & South of Queen St.	10	80	0	10
R8 – East of Range Road 2043 & South of Queen St.	10	90	0	0
Commercial				
C1 – Hwy. 9 North Corridor	0	10	75	15
C4 – SE Commercial Area East of Hwy. 9 & North of Hwy. 16	60	40	0	0
C9 – East of Hwy. 9, North of York Rd. (N of SGI Salvage)	0	10	75	15
C11 – South of York Rd. & NE of Hwy. 16A				
Industrial				
I1 – North of York Rd. between Range Rd. 2042 & 2044	0	45	55	0
I3 – South of Grain Millers Dr. & West of Hwy. 9	0	0	100	0

New trips from Zone R6 were assumed to use York Road West, Smith Street, and Sully Avenue in a distribution similar to Stage 1. During the development of Zones R7 and R8, Allanbrooke Drive, Range Road 2042, and Range Road 2043 were assumed to be the primary entrances to the new area. Allanbrooke Drive was assumed to be extended to the south as part of this area's development.

Zone C1 trips were routed exclusively down Highway 9 as was done in Stage 1. Development of Zone C4 during Stage 2 was assumed to remain SW of the railroad tracks to avoid creating any new at-grade crossings. King Street was assumed to be extended to the east to provide an entrance to this area. An exit to Highway 16 was also created along the southern portion of Zone C4. Trips from Zone C9 were assumed to use Highway 9 as the primary access to the development. Zone C10 trips were assumed to use Dracup Avenue as the main access. Trips to Zone C11 were assumed to be split between York Road and Smith Street.

Trip routing for Zone I1 in Stage 2 was the same as in that assumed in Stage 1. Trips were assumed to use Range Road 2044, Sully Avenue, and Gladstone Avenue to access this area. Zone I3 trips were routed along Gladstone Avenue, Township Road 262, Fourth Avenue (assumed to be extended north beyond Zone I2), and the Highway 9 access created with the development of Zone I2.

EB and WB thru trips through the downtown core were again increased at a rate of 2% per year to reflect the City's growth as new trips did not reach the CBD when routed from their respective zones.

The projected traffic volumes for Stage 2, which consist of all new traffic volumes for each intersection generated by the Stage 1 and Stage 2 developments plus the existing background traffic, are shown in Figure 6.2.

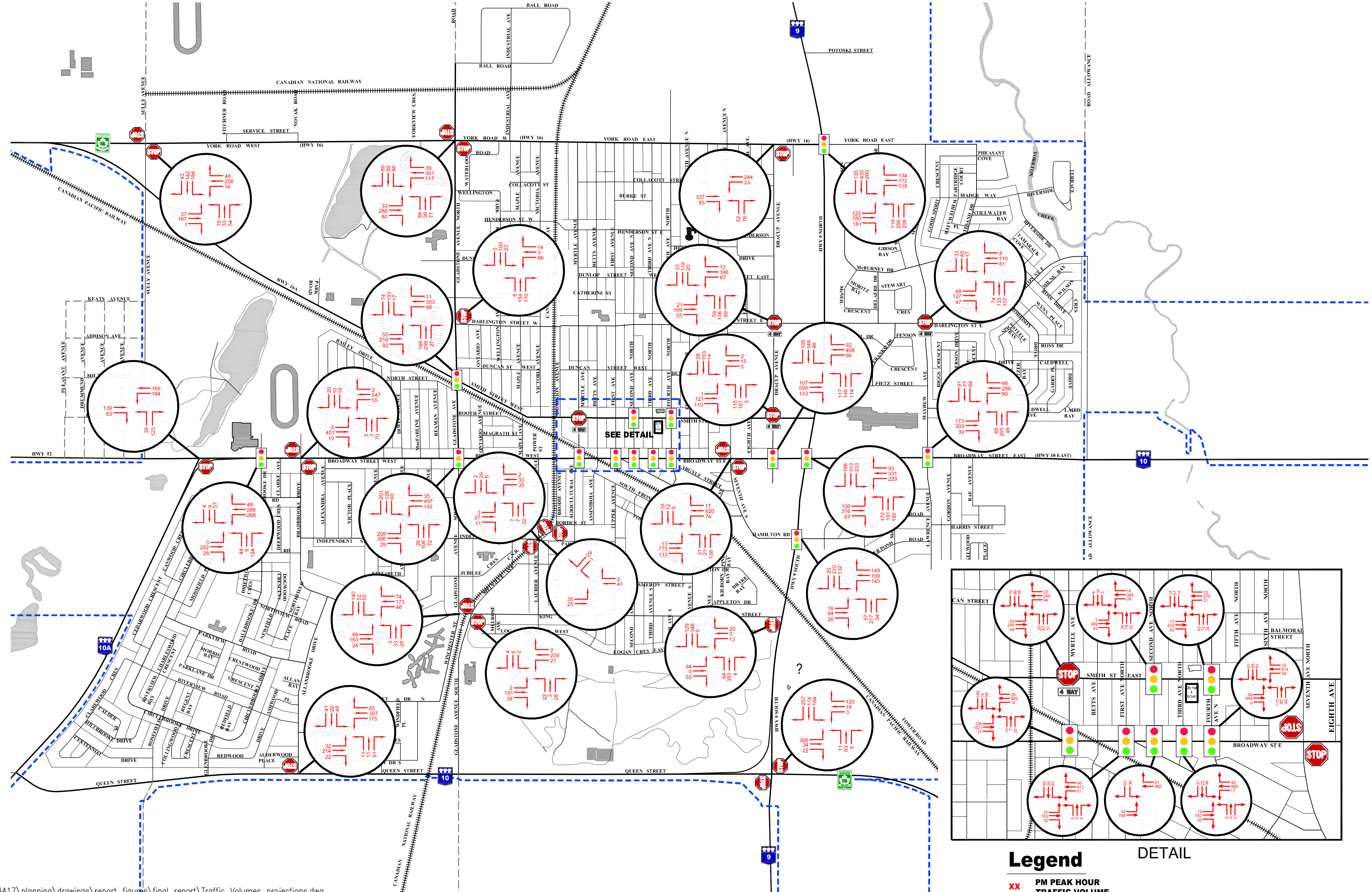

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Figure No.

6.2

Title

STAGE 2
TRAFFIC PROJECTIONS

6.2.3 Traffic System Analysis

Traffic volumes from the existing conditions and Stage 1 were combined with volumes generated in Stage 2 to produce a new traffic model applicable to the Stage 2 development timeframe. These new volumes were entered into SYNCHRO to find locations where un-acceptable delays occur. Improvements suggested as part of the Stage 1 analysis were assumed to already be in place. Suggested improvements are discussed in Section 7.2. Areas experiencing un-acceptable delays during the PM peak hour during Phase 2 are as follows:

- **York Road & Sully Avenue –** NB and SB movements experience extreme delays at this location during Stage 2. All SB movements operate at LOS F while NB right and thru movements operate at LOS E. Traffic signals are warranted at this location at the end of Stage 2 as a result of increased traffic generated by new development.

- **York Road & Highway 9 –** This intersection operates at near capacity. EB and WB left turning movements operate at LOS C. All other movements operate at LOS B or better. However, volume-capacity ratios for the SB movements exceed 0.75 indicating that the intersection is nearing capacity during the PM peak hour.

- **Queen Street & Allanbrooke Drive –** New development to the south of the intersection causes the NB movements to fail with the intersection configured as stop-controlled in the NB and SB directions. NB thru and left turning movements operate at LOS F while SB thru and left turning movements operate at LOS E. Traffic signals are warranted at this location at the end of Stage 2 as a result of increased traffic generated by new development.

6.3 STAGE 3 (2031-2040)

6.3.1 Trip Generation

Stage 3 applied the same methodology to generate and route trips as discussed in Stages 1 and 2. New trips generated in Stage 3 were added to existing trips and trips generated during Stages 1 and 2. All trips generated during development in Stage 3 are summarized in Table 6.5.

Table 6.5 Newly Generated Trips (Stage 3)

Zone	Trips In	Trips Out
Residential		
R6 – East of Range Rd. 2044 & South of Hwy. 16	137	70
R9 – East of Range Rd. 2040 & North of York Rd.	501	258
R10 – East of Range Rd. 2042 & South of Queen St.	478	246
Commercial		
C4 – SE Commercial Area East of Hwy. 9 & North of Hwy. 16	123	438
C12 – SE Commercial Area East of Hwy. 9 & South of Hwy. 16	22	79
C13 – East of Range Rd. 2044 on either side of Hwy. 52	39	138
Industrial		
I3 – South of Grain Millers Dr. between Range Rd. 2043 & Hwy. 9	97	365

6.3.2 Trip Assignment

The same principles were applied in routing any new trips generated in Stage 3 as explained in Stages 1 and 2. Out-bound traffic was not routed to any specific destination and in-bound traffic was not routed from any specific origin. Major roadways and intersections were favoured with the strategy of producing worst-case scenario conditions for the roadway network. The percentage of new traffic routed through various study-area intersections in Stage 3 is shown in Table 6.6. The percentages of trips routed in each direction are taken from the total number of trips generated by each new development. This calculation was performed for both the in-bound and out-bound trips.

Table 6.6 Assumed Directional Distributions In/Out of Developments (Stage 3)

Zone	North (%)	East (%)	South (%)	West (%)
Residential				
R6 – East of Range Rd. 2044 & South of Hwy. 16	0	50	50	0
R9 – East of Range Rd. 2040 & North of York Rd.	0	0	40	60
R10 – East of Range Rd. 2042 & South of Queen St.	100	0	0	0
Commercial				
C13 – East of Range Rd. 2044 on either side of Hwy. 52	0	100	0	0
C12 – SE Commercial East of Hwy. 9 & South of Hwy. 16	70	0	0	30
C4A – SE Commercial East of Hwy. 9 & North of Hwy. 16	80	0	0	20
C4B – SE Commercial East of Hwy. 9 & North of Hwy. 16	95	0	0	5
Industrial				
I3 – South of Grain Millers Dr. between Range Rd. 2043 & Hwy. 9	0	0	100	0

Traffic from Zone R6 was routed similarly to the previous two stages (along York Road, Sully Avenue, and Smith Street). Some traffic was also routed along Range Road 2044 to accommodate development in the SW section of this zone. New trips to Zone R9 were routed along Range Road 2040 and York Road (Township Road 261). Township Road 261 and York Road were assumed to be connected across the creek valley. Traffic routed to Zone R10 was assumed to utilize three primary access points: Gladstone Avenue (Range Road 2042) south of Queen Street, Highway 9 south of Queen Street, and Queen Street mid-way between Gladstone Avenue and Highway 9.

Zone C4 has been divided into two areas for the purposes of trip assignment. Zone C4A is the area SW of the rail line, while Zone C4B is the area NE of the rail line. Trips were proportioned based on the un-developed land remaining in each area and were not routed across the rail line based on the assumption that no new at-grade crossings were created. Traffic accessing Zone C12 was assumed to access the area via Highway 9 and Highway 16. Trips from Zone C13 were assumed to use Highway 52 (Broadway Street) as the primary access to the zone.

Trips from Zone I3 were routed in the same fashion as in Stage 2. The major accesses to this zone were assumed to be Gladstone Avenue, Township Road, Fourth Avenue (extended) and Highway 9 (access built as part of Zone I2 development).

EB and WB trips through the CBD were once again increased at a rate of 2% per year to account for increased travel within the downtown area as no new trips reached the CBD when routed from their respective zones.

The projected traffic volumes for Stage 3, which consist of all new traffic volumes for each intersection generated by the Stage 1, 2, and 3 developments plus the existing background traffic, are shown in Figure 6.3.

6.3.3 Traffic System Analysis

Traffic volumes from the existing conditions and Stages 1 and 2 were combined with volumes generated in Stage 3 to produce a new traffic model applicable to the Stage 3 development timeframe. These new volumes were entered into SYNCHRO to find locations where un-acceptable delays occur. Improvements suggested as part of the existing conditions and the analysis at Stages 1 and 2 were assumed to already be in place. Suggested improvements are discussed in Section 7.3. Areas experiencing un-acceptable delays during the PM peak hour during Phase 3 are as follows:

- **King Street & Highway 9 – The** EB and WB movements experience increased delay as a result of new traffic on Highway 9 and the continued development of the commercial zone to the SW of the railway. Traffic signals are warranted at this location at the end of Stage 3 as a result of increased traffic generated by new development.

- **Smith Street & Myrtle Avenue –** This location does not experience any significant delay as a result of new trips being routed through the intersection, however, traffic

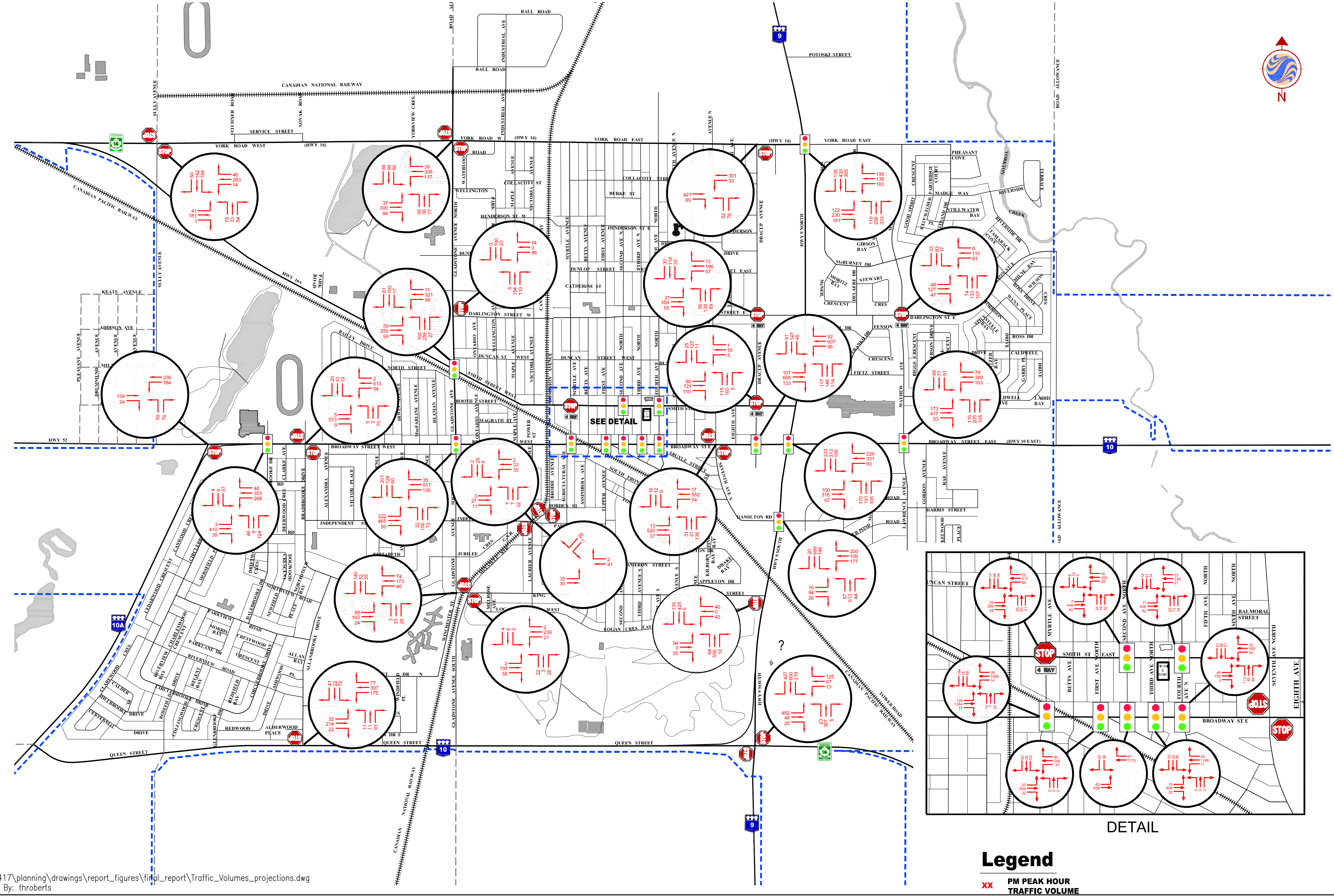

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Figure No.

6.3

Title

STAGE 3

TRAFFIC PROJECTIONS

signals are warranted at this location at the end of Stage 3 as a result of increased traffic generated by new development.

6.4 PROPOSED FUTURE ROAD NETWORK

In order to service the new developments discussed in Sections 6.1, 6.2, and 6.3, a high level analysis was conducted to determine the best alternatives for the future road network. New roadways and/or re-alignments and modifications to existing roadways to service these new areas are shown in Figure 6.4 and are described as follows:

6.4.1 York Road Extension

York Road currently terminates immediately east of Mayhew Avenue in the NE quadrant of the City. In order to provide access to the proposed residential developments identified as residential zones R1 and R2 on the north and south sides of the York Road/Township Road 261 section line respectively, it is recommended that York Road be extended along its current alignment east to Range Road 2040. The extension of York Road between Mayhew Avenue and Range Road 2040 will require a crossing of Yorkton Creek. In order to provide access to the proposed residential development identified as residential zone R9 north of Township Road 261 and west of Range Road 2040, it is also recommended that York Road be further extended along the Township Road 261 road allowance east to Range Road 2039.

As residential zones R1 and R2 are expected to fully develop in Stage 1, it is recommended that the York Road extension from Mayhew Avenue to Range Road 2040 be constructed during Stage 1 and from Range Road 2040 to Range Road 2039 during Stage 3.

6.4.2 Range Road 2040 Upgrades

Range Road 2040 is currently a gravelled roadway running north south through the City of Yorkton along much of the eastern City limit. In order to provide access to the proposed residential development identified as residential zone R3, it is recommended that Range Road 2040 be up-graded to a paved two-lane roadway with a rural cross section between York Road and Highway 10. Upgrading Range Road 2040 between York Road and Highway 10 will require replacement of the existing structure crossing Yorkton Creek. In order to provide access to the proposed commercial development identified as commercial zone C4, it is recommended that Range Road 2040 also be up-graded to a paved two-lane roadway with a rural cross section between Highway 10 and Highway 16. Upgrading Range Road 2040 between Highway 10 and Highway 16 will require upgrades to the existing crossing of Township Road 255 and with the CP Railway.

As residential zone R3 is expected to fully develop in Stage 1, it is recommended that Range Road 2040 be up-graded between York Road and Highway 10 during Stage 1 and between Highway 10 and Highway 16 during Stage 3.

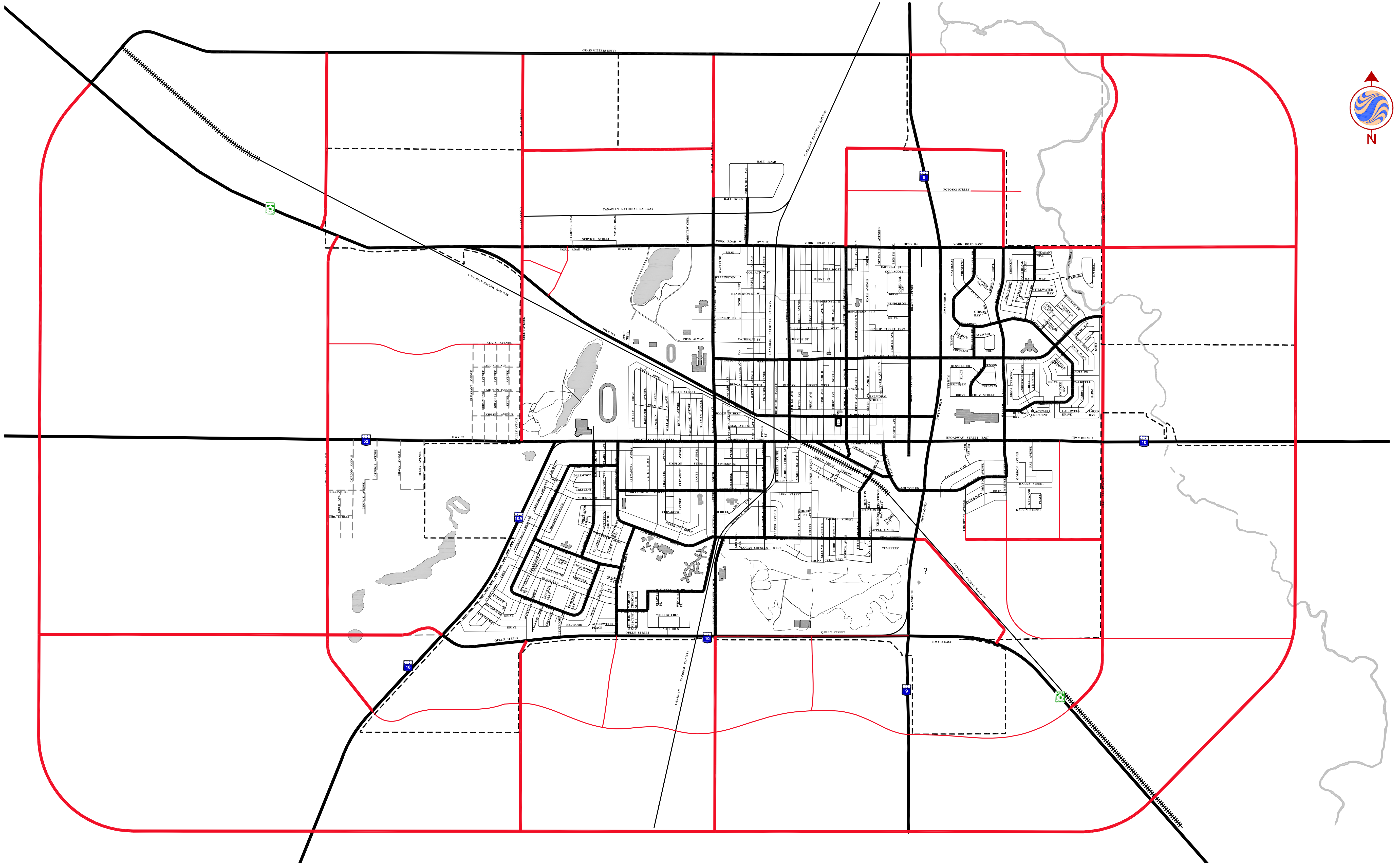

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Figure No.
6.4

Title
PROPOSED FUTURE ROAD NETWORK

6.4.3 Range Road 2043 Upgrade

Range Road 2043 is currently a gravelled roadway running north south from Queen Street to Township Road 254. In order to provide access to the proposed residential development identified as residential zone R5, it is recommended that Range Road 2043 be up-graded to a paved two-lane roadway with a rural cross section to provide access from the development to Queen Street. It is also recommended that a second access be provided into the development. This access should be constructed from the Range Road 2043 extension west to Highway 10 one half mile south of Queen Street.

As residential zone R5 is expected to fully develop in Stage 1, it is recommended that Range Road 2043 be up-graded and the new access to Highway 10 one half mile south of Queen Street be constructed during Stage 1.

6.4.4 Sully Avenue Upgrade

Sully Avenue is currently a gravelled roadway running north south through the City of Yorkton along much of the western City limit terminating at Highway 52. In order to provide access to the proposed residential development identified as residential zone R6, it is recommended that Sully Avenue be up-graded to a paved two-lane roadway with a rural cross section between York Road and Highway 52.

As the bulk of development in residential zone R6 is expected to take place during Stage 2, it is recommended that this upgrade happen at the begging of Stage 2. Development that does occur in this zone during Stage 1 is expected to use existing roadways for access/egress.

6.4.5 Fourth Avenue Extension

Fourth Avenue north of York Road is a gravelled roadway that currently terminates at the CN Railway spur line north of York Road in the City's north end. In order to provide access to the proposed industrial development identified as industrial zone I2 between the CN Railway and Highway 9, it is recommended that Fourth Avenue be extended along its current alignment north one half mile north of York Road. It is also recommended that a second access be provided into the development. This access should be constructed from the Fourth Avenue extension east to Highway 9.

As industrial zone I2 is expected to fully develop in Stage 1, it is recommended that the Fourth Avenue extension and construction of the new access onto Highway 9 be constructed during Stage 1.

6.4.6 Allanbrooke Drive Extension

Allanbrooke Drive currently terminates at Queen Street in the City's south end. In order to provide access to the proposed residential developments identified as residential zones R7 and R8 south of Queen Street between Range Road 2043 and Gladstone Avenue, it is recommended that Allanbrooke Drive be extended south along its current alignment into the new development zones.

As residential zones R7 and R8 are expected to fully develop in Stage 2, it is recommended that the Allanbrooke Drive extension be constructed during Stage 2.

6.4.7 King Street Extension

King Street currently terminates at Highway 9 in the SE quadrant of the City. In order to provide access to the proposed commercial development identified as commercial zone C4 south of the CP Railway, it is recommended that King Street be extended east along its current alignment into the new development zone. The intersection should be constructed with raised center medians and allowance provided for left turning bays and right turn channelization for all movements. Pedestrian crossings should also be provided crossing Highway 9 on both the north and south legs of the intersection. Signalization of this intersection will be required in Stage 3.

As commercial zone C4 south of the CP Railway is expected to fully develop in Stage 3, it is recommended that the King Street extension be constructed during Stage 3.

6.4.8 Residential Zone R10 Access

In order to provide access to the proposed residential development identified as residential zone R10 south of Queen Street between Gladstone Avenue and Highway 9, it is recommended that a new access be constructed off of Queen Street south into the new development zone one half mile from each Gladstone Avenue and Highway 9.

As residential zone R10 is expected to fully develop in Stage 3, it is recommended that the new access be constructed during Stage 3.

6.4.9 Government Road Upgrade

Government Road is currently a gravelled roadway running north-south west of the current City limits terminating at Highway 16. In order to provide access to the proposed residential development identified as residential zone R6, it is recommended that Government Road be up-graded to a paved two-lane roadway with a rural cross section to provide access from the development to both Highway 16 to the north and Highway 52 to the south.

As residential zone R6 is expected to develop to over 80% during Stage 2 and fully develop in Stage 3, it is recommended that Government Road be up-graded during the latter part of Stage 2 or early in Stage 3.

6.4.10 Grain Millers Drive Upgrade

Grain Millers Drive is currently a gravelled roadway running east-west north of the City of Yorkton between Highway 9 and Highway 16. In order to improve access to the industrial businesses north of the City and provide an alternate truck route to York Road, it is recommended that Grain Millers Drive be up-graded to a two-lane roadway with a rural cross section between Highway 9 and Highway 16.

It is recommended that Grain Millers Drive be up-graded and converted to a truck route during Stage 2. See Section 7.2.

6.4.11 West Truck By-Pass Route

A portion of the West Truck By-Pass was recently completed from Highway 16 to Highway 52 west of the City of Yorkton. In order to provide a complete by-pass of the City, it is recommended that the West Truck By-Pass be constructed one mile south of Queen Street crossing Highway 9 and Highway 10 and ultimately terminating at Highway 16 SE of the City.

It is recommended that the West Truck By-Pass be constructed and utilized as a truck route during Stage 3. See Section 7.3.

7.0 Transportation Improvement Plan

The results of the traffic analyses have been used to identify locations that could be improved to more effectively accommodate traffic demand within the City. Potential improvements will primarily include minimal to moderate implementation costs as it is recognized that large scale changes to the existing street system are not likely required in the short-term. However, some recommendations for long-term improvements are also made that do have significant implementation costs. Potential improvements can be grouped into the three categories discussed above and as follows:

Minimal Cost Improvements:

- Improved signage;
- Re-striping of intersections to better utilize existing roadway widths to channelize traffic or provide storage for turning movements;
- Modified parking restrictions;
- Installation of four-way stop control where warranted; and
- Improvements to signal timing/phasing.

Moderate Cost Improvements:

- Installation of traffic signals where warranted;
- Upgrades to signal controller equipment to allow time-of-day timing/phasing and main street and/or side street detection which allows fully or semi-actuated signal operation;
- Installation of a traffic signal interconnection system to allow coordination of signal network;
- Installation of separate left turn signal heads to allow protected-permitted or fully protected left turns where beneficial;
- Street widening at intersections to allow storage for turning movements;
- Streetscaping and pathway construction;
- Constructing roundabouts; and
- Pre-emption with the Railways.

Significant Cost Improvements:

- Construction of grade separations;
- Construction of new roadways to service new developments or as by-pass routes; and
- Widening of existing roadways.

7.1 STAGE 1 – IMMEDIATE IMPROVEMENTS

Recommendations provided for immediate improvements assume that all residential, commercial, and industrial developments discussed in Section 5.3 for Stage 1 have been completed or are underway. It is suggested that all recommendations discussed under Stage 1 be implemented at some point throughout the stage, i.e. in the years 2010 to 2020.

An overview of all recommended immediate improvements is shown in Figure 7.1.

7.1.1 York Road Corridor

Recommendations were made as part of the 2003 study and included dividing the roadway with a 5 m wide median, removing the two-way left turn lane, installing sidewalks on either side of the roadway, constructing retaining walls to act as a sound barrier for residents, and building an underpass under the CN rail tracks. To date, none of the recommendations made have been implemented.

<u>Concern</u>

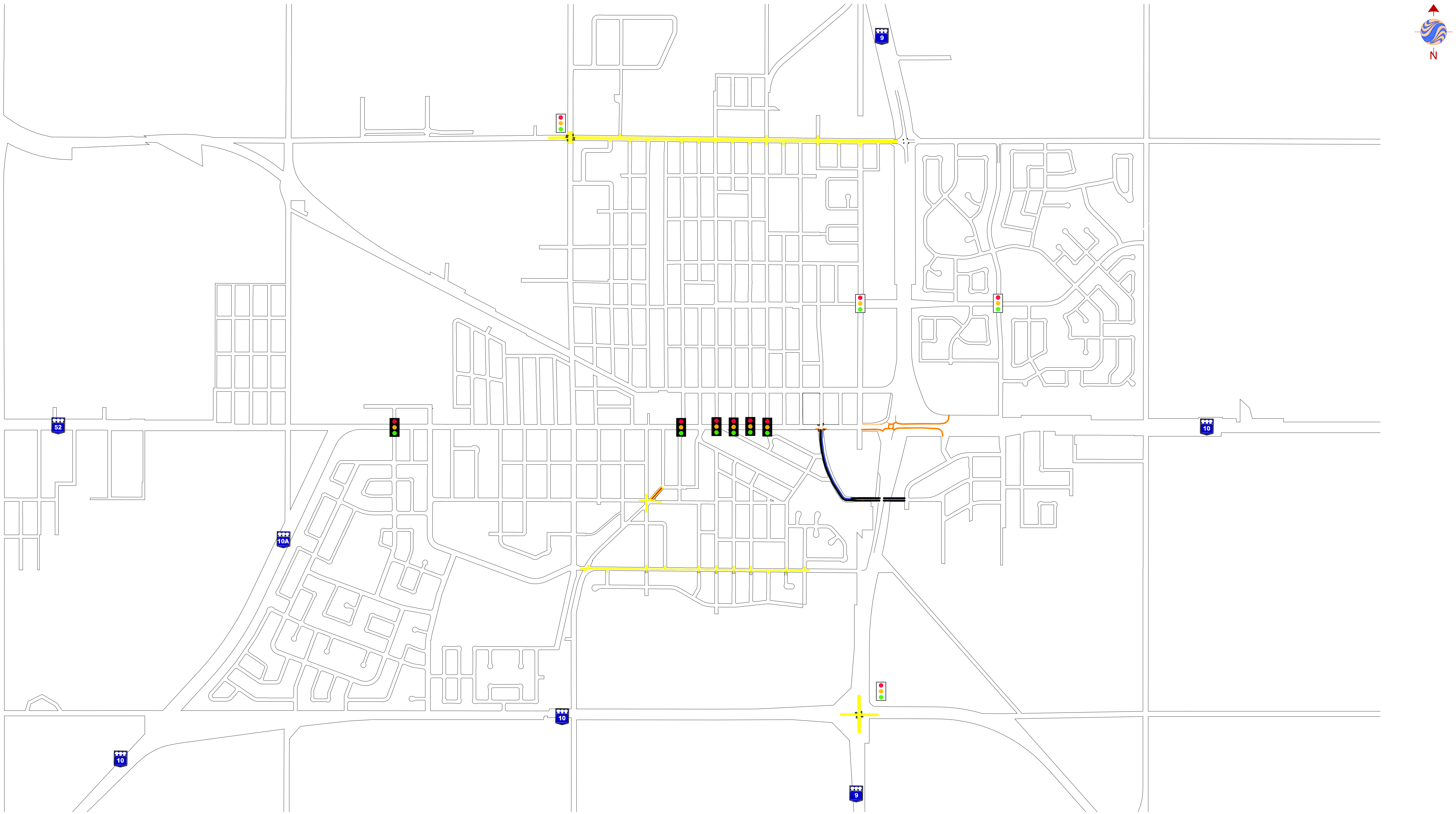
York Road is currently part of the existing truck route network within the City of Yorkton. A number of concerns including safety issues, high operating speeds, increased pollution, traffic noise, and traffic congestion are attributed largely to the fact that this roadway is designated as a truck route.

<u>Recommendations</u>

- Remove the two-way left turn lane and replace with a centre median and dedicated left turning bays;
- Provide sidewalks on both sides of York Road from Gladstone Avenue to Dracup Avenue;
- Construct a noise attenuation device, i.e. sound barrier, along the south side of York Road from Gladstone Avenue to Fourth Avenue if warranted, see Section 4.13; and
- Remove the truck route designation from York Road.

Removing the two-way left turn lane and replacing with a centre median has a number of benefits. It creates refuge for pedestrians crossing the roadway, it provides an opportunity for landscaping to be incorporated into the corridor, it provides for safer and protected left turning movements at respective intersections, and it creates the perception of a narrower roadway thus slowing traffic.

Removing the truck route designation on York Road is an obvious solution to addressing a number of the concerns residents have with this roadway, however, removing the truck route means it has to be replaced somewhere else. See Section 4.11 for details on the recommended changes to the truck route system.



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IMPROVEMENT AREA
IMPROVEMENT BOUNDARY
NEW MEDIAN
NEW SIDEWALK
NEW BIKE PATH
TRAFFIC SIGNAL INSTALLATION
TRAFFIC SIGNAL OPTIMIZATION

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Figure No.
7.1

Title
STAGE 1 - IMMEDIATE IMPROVEMENTS

One of the previous recommendations from the 2003 study was the construction of an underpass beneath the CN Railway. This is not recommended for two reasons. The first reason is that an underpass is typically more expensive and generally takes longer to construct than an overpass. This is due primarily to the time and effort associated with obtaining the necessary permits and approvals associated with moving a rail line. It is generally better practice to go over railways as opposed to under them as this causes little to no disruption to rail service. The second reason is that volume of trains at this location is quite low and the capital cost of constructing a grade separation would be very high. It would not be very economical to front such a large investment to accommodate such small volumes. See Section 4.10 for details on the overall railways review.

The recommended improvements for the York Road corridor are shown in Figure 7.1A.

7.1.2 Broadway Street & Highway 9 Intersection

Suggestions for improving this intersection were made in the 2003 report and included constructing raised islands to channelize the large number of right turn vehicles at this location and create a more pedestrian-friendly environment through the installation of a sidewalk along Broadway Street to connect the businesses on either side of Highway 9. New islands were constructed to accommodate the widening of Highway 9 and to provide a channelized right turn for all movements. Sidewalk ramps were also installed on each crosswalk.

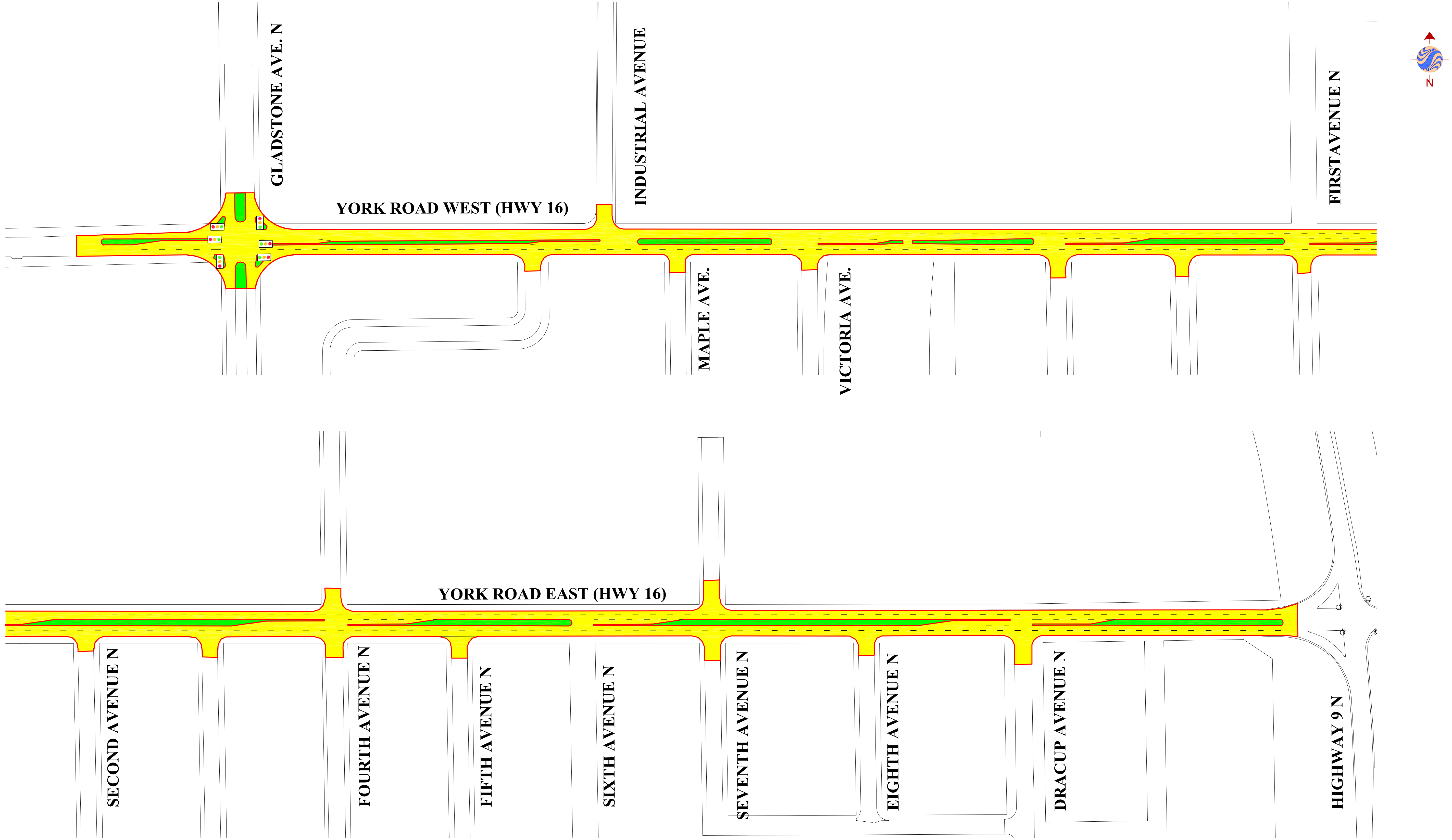
<u>Concern</u>

Although sidewalk ramps have been constructed, no sidewalks currently exist leading away from the intersection. In addition, the SW and NW islands are filled with crushed rock and pedestrians are forced to walk through this area.

<u>Recommendations</u>

- Urbanize the intersection with concrete median fills in the islands and provide appropriate wheel chair ramps or construct proper sidewalks/pathways within the islands;
- Construct sidewalks on either side of Broadway Street west of the intersection up to Dracup Avenue;
- Construct a multi-use pathway on either side of Broadway Street east of the intersection up to the mall access on the north side of the roadway and the Days Inn on the south side of the roadway; and
- Optimize the existing traffic signal timings to allow enough time for pedestrians to safely cross Highway 9.

The recommended improvements for the Broadway Street & Highway 9 intersection are shown in Figure 7.1B.



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- IMPROVEMENT AREA
- IMPROVEMENT BOUNDARY
- NEW MEDIAN
- NEW SIDEWALK
- NEW BIKE PATH
- TRAFFIC SIGNAL INSTALLATION
- TRAFFIC SIGNAL OPTIMIZATION

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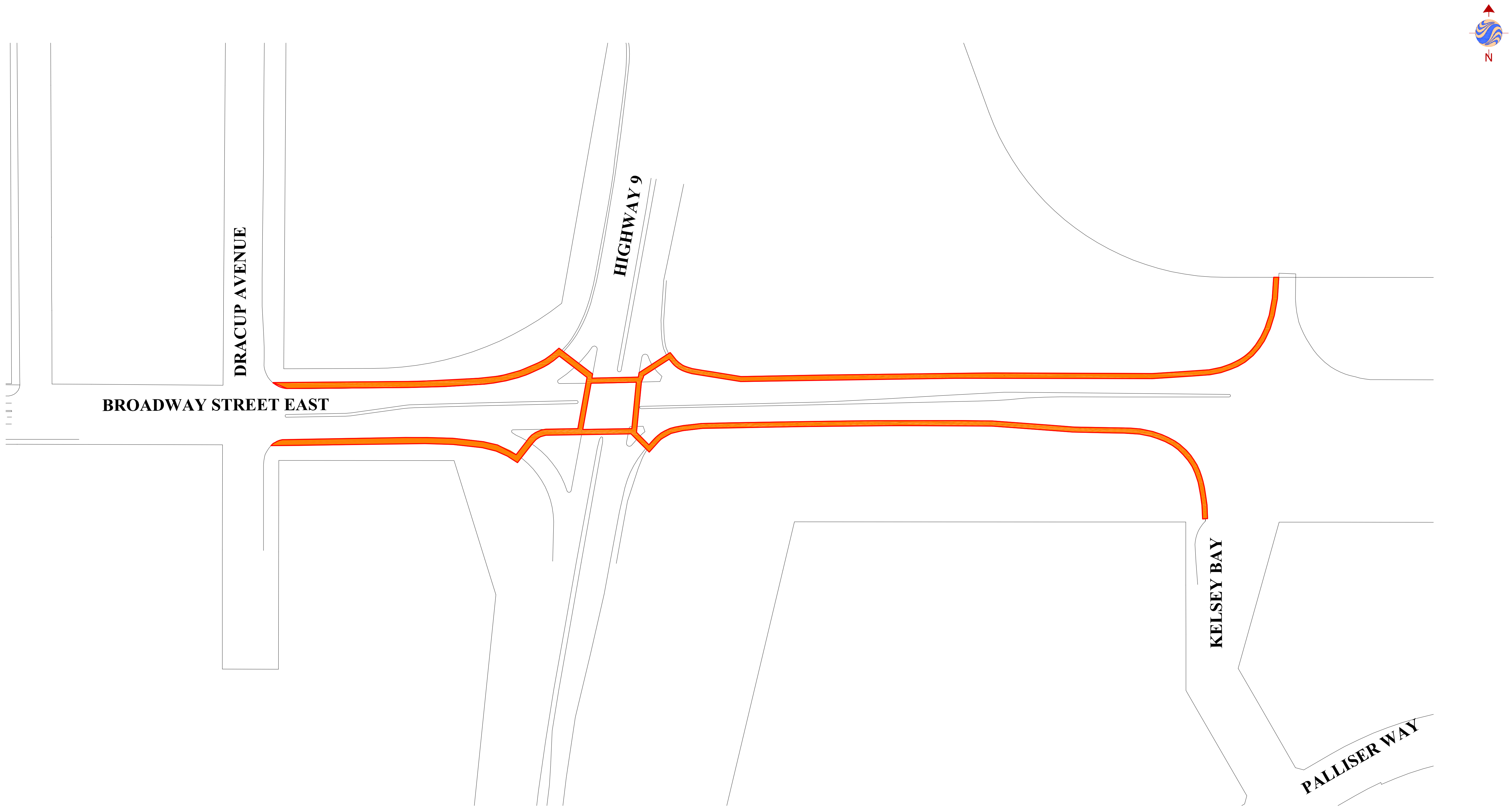
TRANSPORTATION MASTER PLAN UPDATE

Figure No.
7.1A

Title
YORK ROAD CORRIDOR



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- IMPROVEMENT AREA
- IMPROVEMENT BOUNDARY
- NEW MEDIAN
- NEW SIDEWALK
- NEW BIKE PATH
- TRAFFIC SIGNAL INSTALLATION
- TRAFFIC SIGNAL OPTIMIZATION

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TRANSPORTATION MASTER PLAN UPDATE

Figure No.
7.1B

Title
BROADWAY STREET & HIGHWAY 9 INTERSECTION

7.1.3 Broadway Street & Seventh Avenue Intersection

Concern

This intersection is currently stop-controlled in the NB and SB directions. Heavy traffic on Broadway Street causes un-acceptable delays for traffic on Seventh Avenue. The SB left, thru, and right movements all operate at LOS D while the NB left turning movement operates at LOS E. Under existing operating conditions, traffic volumes warrant signals at this location as described in Section 4.3 of this report. The current intersection also does not provide for pedestrian movements across Broadway Street as traffic is currently free flowing along Broadway Avenue.

Recommendations

- Signalize the intersection;
- Add crosswalks across Broadway Street; and
- Add bulb-outs to the south side of the intersection.

Signalizing the intersection improves the NB and SB movements to LOS B while the EB and WB movements remain at LOS A. With the addition of traffic signals, there is an opportunity to provide crosswalks across Broadway Street allowing for better pedestrian access at this intersection. The addition of bulb-outs creates an attractive feature for streetscapes while effectively reducing the overall crossing length for pedestrians moving across Broadway Street. Bulb-outs have been provided on the north side of Broadway Street and there is an opportunity to provide them on the south side as well.

It is recommended that traffic signals be installed immediately in order to alleviate the current congestion that exists at this intersection and the lower than acceptable levels of service on Seventh Avenue.

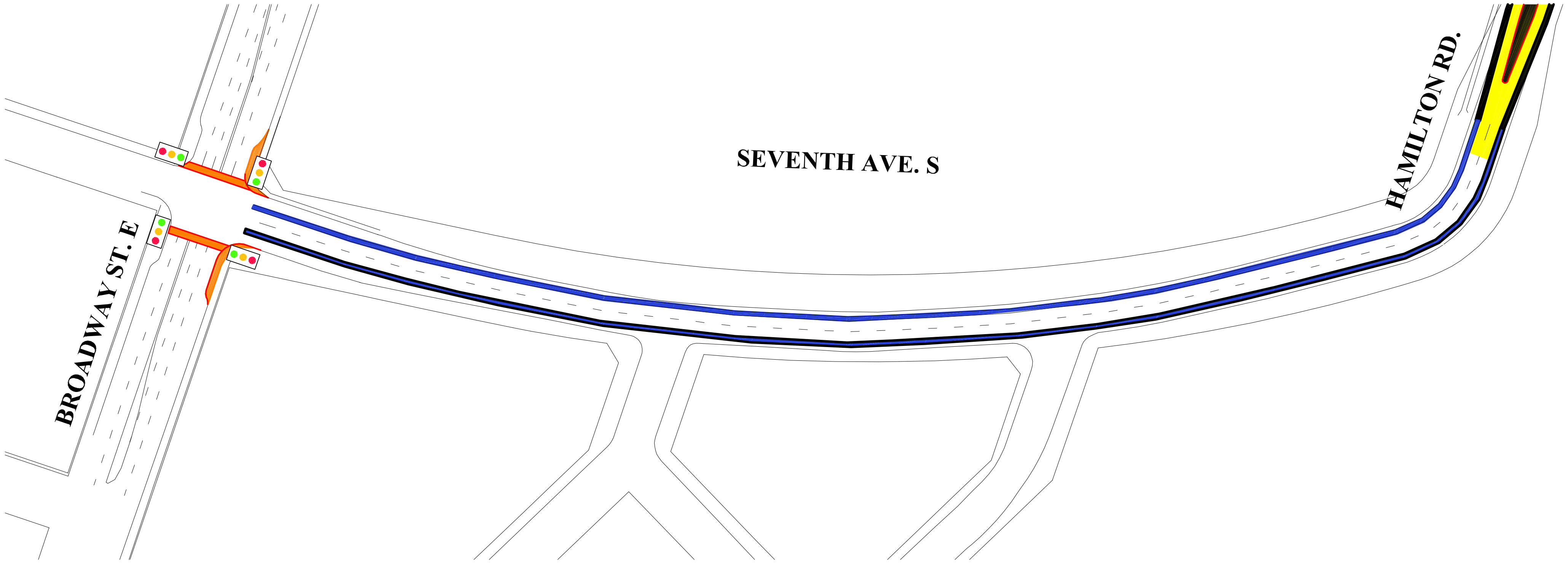
The recommended improvements for the Broadway Street & Seventh Avenue intersection are shown in Figure 7.1C.

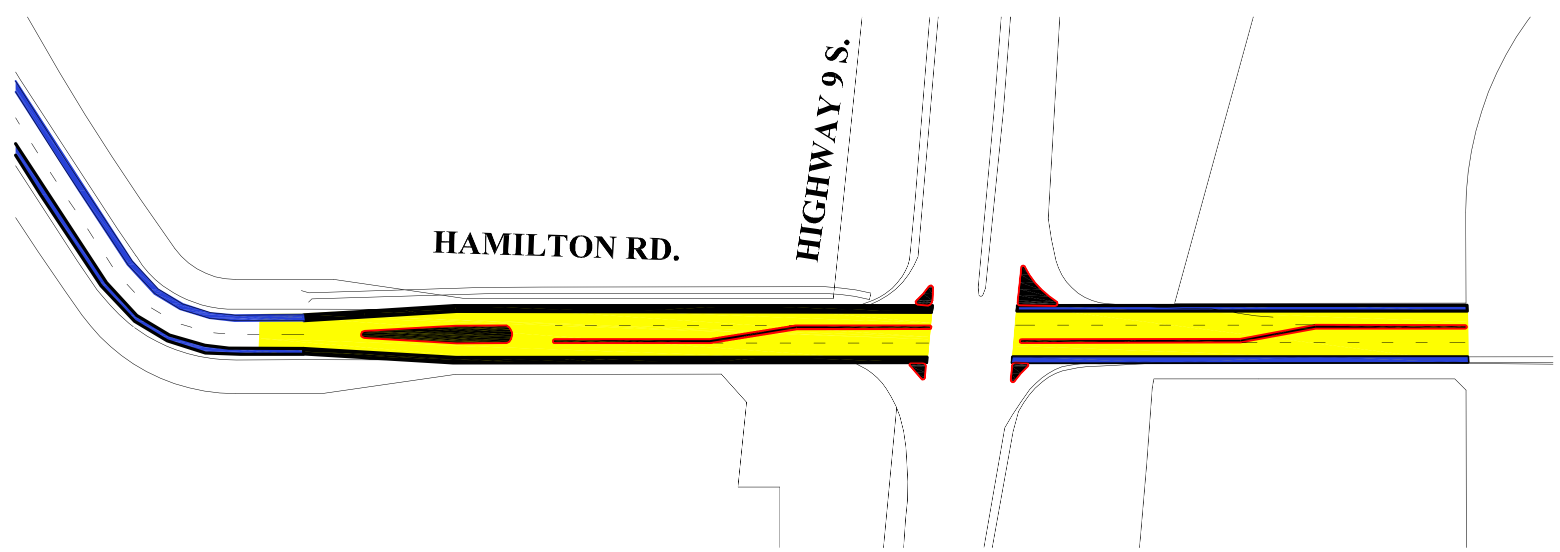
7.1.4 Hamilton Road & Highway 9 Intersection

When Highway 9 was widened, left turn bays and right turn channelization were added for traffic turning onto Hamilton Road from both the NB and SB directions on Highway 9. This was a recommendation of the 2003 report. Improving pedestrian access to this intersection was also considered a priority. A new sidewalk was built along the north side of Hamilton Road to the west of Highway 9, but no other pedestrian-friendly development has occurred.

Concern

Hamilton Road serves as the primary access to the commercial developments east of Highway 9 which creates a lot of queuing along the east approach. WB thru and left turning movements





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ORIGINAL SHEET – ANSI B

Stantec

City of Yorkton

Legend

- IMPROVEMENT AREA
- IMPROVEMENT BOUNDARY
- NEW MEDIAN
- NEW SIDEWALK
- NEW BIKE PATH
- TRAFFIC SIGNAL INSTALLATION
- TRAFFIC SIGNAL OPTIMIZATION

JUNE, 2011
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Client/Project
CITY OF YORKTON
TRANSPORTATION MASTER PLAN UPDATE

Figure No.
7.1C

Title
SEVENTH AVENUE / HAMILTON ROAD CORRIDOR

operate at an acceptable LOS C under current traffic conditions, but queue lengths in the WB direction approach 30 m during the PM peak hour.

Pedestrians are forced to walk along the side of the road or use a dirt footpath next to the roadway. Additional improvements are required at this location in order to improve safety and provide a friendlier environment for pedestrians and cyclists.

Recommendations

- Add left turning bays with a protected left turn phase to the EB and WB movements;
- Add sidewalks along the south side of Hamilton Road west of the intersection terminating at the Staples parking lot and along both sides of Hamilton Road east of the intersection up to Palliser Way; and
- Add dedicated cyclist lanes to Hamilton Road on both sides of the street. The addition of separate bicycle lanes to Hamilton Road was a recommendation from the 2003 report and is also included in the Network Plan for the City of Yorkton as discussed in Section 4.12.

The present right-of-way is wide enough to accommodate separate left turning lanes on Hamilton Road, however, the existing traffic signals will have to be modified in order to accommodate the wider roadway. Adding dedicated left turning bays and a protected left turn phase to the EB and WB movements improves the WB left movement to LOS B and the EB left movement to LOS A. All other movements at the intersection remain at an acceptable LOS.

The recommended improvements for the Hamilton Road & Highway 9 intersection are shown in Figure 7.1C.

7.1.5 King Street Corridor

Recommendations were made as part of the 2003 study and included constructing bulb-outs on King Street at Melrose Avenue, Laurier Avenue, and Roslyn Avenue to calm traffic and improve pedestrian movements, changes to the King Street and Highway 9 intersection including restricting access to Highway 9 from King Street by providing a right-in/right-out intersection configuration only, or channelizing Highway 9 to allow left-turning vehicles to queue without obstructing traffic on the highway. Currently, the King Street corridor remains largely unchanged since the 2003 study.

Concern

King Street is often used as a shortcut between Gladstone Avenue and Highway 9 to avoid having to use Broadway Street. High traffic volumes, excess speeds, and public safety are all concerns associated with this corridor.

As a stopgap measure to slow traffic using King Street as a shortcut, the intersections of King Street with Fifth Avenue and Laurier Avenue have been converted to four-way stop controlled intersections. Simply creating delay to discourage usage of a route is not good practice.

Recommendations

- Replace the four-way stops at Fifth Avenue and Laurier Avenue with roundabouts;
- Construct a roundabout at Tupper Avenue;
- Construct bulb-outs at Second Avenue, Third Avenue, and Roslyn Avenue; and
- Re-define the centre line of King Street by moving it approximately 1.3 m to the north and creating a designated parking lane on the south side of the roadway.

The existing right of way on King Street is wide enough to accommodate small roundabouts at Fifth Avenue, Laurier Avenue, and Tupper Avenue with minimal modifications to the existing geometry.

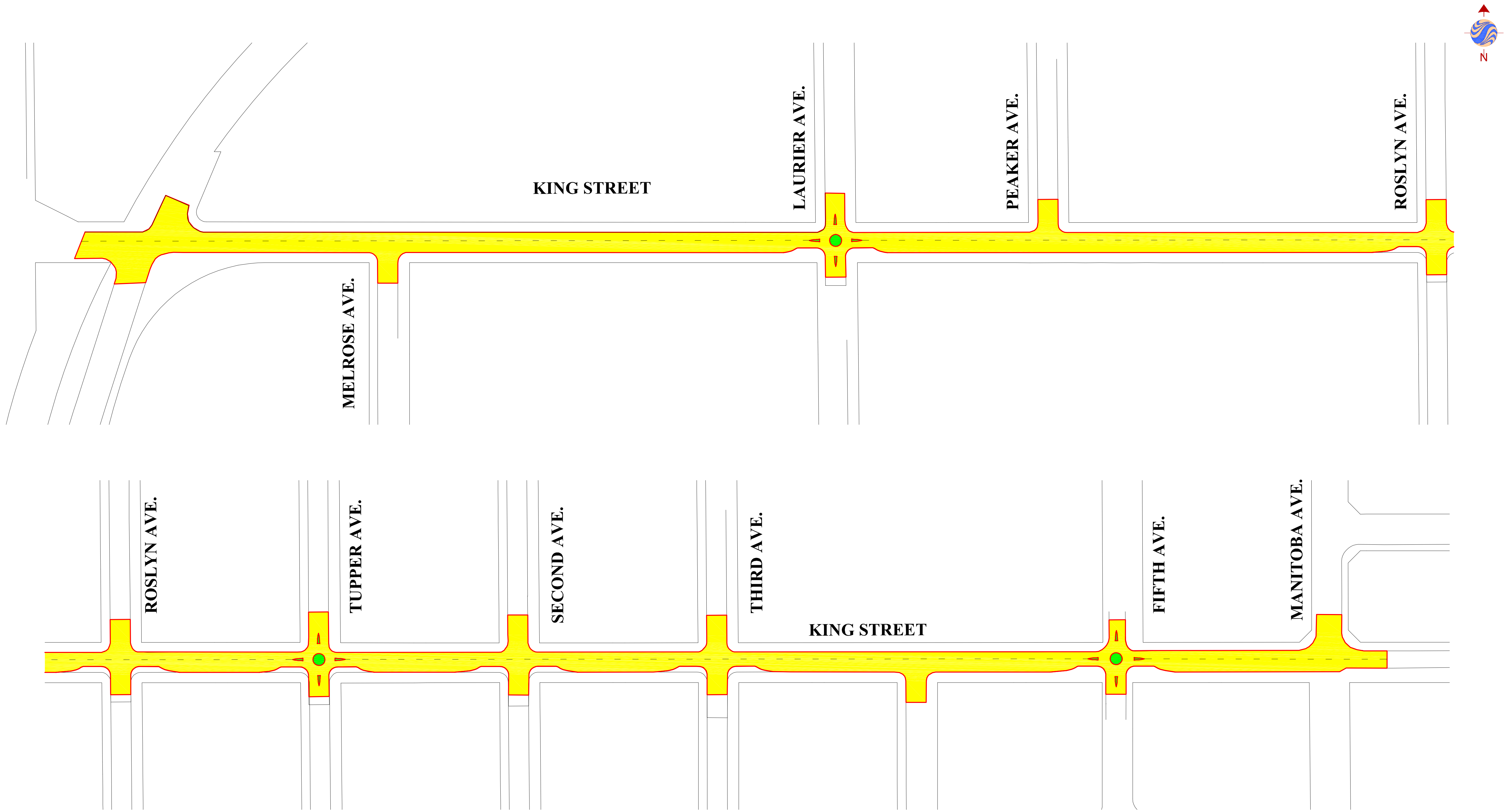
Roundabouts provide significant operational and safety benefits to intersections while also functioning to calm traffic. Roundabouts are typically constructed for a variety of reasons including but not limited to collision reduction by reducing the number of conflict points within an intersection, reduced traffic delays, reductions to air pollution and fuel consumption attributed to the starting and stopping of vehicles at conventional intersections, enhancing intersection aesthetics, and providing a safe and friendly environment for pedestrians. Roundabouts are typically much cheaper to maintain than conventional intersections and motorists are becoming much more familiar with their operation as they are emerging as a common feature in residential neighbourhoods throughout North America.

Bulb-outs have also been found to safely and effectively reduce vehicle speeds by creating the perception of a narrower roadway and thus encourage drivers to slow down. Bulb-outs also create shelter for parked vehicles, reduce pedestrian crossing distances, and provide an opportunity for unique landscaping features and aesthetic enhancements to roadway corridors.

The current roadway width of King Street varies slightly but for the most part is 10 m wide. Allowing parking on both sides of the roadway is not desirable as the travel lanes of the roadway will effectively be narrowed far below what is considered an acceptable lane width. It is recommended that parking be allowed exclusively on the south side of the roadway and that the centre line be shifted approximately 1.3 m north to allow for two standard 3.7 m lanes with a 2.6 m parking lane on the south side. The parking lane would be protected by the bulb-outs and signed accordingly.

It is recommended that the four-way stops be converted to roundabouts immediately while the bulb-outs and re-defined centre line may be established later on in Stage 1. It is not recommended to restrict any access to King Street from Highway 9 but rather to improve the geometrics of this intersection. This is discussed in further detail in Section 7.1.

The recommended improvements for the King Street corridor are shown in Figure 7.1D.



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ORIGINAL SHEET - ANSI B

Stantec

City of Yorkton

Legend

- IMPROVEMENT AREA
- IMPROVEMENT BOUNDARY
- NEW MEDIAN
- NEW SIDEWALK
- NEW BIKE PATH
- TRAFFIC SIGNAL INSTALLATION
- TRAFFIC SIGNAL OPTIMIZATION

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CITY OF YORKTON
TRANSPORTATION MASTER PLAN UPDATE

Figure No.
7.1D

Title
KING STREET CORRIDOR

7.1.6 Queen Street & Highway 9 Intersection

Concern

All EB movements at this location operate at LOS D under existing operating conditions. Traffic signals are warranted at this location under existing traffic conditions as described in Section 4.3.

Recommendations

- Signalize the intersection; and
- Add left-turn bays in the NB, EB, and WB directions.

Adding traffic signals alone does improve the operating capacity of this intersection; however, left turn bays are required for future stages of development and greatly improve its operation. To avoid having to relocate the traffic signals in the future, the addition of left turn bays should be installed concurrently in order to avoid having to move the signals in the future when it becomes more critical that left turning bays are provided. These improvements greatly improve the performance of this intersection. The EB thru movement improves to LOS A and EB left turning movement improves to LOS B. All other movements remain at an acceptable LOS.

The current cross section of Highway 9 is wide enough to accommodate the NB left turn bay. The addition of this movement will only require new pavement markings. The current cross section of Queen Street, however, is not wide enough to accommodate separate left turning bays. It is recommended that Queen Street be widened out at the intersection to allow for left turning bays in the EB and WB directions prior to traffic signal installation.

It is recommended that traffic signals be installed immediately in order to alleviate the congestion that currently exists at this intersection.

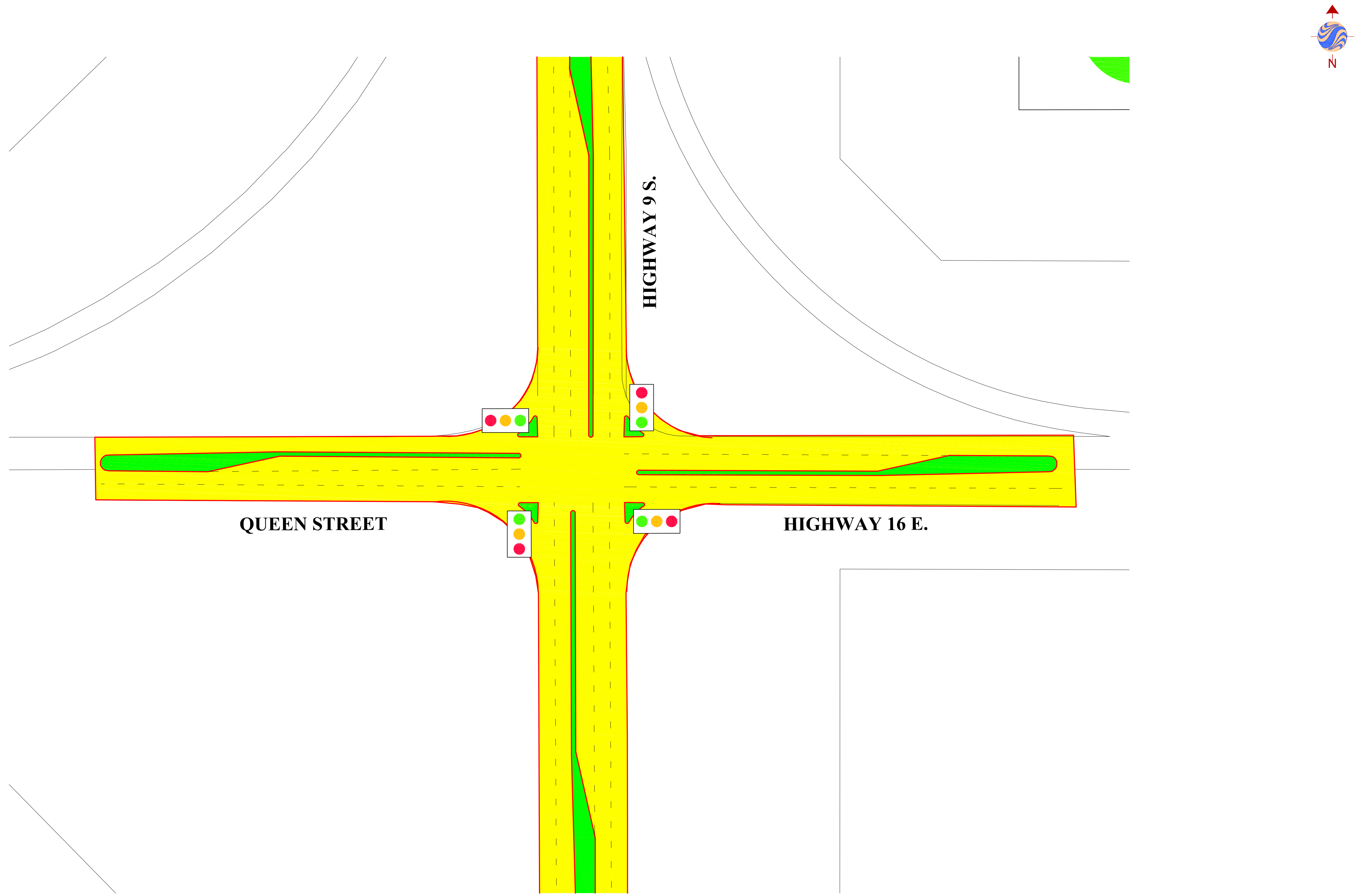
The recommended improvements for the Queen Street & Highway 9 intersection are shown in Figure 7.1E.

7.1.7 Independent Street & Laurier Avenue/Melville Avenue Intersection

The intersection of Independent Street with Laurier Avenue and Melville Avenue is a five-legged intersection just south of the CBD. The 2003 study recommended closing Laurier Drive north and south of the intersection, closing Haultain Avenue between Jubilee Crescent and Melville Avenue, and re-aligning Park Street to align with Independent Street.

Concern

Aside from being an un-traditional five-legged intersection, the CN Railway also bisects the intersection from NE to SW. In addition, traffic travelling WB on Park Street currently has to stop in advance of Melville Avenue, far back from the free flowing Laurier Avenue. After traffic



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ORIGINAL SHEET – ANSI B

Stantec

City of Yorkton

Legend

IMPROVEMENT AREA

IMPROVEMENT BOUNDARY

NEW MEDIAN

NEW SIDEWALK

NEW BIKE PATH

TRAFFIC SIGNAL INSTALLATION

TRAFFIC SIGNAL OPTIMIZATION

Client/Project
CITY OF YORKTON
TRANSPORTATION MASTER PLAN UPDATE

Figure No.
7.1E

Title
QUEEN STREET & HIGHWAY 9
INTERSECTION

advances past Melville Avenue, they are not prompted to stop again at Laurier Avenue creating an unsafe operating condition.

Concerns with the recommendations made in the 2003 report are the additional property required to extend Melville Avenue, the near 45 degree skew of the new intersection created between Melville Avenue and Independent Street, and access from Laurier Avenue not being provided to Independent Street resulting in the creation of two cul-de-sacs.

Recommendations

- Close Melville Avenue from Park Street to Borden Street; and
- Re-align Park Street north towards the water tower such that it aligns properly with Independent Street.

Closing Melville Avenue between Park Street and Borden Street creates a conventional four-legged intersection with no skew between Independent Street and Laurier Avenue. Traffic volumes on Melville Avenue are relatively low and the increase in traffic to Laurier Drive as a result is considered negligible. Removing Melville Avenue allows the stop sign for WB Park Street to be moved closer to the Laurier Drive intersection and the re-alignment of Park Street.

The reason for extending Melville Avenue was to create a continuous route for motorists travelling on Gladstone Avenue South to the CBD. Melville Avenue can be up-graded from King Street to Peaker Avenue and tie into Haultain Avenue to effectively create the same result while not having adverse effects on Laurier Avenue and Independent Street. See recommendations for Melville Avenue in Section 7.2.

The recommended improvements for the Independent Street & Laurier Avenue/Melville Avenue intersection are shown in Figure 7.1F.

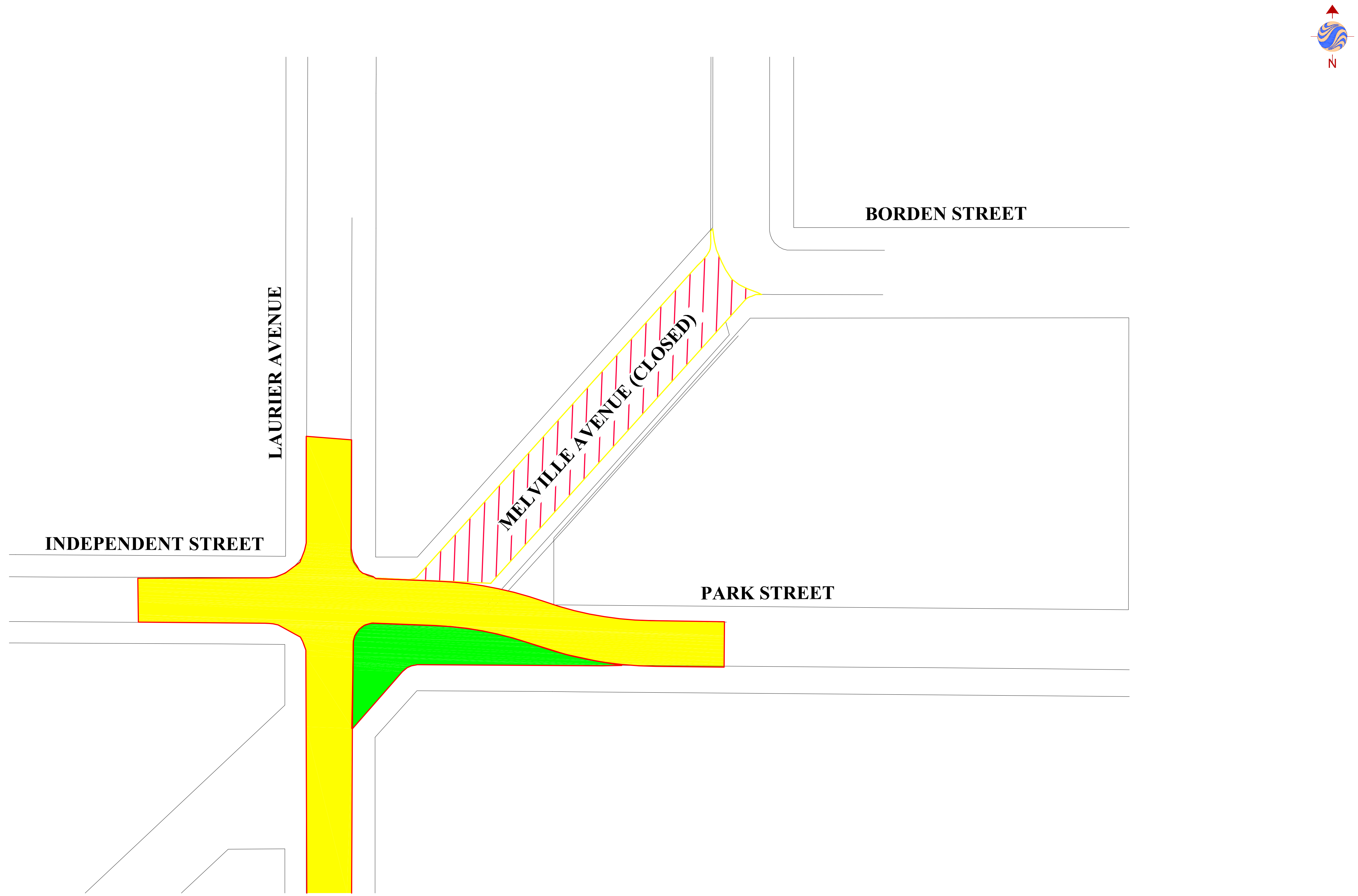
7.1.8 York Road & Gladstone Avenue Intersection

Concern

Significant development, primarily industrial, is expected to take place in the City's north end during Stage 1. As a result of these future developments, increased traffic volumes on York Road cause the NB and SB thru and left turning movements at this intersection to experience significant delays operating at LOS E and LOS D respectively. As the intersection is currently un-signalized, increased traffic along York Road does not provide significant gaps in traffic for vehicles crossing or turning onto York Road in order to make their movements and as a result the LOS drops significantly and queue lengths become longer on York Road.

Recommendations

- Signalize the intersection; and



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JUNE, 2011
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ORIGINAL SHEET - ANSI B

Stantec

City of Yorkton

Legend

- IMPROVEMENT AREA
- IMPROVEMENT BOUNDARY
- NEW MEDIAN
- NEW SIDEWALK
- NEW BIKE PATH
- TRAFFIC SIGNAL INSTALLATION
- TRAFFIC SIGNAL OPTIMIZATION

Client/Project
CITY OF YORKTON
TRANSPORTATION MASTER PLAN UPDATE

Figure No.
7.1F

Title
PARK STREET & LAURIER AVENUE INTERSECTION

- Widen Gladstone Avenue north of the intersection to align with Gladstone Avenue south of the intersection.

Signalizing the intersection improves the SB thru and left turning movements to LOS C at the completion of Stage 1. All other movements operate at LOS B or better once traffic signals are installed. Aligning Gladstone Avenue north of York Road with Gladstone Avenue south of Gladstone Road creates a safer intersection, improves sightlines, and avoids driver confusion.

7.1.9 Darlington Street & Mayhew Avenue Intersection

Concern

This intersection does not experience any significant operational issues and all movements operate at LOS B or better at the completion of Stage 1, however, traffic signals are warranted at this location as a result of increased traffic from Stage 1 developments.

Recommendations

- Signalize the intersection.

Though immediate improvements may not be feasible in the short term, the addition of traffic signals to the intersection is a proactive approach to improving its operation in the long term. It is recommended that traffic signals be installed at this intersection at the end of Stage 1 or early in Stage 2.

7.1.10 Darlington Street & Dracup Avenue Intersection

This intersection does not experience any significant operational issues and all movements operate at LOS B or better at the completion of Stage 1, however, traffic signals are warranted at this location as a result of increased traffic from Stage 1 developments.

Recommendations

- Signalize the intersection.

Though immediate improvements may not be feasible in the short term, the addition of traffic signals to the intersection is a proactive approach to improving its operation in the long term. It is recommended that traffic signals be installed at this intersection at the end of Stage 1 or early in Stage 2.

7.1.11 Broadway Street & Dalebrooke Drive Intersection

Concern

After completion of Stage 1, the EB thru and right turning movements on Broadway Street operate at LOS D.

Recommendations

- Optimize the current traffic signal timings.

Optimizing the current traffic signal timings increases the LOS in the EB direction during Stage 1 from LOS D to LOS B for both the thru and right turning movements. All other movements at the intersection remain at LOS B or better.

7.1.12 Broadway Street & Gladstone Avenue Intersection

Concern

This intersection is the site of the most accidents within the City of Yorkton. The majority of the accidents experienced are rear-end collisions associated with high traffic volumes and driver in-attention.

Recommendations

- Optimize the current traffic signal timings; and
- Install advanced warning flashers on Broadway Street.

The current intersection utilizes the entire road right-of-way and geometric improvements such as widening the roadway to accommodate additional left and/or right turning bays would involve a significant capital investment including property acquisitions. Optimizing the existing traffic signals improves the overall LOS which in turn can reduce traffic collisions. The installation of an advanced warning system will warn motorists prior to the intersection if the light is about to change red which typically aids in the reduction of rear-end and other types of collisions often associated with motorists running red lights.

7.1.13 Broadway Street Corridor

Broadway Street, aside from being the busiest roadway corridor in the City of Yorkton, is also the main thoroughfare for pedestrians and motorists and forms the heart of the CBD. One of the concerns identified in the 2003 study were the aesthetics along this corridor. It was recommended to provide bulb-outs at the intersections along Broadway Street not only to enhance the aesthetics but to create a more pedestrian friendly environment for those visiting the downtown restaurants and shops.

Concern

Aside from the aesthetic aspect, there is also concern regarding the traffic signal coordination for those intersections along the Broadway Street corridor as discussed in Section 2.4, specifically the traffic signals from Myrtle Avenue to Fourth Avenue. Currently, there are five consecutive traffic signals along the Broadway Street corridor at the intersections of Myrtle Avenue, First Avenue, Second Avenue, Third Avenue, and Fourth Avenue which operate on a coordinated traffic signal timing program.

Recommendations

- Provide bulb-outs at intersections along Broadway Street from Myrtle Avenue to Seventh Avenue; and
- Re-program or re-install the traffic coordination for the traffic signals on Myrtle Avenue, First Avenue, Second Avenue, Third Avenue, and Fourth Avenue.

The construction of bulb-outs are generally a quick and in-expensive improvement to any road corridor in that they provide a means of calming traffic, shorten the overall distance of pedestrian crossings, provide an area for landscaping and other aesthetic features, and provide protection for parking along the side of the roadway when present. As discussed in Section 2.4, recommendations for the re-programming of the coordinated traffic signals on Broadway Street from Myrtle Avenue to Fourth Avenue is outside of the scope of this study.

7.2 STAGE 2 – INTERMEDIATE IMPROVEMENTS

Recommendations provided for intermediate improvements assume that all residential, commercial, and industrial developments discussed in Section 5.3 for Stages 1 and 2 have been completed or are underway. It is suggested that all recommendations discussed under Stage 2 be implemented at some point throughout the stage, i.e. in the years 2020 to 2030.

An overview of all recommended intermediate improvements is shown in Figure 7.2.

7.2.1 York Road & Sully Avenue Intersection

Concern

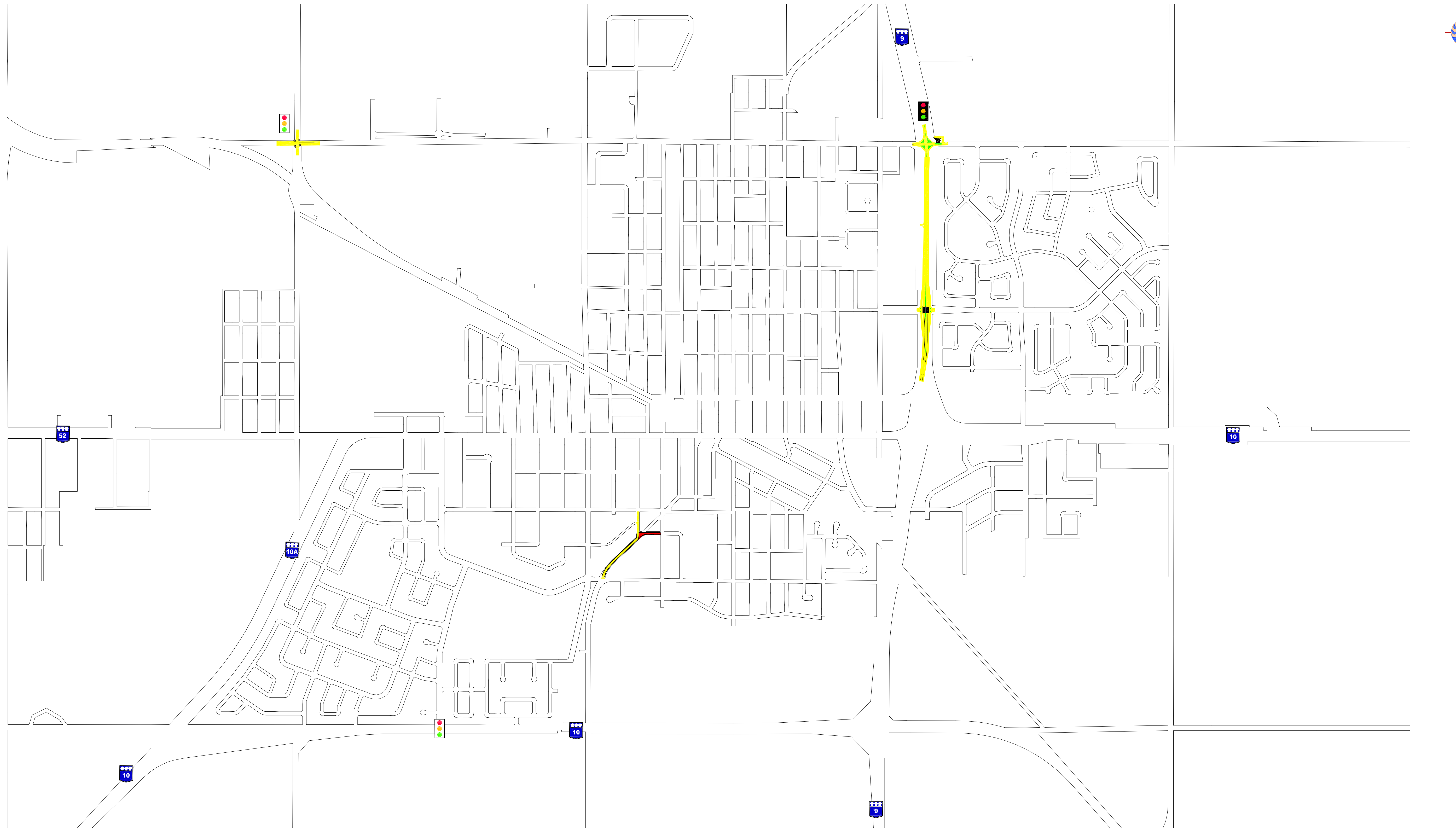
This intersection experiences a large increase in traffic volumes throughout Stages 2 and 3. SB thru and left turning movement's experience LOS E at the end of Stage 2 assuming the current stop controlled intersection is left in place. Traffic signals are warranted at this intersection in Stage 2.

Recommendations

- Signalize the intersection;
- Provide separate left turning bays in all directions; and
- Provide channelization for all right turning movements.

Signalizing the intersection and providing separate left and right turning movements improves all intersection movements to LOS B or better.

The recommended improvements for the York Road & Sully Avenue intersection are shown in Figure 7.2A.



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JUNE, 2011
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ORIGINAL SHEET – ANSI B

Stantec

City of Yorkton

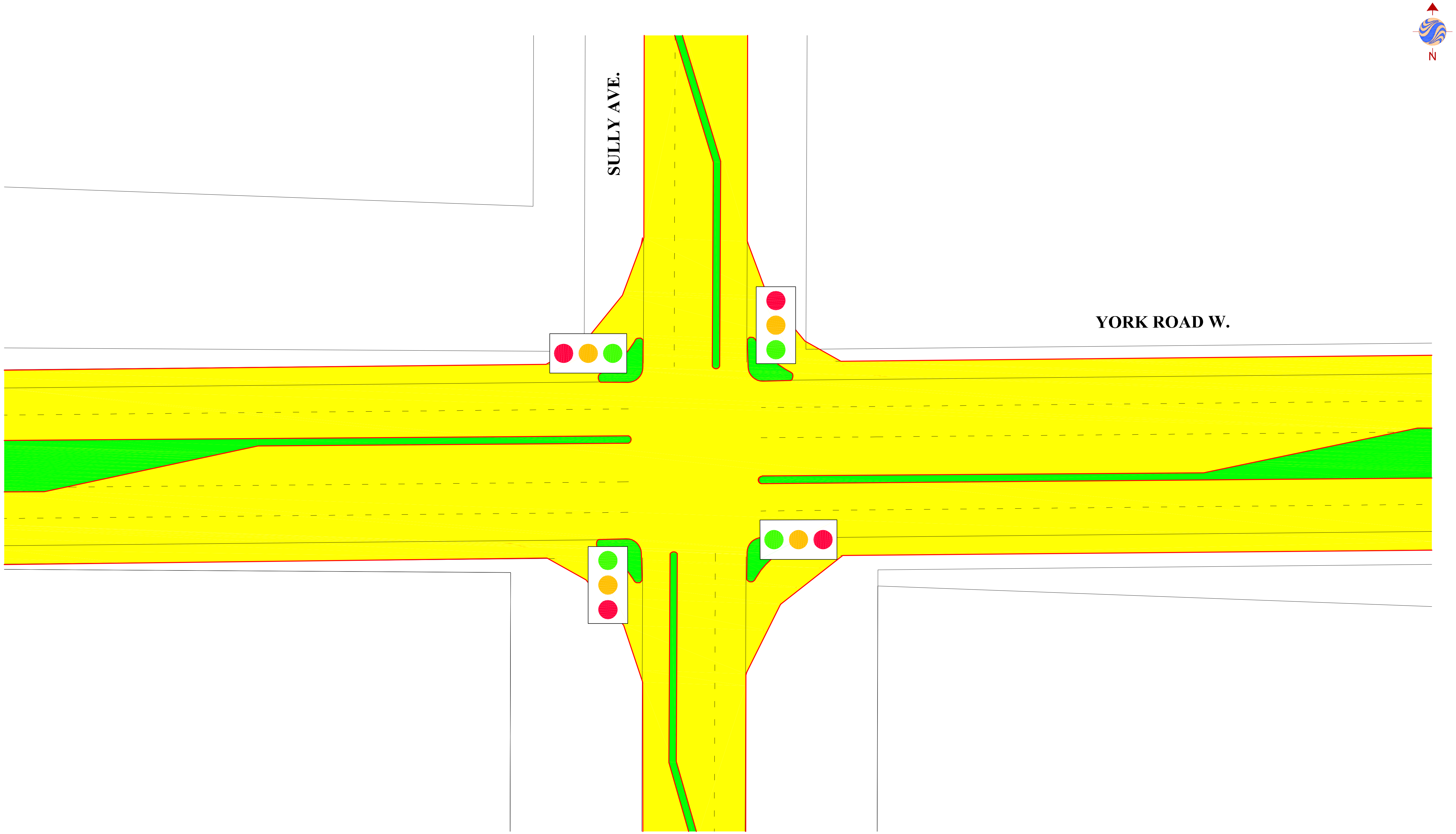
Legend

- IMPROVEMENT AREA
- IMPROVEMENT BOUNDARY
- NEW MEDIAN
- NEW SIDEWALK
- NEW BIKE PATH
- TRAFFIC SIGNAL INSTALLATION
- TRAFFIC SIGNAL OPTIMIZATION

Client/Project
CITY OF YORKTON
TRANSPORTATION MASTER PLAN UPDATE

Figure No.
7.2

Title
STAGE 2 - INTERMEDIATE IMPROVEMENTS



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ORIGINAL SHEET – ANSI B

Stantec

City of Yorkton

Legend

IMPROVEMENT AREA
IMPROVEMENT BOUNDARY
NEW MEDIAN
NEW SIDEWALK
NEW BIKE PATH

TRAFFIC SIGNAL INSTALLATION
TRAFFIC SIGNAL OPTIMIZATION

Client/Project
CITY OF YORKTON
TRANSPORTATION MASTER PLAN UPDATE

Figure No.
7.2A

Title
YORK ROAD & SULLY AVENUE INTERSECTION

7.2.2 Highway 9 Corridor

The 2003 recommendations suggested that Highway 9 be widened and channelized with a centre median. The report also recommended constructing dedicated turning lanes for traffic turning onto Broadway Street and Hamilton Road. Poor lighting along Highway 9 was also cited as an issue. Many of the recommendations have since been put in place.

Highway 9 is now divided with a centre median from Smith Street to Hamilton Road, channelized right turning lanes and left turning bays have been provided for traffic turning off of Highway 9, and street lighting has also been installed in the area improving nighttime visibility. Despite all of the efforts made thus far, there are still concerns over Highway 9 as a corridor.

Concern

Highway 9 remains an undivided four-lane roadway north of Smith Street and south of Hamilton Road. A large amount of commercial development is expected to take place on the west side of Highway 9 between York Road and Smith Street as well as the east side of Highway 9 between Hamilton Road and Queen Street. With the new commercial developments, it may be desirable to create business access directly from Highway 9.

Recommendations

- Twin Highway 9 from York Road to Smith Street and from Hamilton Road to Queen Street with a center median;
- Construct a second overpass structure over Darlington Street with ramp connections providing all access movements between Highway 9 and Darlington Street;
- Construct a right-in/right-out access off of Highway 9 into the new commercial development area west of Highway 9 between York Road and Darlington Street;
- Do not allow any additional access directly off of Highway 9. All other access to the proposed commercial developments between York Road and Smith Street should be provided from York Road, Darlington Street, Smith Street, and Dracup Avenue; and
- Improve lighting along Highway 9.

Twinning Highway 9 from York Road to Smith Street will allow space in the median for protected left turning bays in the NB direction to provide an additional access to the proposed commercial developments west of the highway. Twinning Highway 9 will require the construction of an additional overpass structure where Highway 9 passes over Darlington Street as the existing structure is only wide enough to accommodate two lanes of traffic. Providing an all access interchange at this location will provide access to the commercial developments on the west side of Highway 9 both north and south of Darlington Street.

Provided that the Highway is twinned, it may also be feasible to provide a separate left turning movement into the commercial area from NB Highway 9 similar to that currently existing for the Parkland Mall access from SB Highway 9. It is not recommended, however, to allow a left turning movement out of the commercial access at this location to NB Highway 9. By configuring this access as a right-in/right-out with provision for only the NB left turning movement should eliminate the need for signalization at this location which is undesirable

The recommended improvements for the Highway 9 corridor are shown in Figure 7.2B.

7.2.3 York Road & Highway 9 Intersection

During Stages 2 and 3, the intersection of York Road and Highway 9 experiences significant increases in traffic due primarily to the industrial developments to the north and the residential developments to the east. This intersection becomes one of the primary accesses to Highway 9 and ultimately the CBD from the NE quadrant of the City.

Concern

Although delays on at the intersection of York Road and Highway 9 are acceptable following Stage 2 developments, the queue lengths on the SB approach 50 m in length during the PM peak hour.

Recommendations

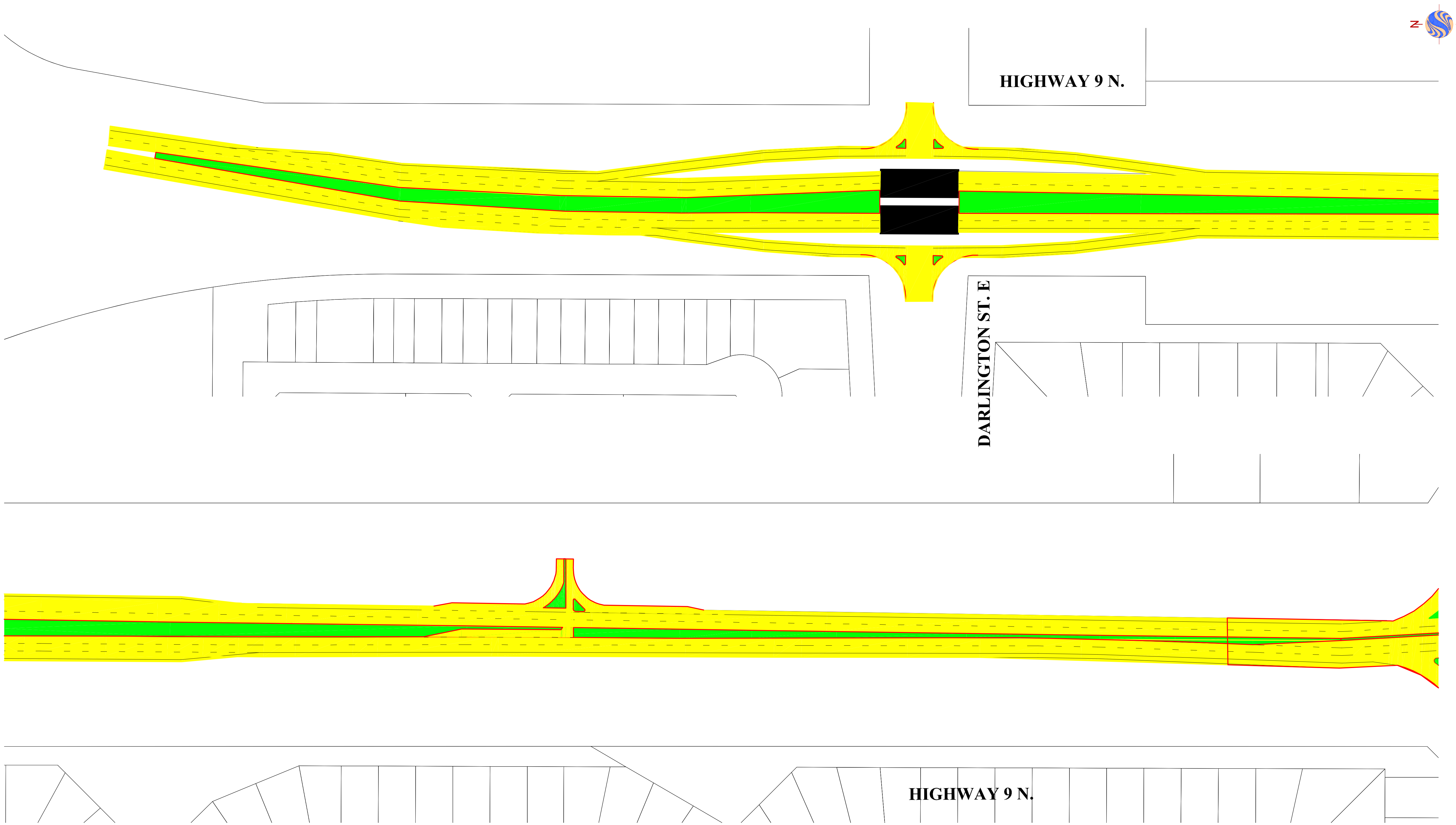
- Optimize the signal timings;
- Provide a raised median section on Highway 9;
- Add dedicated left turning bays in the NB, SB, and WB directions;
- Channelize the NB and WB right turning movements; and
- Move the service road access in the NE quadrant of the intersection further east to create more separation from the intersection.

The addition of left turning bays in the NB and SB directions will require the widening of Highway 9 through the intersection. The addition of a dedicated left turning bay in the WB direction can be accommodated within the current right-of-way. Optimizing the signal timings and adding dedicated left turning bays reduces the queuing distance on SB Highway 9 to just over 30 m while maintaining an acceptable LOS in all directions.

The recommended improvements for the York Road & Highway 9 intersection are shown in Figure 7.2C.

7.2.4 Melville Avenue Corridor

With the large residential developments planned at the south end of the City in Stages 2 and 3, large volumes of traffic will be seeking alternate routes to access the CBD from the south. Currently, the most direct route to the CBD is Queen Street either west to Highway 10A or east to Highway 9 to access Broadway Street in the heart of the CBD. There are other, less direct routes that involve taking Allanbrooke Drive to Bradbrooke Drive or taking Gladstone Avenue north to King Street and accessing the traffic circle at Bradbrooke Drive and Gladstone Avenue,



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JUNE, 2011
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ORIGINAL SHEET - ANSI B

Stantec

City of Yorkton

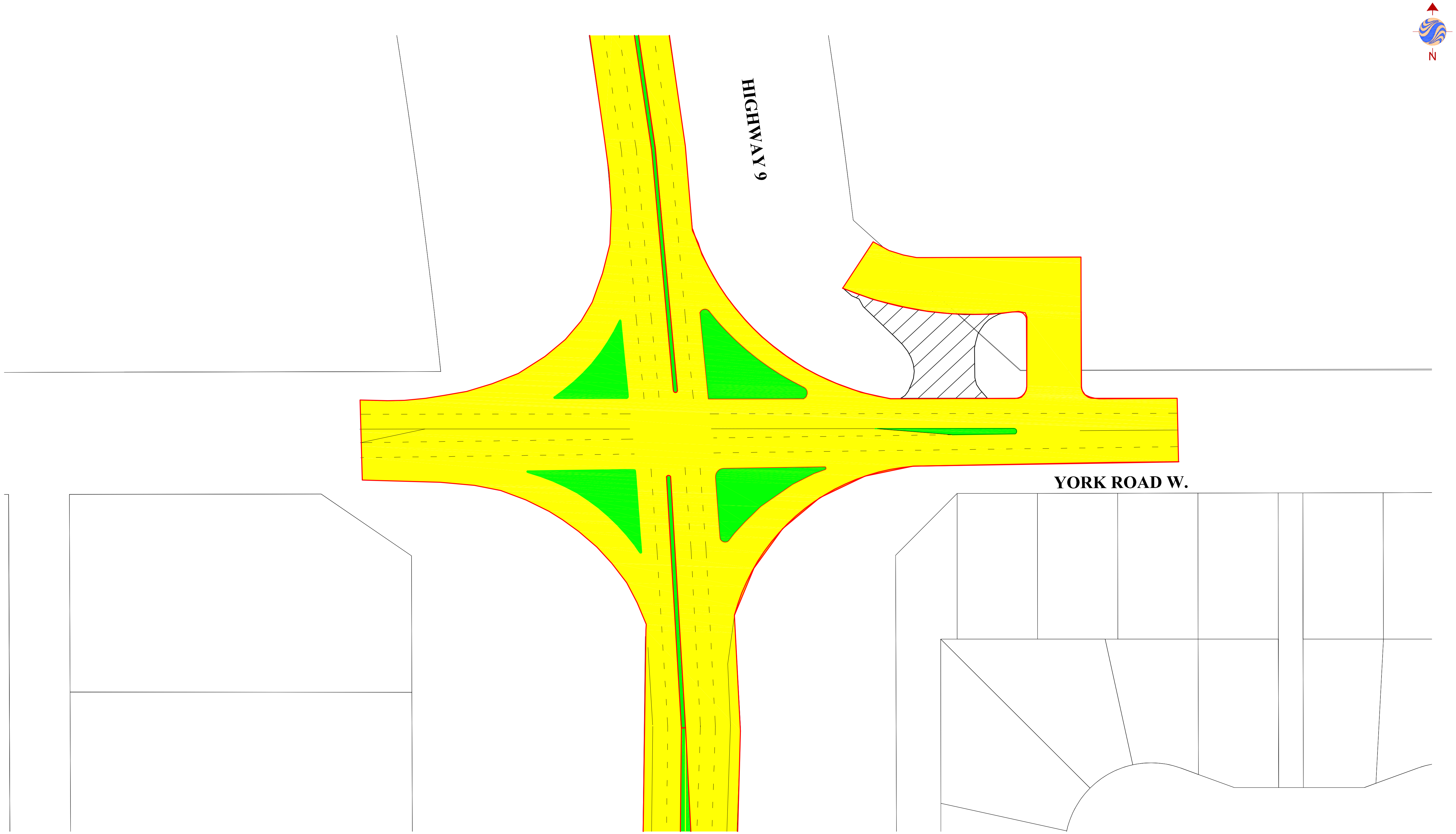
Legend

- IMPROVEMENT AREA
- IMPROVEMENT BOUNDARY
- NEW MEDIAN
- NEW SIDEWALK
- NEW BIKE PATH
- TRAFFIC SIGNAL INSTALLATION
- TRAFFIC SIGNAL OPTIMIZATION

Client/Project
CITY OF YORKTON
TRANSPORTATION MASTER PLAN UPDATE

Figure No.
7.2B

Title
HIGHWAY 9 CORRIDOR



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JUNE, 2011
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ORIGINAL SHEET - ANSI B

Stantec

City of Yorkton

Legend

IMPROVEMENT AREA
IMPROVEMENT BOUNDARY
NEW MEDIAN
NEW SIDEWALK
NEW BIKE PATH

TRAFFIC SIGNAL INSTALLATION
TRAFFIC SIGNAL OPTIMIZATION

Client/Project
CITY OF YORKTON
TRANSPORTATION MASTER PLAN UPDATE

Figure No.
7.2C

Title
YORK ROAD & HIGHWAY 9
INTERSECTION

and proceeding north along Gladstone Avenue to access Broadway Street and the CBD. A more direct route to the CBD would be more convenient for motorists and reduce traffic at intersections along Queen Street.

Recommendations

- Upgrade Melville Avenue between King Street and Peaker Avenue; and
- Close Peaker Avenue at Laurier Avenue to allow Melville to tie directly to Haultain Avenue while utilizing the existing crossing of the CN Railway.

Encouraging traffic to use Haultain Avenue may, however, create additional disruption for the residents on Haultain Avenue with the expected increase in traffic. It is recommended that the stop condition on Haultain Avenue at Independent Street be removed from Haultain Avenue and implemented on Independent Street to allow free flow on Haultain Avenue between the CN Railway and Broadway Street.

The recommended improvements for the Melville Avenue corridor are shown in Figure 7.2D.

7.2.5 Queen Street & Allanbrooke Drive

This intersection is assumed to have been converted to a four legged intersection at the start of Stage 2 in order to serve the new development areas to the south. Traffic signals are warranted at this intersection in Stage 2.

Concern

As traffic volumes increase throughout Stage 2, the NB thru and left turning movements operate at LOS F under a simple intersection configuration, i.e. no signalization and no dedicated turning lanes while the SB thru and left movements operate at LOS E.

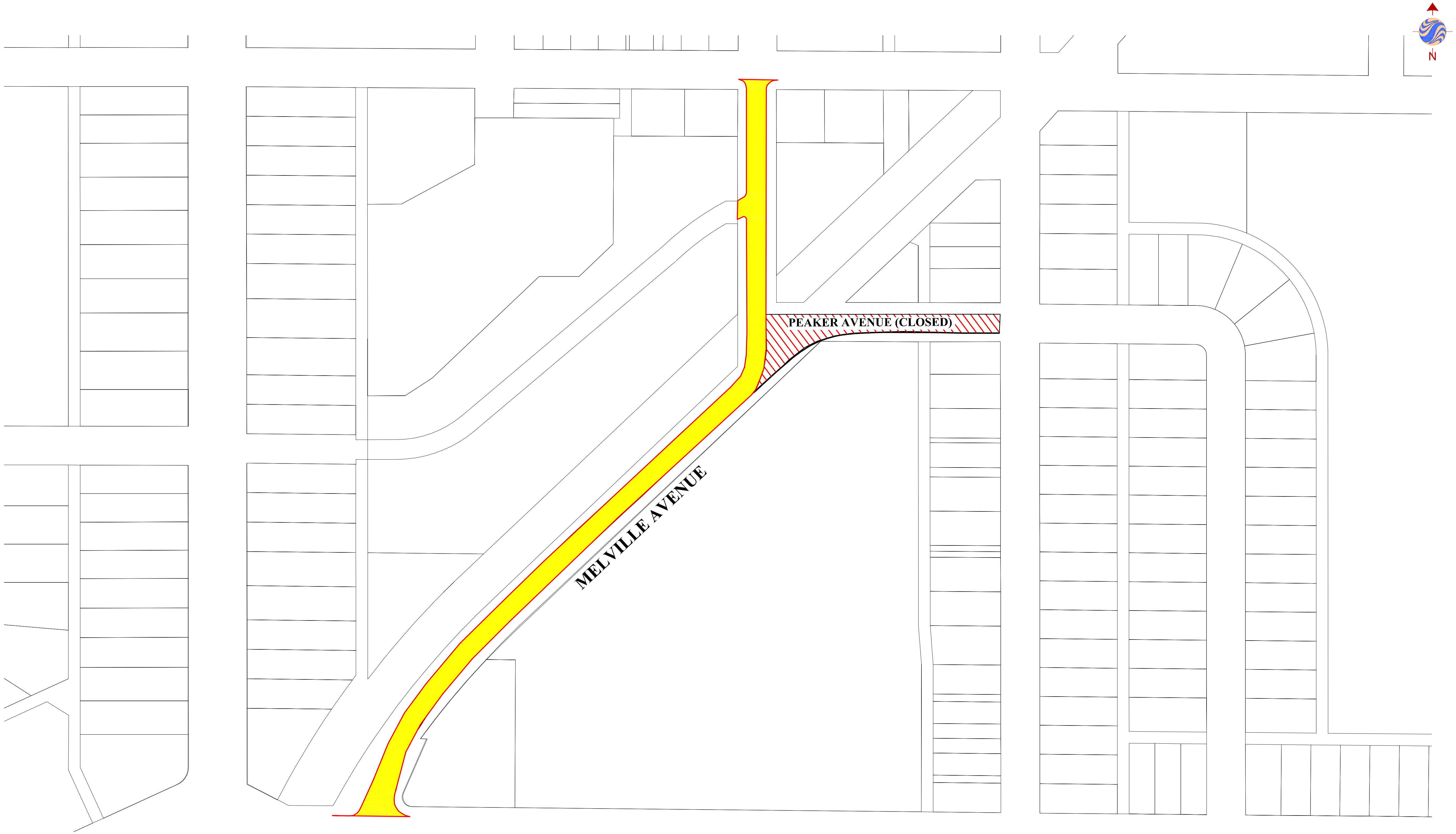
Recommendations

- Signalize the intersection; and
- Construct left turning bays for all directions of travel.

Signalizing this intersection, channelizing right turning movements, adding dedicated left turning bays, and providing protected left turning phases greatly improves the performance of this intersection. All movements perform at LOS B or better under this configuration.

7.2.6 Grain Millers Drive Corridor

Currently there are no major concerns with this roadway, however, traffic volumes are expected to increase with new development and shifts in traffic patterns.



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JUNE, 2011
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ORIGINAL SHEET - ANSI B

Stantec

City of Yorkton

Legend

IMPROVEMENT AREA
IMPROVEMENT BOUNDARY
NEW MEDIAN
NEW SIDEWALK
NEW BIKE PATH
TRAFFIC SIGNAL INSTALLATION
TRAFFIC SIGNAL OPTIMIZATION

Client/Project
CITY OF YORKTON
TRANSPORTATION MASTER PLAN UPDATE

Figure No.
7.2D

Title
MELVILLE AVENUE CORRIDOR

Recommendations

- Upgrade the roadway to a paved two-lane roadway with a 12 m top width and an urban cross section;
- Change the orientation of the current EB and WB stop control at the intersection with Gladstone Avenue to stop controlled in the NB and SB directions; and
- Remove the truck route designation from York Road and designate Grain Miller Drive as the new truck route.

Paving the roadway and moving the truck route designation from York Road to Grain Millers Drive will reduce the amount of heavy truck traffic passing through the City while providing better access to the businesses north of the City. See discussion in Section 4.11.

7.3 STAGE 3 – LONG TERM IMPROVEMENTS

Recommendations provided for long term improvements assume that all residential, commercial, and industrial developments discussed in Section 5.3 for Stages 1, 2 and 3 have been completed or are underway. It is suggested that all recommendations discussed under Stage 3 be implemented at some point throughout the stage, i.e. in the years 2030 to 2040.

An overview of all recommended long-term improvements is shown in Figure 7.3.

7.3.1 Queen Street Corridor

Queen Street has seen increased traffic since the 2003 study and is expected to increase substantially with the large residential developments planned south of Queen Street between Highway 9 and Highway 10 throughout all three stages of development. Traffic signals are warranted at the intersections with Gladstone Avenue and the new residential access between Gladstone Avenue and Highway 9 based on the Stage 3 traffic volumes.

Concern

Queen Street is currently a two lane undivided paved roadway. In Stage 1 is was recommended that Queen Street be widened out at the intersection with Highway 9 and in Stage 2 it be widened out at the intersection of Allanbrooke Drive in order to accommodate left turning bays at each of the respective stages. In Stage 3, even more traffic is added to Queen Street with further residential development between Gladstone Avenue and Highway 9.

Recommendations

- Widen Queen Street to accommodate two lanes of traffic in each direction from Allanbrooke Drive to Highway 9 and provide allowance for separate left turning bays at both Gladstone Avenue and the new access road between Gladstone Avenue and Highway 9;
- Signalize the intersection with Gladstone Avenue; and

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2011-06-20 02:52PM By: throberts

JUNE, 2011
113154417

ORIGINAL SHEET – ANSI B

Stantec

City of Yorkton

Legend

- IMPROVEMENT AREA
- IMPROVEMENT BOUNDARY
- NEW MEDIAN
- NEW SIDEWALK
- NEW BIKE PATH
- TRAFFIC SIGNAL INSTALLATION
- TRAFFIC SIGNAL OPTIMIZATION

Client/Project
CITY OF YORKTON
TRANSPORTATION MASTER PLAN UPDATE

Figure No.
7.3

Title
STAGE 3 - LONG TERM IMPROVEMENTS

- Signalize the intersection for the new residential access between Gladstone Avenue and Highway 9.

The recommended improvements for the Queen corridor are shown in Figure 7.3A.

7.3.2 King Street & Highway 9 Intersection

In Stage 3, it is assumed that the King Street extension has been constructed to serve as access to the new commercial development area east of Highway 9 and south of the CP Railway. New trips were not routed along King Street out of this area based upon the assumption that the City wants to discourage the use of King Street as a primary route across the City. Highway 9 experiences an increase in vehicle trips as a result of this and other developments to the north and south, however, delays are acceptable during Stages 1 and 2. Traffic signals are warranted at this intersection in Stage 3.

<u>Recommendations</u>

- Signalize the intersection; and
- Provide pedestrian crosswalks across Highway 9 on both sides of King Street.

Signalizing the intersection improves the LOS in all movements to LOS B or better and greatly reduces the queuing on King Street which is created by the high volume of traffic on Highway 9 not allowing sufficient gaps for those entering off of King Street with the intersection under stop control. It should be noted that, due to the close proximity of the CP Railway to the intersection, it is recommended and may be required to provide interconnection between the traffic signals and the railway signals.

The recommended improvements for the King Street & Highway 9 intersection are shown in Figure 7.3B.

7.3.3 Fourth Avenue Overpass and Park Street Extension

Construction of the Fourth Avenue Underpass has been a long-standing recommendation for the City of Yorkton originally proposed in 1985. The 2003 report identified it as being an immediate improvement.

<u>Concern</u>

The CP Railway essentially bisects the City of Yorkton separating the north and south halves of the City. This has been cause for concern for a number of years in that when a train does pass through the City it blocks access from one side to the other. Of particular concern is that of getting emergency vehicles across the tracks when a train is present. Both the police and fire stations reside on the north side of the tracks while the hospital resides on the south side of the tracks.

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JUNE, 2011
113154417

ORIGINAL SHEET – ANSI B

Stantec

City of Yorkton

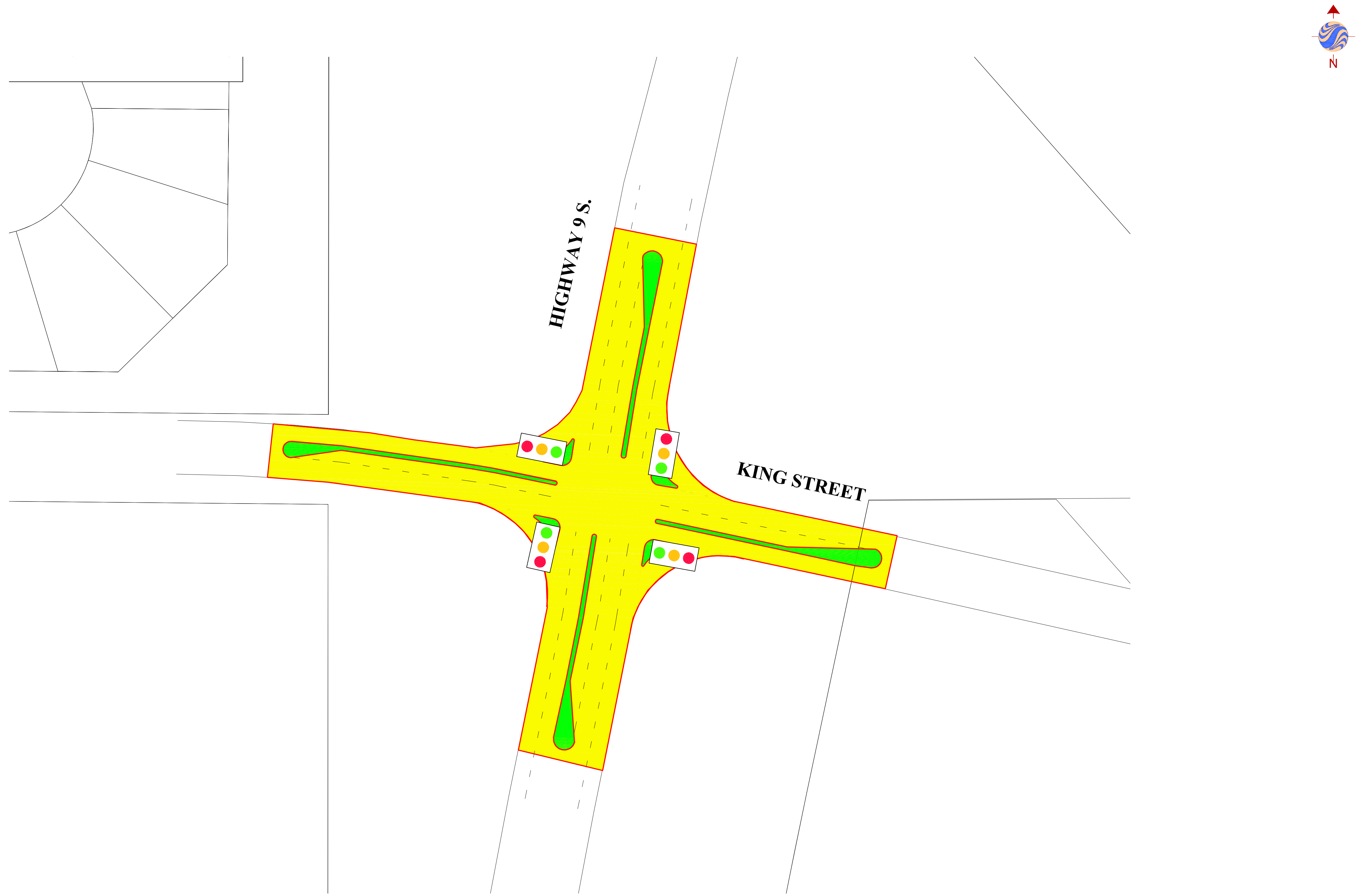
Legend

- IMPROVEMENT AREA
- IMPROVEMENT BOUNDARY
- NEW MEDIAN
- NEW SIDEWALK
- NEW BIKE PATH
- TRAFFIC SIGNAL INSTALLATION
- TRAFFIC SIGNAL OPTIMIZATION

Client/Project
CITY OF YORKTON
TRANSPORTATION MASTER PLAN UPDATE

Figure No.
7.3A

Title
QUEEN STREET CORRIDOR



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JUNE, 2011
113154417

ORIGINAL SHEET - ANSI B

Stantec

City of Yorkton

Legend

IMPROVEMENT AREA
IMPROVEMENT BOUNDARY
NEW MEDIAN
NEW SIDEWALK
NEW BIKE PATH
TRAFFIC SIGNAL INSTALLATION
TRAFFIC SIGNAL OPTIMIZATION

Client/Project
CITY OF YORKTON
TRANSPORTATION MASTER PLAN UPDATE

Figure No.
7.3B

Title
KING STREET & HIGHWAY 9
INTERSECTION

Recommendations

- Construct an overpass over the CP Railway connecting Fourth Avenue on the north side to Third Avenue on the south side; and
- Construct the Park Street extension east through the existing park/ball diamond area to tie into Third Avenue.

The reason for constructing an overpass as opposed to an underpass is that underpasses with railways are typically more expensive and tend to take longer than overpasses do. This is due primarily to the time and effort associated with obtaining the necessary permits and approvals associated with moving a rail line. It is generally better practice to go over the railways as opposed to under them as this causes little to no disruption to rail service. The extension of Park Street will allow more direct access to the downtown core via the Fourth Avenue overpass, however, will require relocation of the existing north ball diamond and the purchase/removal of one residence on Tupper Avenue to allow Park Street to be properly aligned.

The recommended improvements for the Fourth Avenue Underpass and Park Street Extension are shown in Figure 7.3C.

7.3.4 Smith Street & Myrtle Avenue

This intersection is operating under acceptable operating conditions in Stage 3, however, traffic signals are warranted at the end of this stage.

Recommendations

- Signalize the intersection.

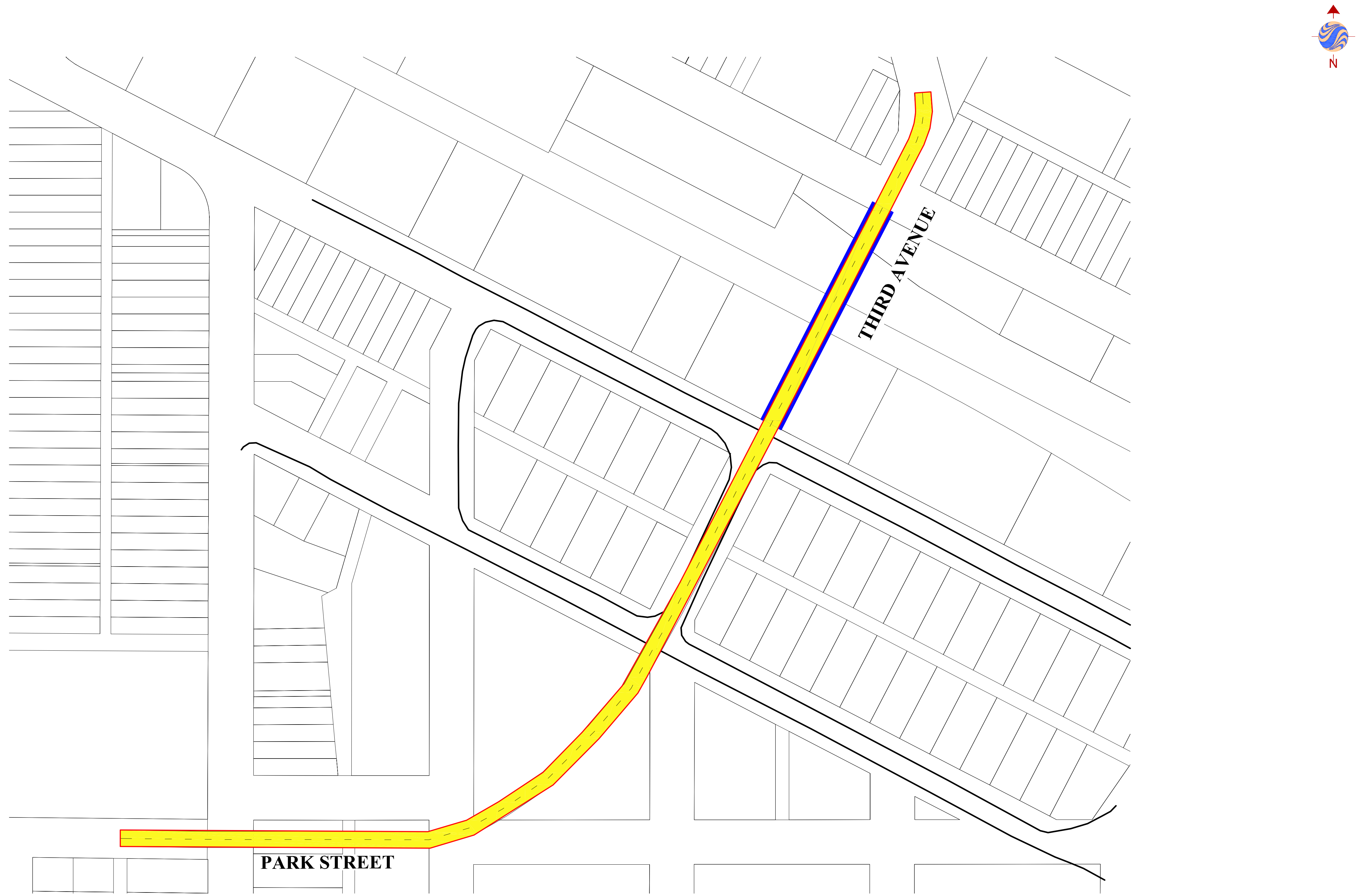
Signalizing the intersection further improves the LOS in all movements to LOS B or better.

7.3.5 West Truck By-Pass Route

One of the primary objectives of this report was the examination of the West Truck By-Pass Route. The recommendation from the 2003 report was to use Queen Street as the southern portion of the route to tie to Highway 9 and Highway 16 east of the City.

Recommendations

- Construct the route one mile south of Queen Street along the Township Road 254 corridor;
- Continue the west portion of the by-pass along the current alignment south before turning 90 degrees to follow Township Road 254 to intersect Highway 10 at a near right angle;



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ORIGINAL SHEET - ANSI B

Stantec

City of Yorkton

Legend

- IMPROVEMENT AREA
- IMPROVEMENT BOUNDARY
- NEW MEDIAN
- NEW SIDEWALK
- NEW BIKE PATH
- TRAFFIC SIGNAL INSTALLATION
- TRAFFIC SIGNAL OPTIMIZATION

JUNE, 2011
113154417

Client/Project
CITY OF YORKTON
TRANSPORTATION MASTER PLAN UPDATE

Figure No.
7.3C

Title
4th AVENUE UNDERPASS /
PARK STREET EXTENSION

- Curve the Road NE after crossing Highway 9 to intersect Highway 16 at a right angle; and
- Remove the truck route designations from Queen Street, Highway 10A, and Highway 52 immediately west of the City and designate the West Truck By-Pass as the new truck route.

This route presents additional costs but moves the by-pass far south of the City limits. The concern with utilizing Queen Street is that Queen Street will already experience significant increases in traffic volumes generated by the large amount of residential development on the south side of the City as discussed in Sections 6.2 and 6.3. Creating a truck route along Queen Street with new developments south of Queen Street will not solve the problems experienced currently on York Road where the primary truck route passes right through the City. See discussions in Section 4.11.

7.4 OPINION OF PROBABLE COSTS

Table 7.1 shows the opinion of probable costs for each of the recommended improvements discussed for Stages 1, 2, and 3. Only costs for improvements to the existing road network are provided. Suggested roadway extensions discussed as part of the proposed future road network in Section 6.4 are not included.

Table 7.1 Option of Probable Costs

Recommended Improvement	Opinion of Probable Cost
Stage 1 – Immediate Improvements	
York Rd. Corridor	$800,000
Hwy. 9 & Broadway St. Intersection	$325,000
Broadway St. & Seventh Ave. Intersection	$210,000
Hamilton Rd. & Hwy. 9 Intersection	$600,000
King St. Corridor	$700,000
Queen St. & Hwy. 9 Intersection	$1,100,000
Independent St. & Laurier Ave./Melville Ave. Intersection	$175,000
York Rd. & Gladstone Ave. Intersection	$550,000
Darlington St. & Mayhew Ave. Intersection	$200,000
Darlington St. & Dracup Ave. Intersection	$200,000
Broadway St. & Gladstone Ave. Intersection	$15,000
Broadway St. & Dalebrooke Dr. Intersection	$15,000
Broadway St. Corridor	$50,000
Total	**$4,940,000**
Stage 2 – Intermediate Improvements	
York Rd. & Sully Ave. Intersection	$925,000
Hwy. 9 Corridor	*$2,400,000
York Rd. & Hwy. 9 Intersection	$775,000
Melville Ave. between King St. and Peaker Ave.	$500,000
Queen St. & Allanbrooke Dr. Intersection	$200,000
Grain Millers Dr. Corridor	$8,000,000
Total	**$12,800,000**
Stage 3 – Long-Term Improvements	
Queen St. Corridor	$7,100,000
King St. & Hwy. 9 Intersection	$600,000
Fourth Ave. Overpass and Park St. Extension	**$825,000
Smith St. & Myrtle Ave. Intersection	$200,000
West Truck By-Pass Route	$14,100,000
Total	**$22,825,000**

* does not include overpass structure
**does not include overpass structure or land acquisition

Opinions of probable cost do not include land acquisition costs, engineering costs, or taxes. A 30% contingency has been applied to all costs to account for unit price fluctuations, inflation, and uncertainty in the existing ground conditions.

Unit prices were provided by the City of Yorkton and reflect 2010 rates. Unit prices for items not provided by the City were assumed based on standard rates in and around the City of Saskatoon which are also reflective of 2010 rates.

Prepared by ______________________________ Date ______________________________

Jayden Schmiess, P.Eng.

Reviewed by ______________________________ Date ______________________________

Brad Zurevinski, P.Eng.

Appendix A

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location YORK ROAD & CRESCENT AVE

Date Tuesday, October 19, 2010

Observers Brenda

	FROM THE NORTH on RR 43						FROM THE SOUTH on CRESCENT AVE						FROM THE EAST on YORK ROAD						FROM THE WEST on HIGHWAY 16					
time ending	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE
7:15	4	4	0	1	0	0	10	4	2	2	0	0	0	12	6	6	0	0	0	5	0	1	0	0
7:30	6	2	2	3	0	0	11	1	4	1	0	0	1	9	7	8	0	0	3	11	0	5	0	0
7:45	3	1	4	5	0	0	12	2	2	0	0	0	5	9	7	8	0	0	3	17	0	4	0	0
8:00	3	3	0	2	0	0	17	3	9	2	0	0	4	19	4	9	0	0	1	29	0	4	0	0
8:15	6	0	1	5	0	0	7	4	4	1	0	0	3	15	6	8	0	0	0	17	0	5	0	0
8:30	7	0	0	4	0	0	7	1	4	0	0	0	3	14	6	7	0	0	0	25	0	11	0	0
8:45	3	0	2	3	0	0	10	1	4	0	0	0	1	21	3	6	0	0	3	18	0	6	0	0
9:00	6	1	2	7	0	0	11	3	3	2	0	0	2	15	4	8	0	0	2	24	0	8	0	0
2 hr total	38	11	11	30	0	0	85	19	32	8	0	0	19	114	43	60	0	0	12	146	0	44	0	0
		60		50%				136		6%				176		34%				158		28%		
peak hour	19	3	3				41	9	21				11	69	19				4	89	0			
		25						71						99						93				
11:15	2	4	2	3	0	0	14	3	6	5	0	0	1	23	5	10	0	0	0	11	0	3	0	0
11:30	6	1	0	2	0	0	13	2	6	6	0	0	1	15	1	6	0	0	1	17	0	9	0	0
11:45	3	2	1	2	0	0	12	0	1	3	0	0	3	17	1	10	0	0	0	22	0	1	0	0
12:00	6	5	0	2	0	0	12	0	3	6	0	0	4	16	3	8	0	0	3	12	0	6	0	0
12:15	8	4	0	0	0	0	14	0	4	3	0	0	7	15	3	3	0	0	0	18	0	7	0	0
12:30	2	0	0	1	0	0	9	3	3	3	0	0	4	21	6	11	0	0	0	18	0	9	0	0
12:45	4	1	0	0	0	0	12	7	5	3	0	0	5	10	4	2	0	0	0	18	0	5	0	0
1:00	3	2	0	2	0	0	13	4	8	5	0	0	5	20	7	9	0	0	0	15	0	7	0	0
2 hr total	34	19	3	12	0	0	99	19	36	34	0	0	30	137	30	59	0	0	4	131	0	47	0	0
		56		21%				154		22%				197		30%				135		35%		
peak hour	17	7	0				48	14	20				21	66	20				0	69	0			
		24						82						107						69				
4:15	7	9	4	9	0	0	18	5	3	0	0	0	8	27	6	9	0	0	3	12	1	4	1	0
4:30	5	4	1	3	0	0	15	0	4	1	0	0	5	16	3	7	0	0	3	11	1	4	0	0
4:45	11	6	2	4	0	0	15	1	7	0	0	0	4	29	4	12	0	0	1	17	0	4	0	0
5:00	3	1	0	1	0	0	17	0	0	0	0	0	2	17	3	6	0	0	0	11	0	1	0	0
5:15	6	9	1	2	0	0	19	1	7	1	0	0	10	29	3	6	0	0	4	14	0	6	0	0
5:30	3	7	2	1	0	0	26	3	4	0	0	0	2	34	1	8	0	0	3	21	0	14	0	0
5:45	11	14	6	6	0	0	15	2	1	0	0	0	1	22	1	5	0	0	1	21	1	7	0	0
6:00	9	8	0	1	0	0	15	0	4	0	0	0	1	21	0	5	0	0	1	11	0	5	0	0
2 hr total	55	58	16	27	0	0	140	12	30	2	0	0	33	195	21	58	0	0	16	118	3	45	1	0
		129		21%				182		1%				249		23%				137		33%		
peak hour	29	38	9				75	6	16				14	106	5				9	67	1			
		76						97						125						77				
4 hour	93	69	27				225	31	62				52	309	64				16	187	3			
total		189						318						425						206				
6 hour	127	88	30				324	50	98				82	446	94				32	395	3			
total		245						472						622						430				
2 direct L	SB	245	58%				NB	472	73%				WB	622	50%				EB	430	35%			
total	NB	176	42%				SB	173	27%				EB	620	50%				WB	800	65%			
		421						645						1242						1230				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location DRACUP AVE & SMITH STREET

Date Monday, October 18, 2010

Observers Doug

FROM THE NORTH on DRACUP AVE

time ending	LT	ST	RT	CV	PED	BIKE
7:15	2	12	7	2	0	0
7:30	0	22	8	0	0	0
7:45	1	17	7	0	0	0
8:00	4	39	18	2	0	0
8:15	1	15	14	3	1	0
8:30	2	18	15	1	0	0
8:45	2	39	9	1	0	0
9:00	1	35	15	2	0	0
2 hr total	13	197	93	11	1	0
		303		4%		
peak hour	6	107	53			
		166				
11:15	3	16	9	0	1	0
11:30	1	21	7	0	1	0
11:45	3	23	8	0	0	0
12:00	3	31	9	0	0	0
12:15	3	44	10	3	0	0
12:30	4	38	6	2	0	0
12:45	3	30	21	1	0	0
1:00	4	35	24	1	0	0
2 hr total	24	238	94	7	2	0
		356		2%		
peak hour	14	147	61			
		222				
4:15	5	18	4	1	0	0
4:30	5	22	9	1	0	0
4:45	8	29	6	0	0	0
5:00	3	24	7	1	0	0
5:15	4	33	8	1	0	0
5:30	2	42	5	2	0	0
5:45	2	28	5	0	0	0
6:00	2	24	2	1	0	0
2 hr total	31	220	46	7	0	0
		297		2%		
peak hour	11	127	25			
		163				
4 hour total	44	417	139			
		600				
6 hour total	68	655	233			
		956				
2 direct L total	SB	956	46%			
	NB	1100	54%			
		2056				

FROM THE SOUTH on DRACUP AVE

time ending	LT	ST	RT	CV	PED	BIKE
7:15	3	4	0	0	1	0
7:30	1	12	0	1	0	0
7:45	12	19	1	2	0	0
8:00	7	10	1	1	1	0
8:15	18	18	2	2	0	0
8:30	14	10	0	1	0	0
8:45	11	15	1	1	0	0
9:00	15	11	0	3	0	0
2 hr total	81	99	5	11	2	0
		185		6%		
peak hour	58	54	3			
		115				
11:15	16	30	1	1	1	0
11:30	12	21	1	1	0	0
11:45	21	31	2	3	4	0
12:00	21	32	2	3	0	0
12:15	15	43	2	0	0	0
12:30	25	43	3	2	0	0
12:45	28	32	2	1	0	0
1:00	34	42	0	0	1	0
2 hr total	172	274	13	11	6	0
		459		2%		
peak hour	102	160	7			
		269				
4:15	37	35	1	1	0	0
4:30	22	28	2	1	2	0
4:45	14	37	2	3	0	0
5:00	21	22	1	1	0	0
5:15	37	44	1	1	2	0
5:30	24	48	3	1	1	0
5:45	33	46	0	1	5	0
6:00	18	36	0	2	0	0
2 hr total	206	296	10	11	10	0
		512		2%		
peak hour	115	160	5			
		280				
4 hour total	287	395	15			
		697				
6 hour total	459	669	28			
		1156				
2 direct L total	NB	1156	50%			
	SB	1160	50%			
		2316				

FROM THE EAST on SMITH ST

time ending	LT	ST	RT	CV	PED	BIKE
7:15	0	3	0	0	0	0
7:30	0	5	0	1	0	0
7:45	1	10	0	1	0	0
8:00	1	10	0	1	0	0
8:15	1	7	0	0	0	0
8:30	5	10	0	1	0	0
8:45	0	7	0	1	0	0
9:00	1	9	0	0	0	0
2 hr total	9	61	0	5	0	0
		70		7%		
peak hour	7	33	0			
		40				
11:15	0	3	0	1	0	0
11:30	2	5	0	0	0	0
11:45	1	4	0	1	0	0
12:00	3	7	0	1	0	0
12:15	5	5	0	0	0	0
12:30	1	5	1	0	0	0
12:45	3	6	0	0	0	0
1:00	1	5	0	0	1	0
2 hr total	16	40	1	3	1	0
		57		5%		
peak hour	10	21	1			
		32				
4:15	1	2	0	1	0	0
4:30	1	4	0	0	0	0
4:45	2	3	1	0	0	0
5:00	0	5	0	1	0	0
5:15	1	7	0	0	0	0
5:30	2	2	1	0	0	0
5:45	2	1	0	0	0	0
6:00	4	1	0	0	0	0
2 hr total	13	25	2	2	0	0
		40		5%		
peak hour	5	15	1			
		21				
4 hour total	22	86	2			
		110				
6 hour total	38	126	3			
		167				
2 direct L total	WB	167	19%			
	EB	714	81%			
		881				

FROM THE WEST on SMITH ST

time ending	LT	ST	RT	CV	PED	BIKE
7:15	6	9	3	1	0	0
7:30	3	6	3	0	0	0
7:45	3	17	8	0	0	0
8:00	10	14	5	1	0	0
8:15	12	15	11	3	0	0
8:30	11	19	15	0	0	0
8:45	12	17	12	2	0	1
9:00	11	25	23	4	0	0
2 hr total	68	122	80	11	0	1
		270		4%		
peak hour	46	76	61			
		183				
11:15	15	24	15	1	0	0
11:30	19	28	18	1	0	0
11:45	20	33	11	2	0	0
12:00	21	29	23	0	0	0
12:15	49	48	39	4	0	0
12:30	18	27	39	1	0	0
12:45	18	27	29	1	0	0
1:00	24	50	26	2	0	0
2 hr total	184	266	200	12	0	0
		650		2%		
peak hour	109	152	133			
		394				
4:15	18	25	20	1	0	0
4:30	19	34	21	1	0	0
4:45	25	31	22	1	0	0
5:00	23	35	31	2	0	0
5:15	31	48	30	2	1	0
5:30	15	20	23	1	0	0
5:45	21	18	26	0	0	0
6:00	24	19	14	1	0	0
2 hr total	176	230	187	9	1	0
		593		2%		
peak hour	90	121	110			
		321				
4 hour total	285	382	320			
		987				
6 hour total	428	618	467			
		1513				
2 direct L total	EB	1513	65%			
	WB	818	35%			
		2331				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location BROADAWAY STREET & HIGHWAY 10 | Date Tuesday 19 October 2010 | Observers CODY

time	FROM THE NORTH on						FROM THE SOUTH on HIGHWAY 10						FROM THE EAST on BROADWAY ST						FROM THE WEST on BROADWAY ST					
ending	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE
7:15	0	0	0	0	0	0	0	0	15	2	0	0	6	15	0	3	0	0	0	21	2	1	0	0
7:30	0	0	0	0	0	0	1	0	21	0	0	0	7	22	0	3	1	0	0	26	5	0	0	0
7:45	0	0	0	0	0	0	3	0	30	2	0	0	12	23	0	1	0	0	0	31	5	4	0	0
8:00	0	0	0	0	0	0	15	0	45	5	1	0	5	18	0	1	0	0	0	55	7	4	0	0
8:15	0	0	0	0	0	0	4	0	18	2	0	0	12	18	0	1	0	0	0	33	3	7	0	0
8:30	0	0	0	0	0	0	3	0	23	2	0	0	14	25	0	3	0	0	0	26	6	4	0	0
8:45	0	0	0	0	0	0	7	0	30	5	0	0	9	26	0	2	0	0	0	34	6	5	0	0
9:00	0	0	0	0	0	0	3	0	25	0	0	0	6	29	0	4	0	0	1	35	2	3	0	0
2 hr total	0	0	0	0	0	0	36	0	207	18	1	0	71	176	0	18	1	0	1	261	36	28	0	0
		0		#DIV/0!				243		7%				247		7%				298		9%		
peak hour	0	0	0				29	0	116				40	87	0				0	148	22			
		0						145						127						170				
11:15	0	0	0	0	0	0	0	0	14	0	1	0	21	21	0	3	0	0	0	25	2	1	0	0
11:30	0	0	0	0	0	0	4	0	14	3	0	0	11	27	0	2	0	0	0	22	3	4	0	0
11:45	0	0	0	0	0	0	1	0	16	2	0	0	14	26	0	1	0	0	0	17	6	5	0	0
12:00	0	0	0	0	0	0	5	0	27	4	0	0	8	27	0	5	0	0	0	26	6	3	0	0
12:15	0	0	0	0	0	0	4	0	10	1	0	0	21	36	0	1	0	0	0	60	1	4	0	0
12:30	0	0	0	0	0	0	4	0	18	3	0	0	11	28	0	1	0	0	0	25	1	2	0	0
12:45	0	0	0	0	0	0	0	0	21	1	0	0	12	29	0	4	0	0	0	31	1	1	0	0
1:00	0	0	0	0	0	0	6	0	16	0	0	0	18	30	0	2	0	0	1	35	6	5	0	0
2 hr total	0	0	0	0	0	0	24	0	136	14	1	0	116	224	0	19	0	0	1	241	26	25	0	0
		0		#DIV/0!				160		9%				340		6%				268		9%		
peak hour	0	0	0				14	0	65				62	123	0				1	151	9			
		0						79						185						161				
4:15	0	0	0	0	0	0	2	0	18	1	0	0	22	31	1	3	0	0	0	24	3	3	0	0
4:30	0	0	0	0	0	0	6	1	17	2	0	0	28	43	0	3	0	0	0	33	4	4	0	0
4:45	0	0	0	0	0	0	6	0	13	3	1	0	22	44	0	6	0	0	0	34	5	3	0	0
5:00	0	0	0	0	0	0	6	0	28	2	0	0	18	38	0	0	0	0	0	29	7	3	0	0
5:15	0	0	0	0	0	0	1	0	18	1	0	0	24	43	0	3	0	0	0	43	8	4	0	0
5:30	0	0	0	0	0	0	6	0	28	4	1	0	15	37	0	1	0	0	0	29	6	4	0	0
5:45	0	0	0	0	0	0	5	0	17	0	0	0	15	38	0	2	0	0	0	33	3	4	0	0
6:00	0	0	0	0	0	0	10	1	13	0	0	0	11	25	0	1	0	0	0	22	7	1	0	0
2 hr total	0	0	0	0	0	0	42	2	152	13	2	0	155	299	1	19	0	0	0	247	43	26	0	0
		0		#DIV/0!				196		7%				455		4%				290		9%		
peak hour	0	0	0				19	1	76				92	168	0				0	139	24			
		0						96						260						163				
4 hour	0	0	0				78	2	359				226	475	1				1	398	52			
total		0						439						702						451				
6 hour	0	0	0				102	2	495				342	699	1				2	749	105			
total		0						599						1042						856				
2 direct L	SB	0	0%				NB	599	57%				WB	1042	46%				EB	856	52%			
total	NB	5	100%				SB	447	43%				EB	1244	54%				WB	801	48%			
		5						1046						2286						1657				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location BROADWAY ST & DALEBROOKE DR | Date Tuesday 19 October 2010 | Observers PAT

time ending	FROM THE NORTH on PARKING						FROM THE SOUTH on DALEBROOKE DR						FROM THE EAST on BROADWAY ST						FROM THE WEST on BROADWAY ST					
	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE
7:15	0	0	0	0	0	0	4	0	11	1	14	0	10	16	0	2	25	0	0	33	4	3	34	0
7:30	0	0	0	0	0	0	2	0	23	1	24	0	10	16	1	4	23	0	0	31	2	0	33	0
7:45	3	0	0	0	3	0	13	2	54	3	66	0	12	31	7	4	46	1	1	47	6	4	50	0
8:00	0	3	0	0	3	0	12	6	57	2	72	1	22	19	6	1	46	0	5	85	4	4	90	0
8:15	0	1	0	0	1	0	8	2	38	0	48	0	29	32	4	3	62	0	1	54	4	8	51	0
8:30	2	1	0	0	3	0	5	4	45	2	52	0	25	34	7	5	61	0	1	54	0	2	53	0
8:45	2	3	0	1	4	0	5	4	66	1	74	0	39	36	9	5	79	0	1	58	5	5	59	0
9:00	4	3	1	1	7	0	6	2	58	2	64	0	38	32	17	7	81	0	7	54	4	4	62	0
2 hr total	11	11	1	2	21	0	55	20	352	12	414	1	185	216	51	31	423	1	16	416	29	30	432	0
		23		9%				427		3%				452		7%				461		7%		
peak hour	8	8	1				24	12	207				131	134	37				10	220	13			
		17						243						302						243				
11:15	10	7	0	0	17	0	6	1	21	2	26	0	37	36	6	4	75	0	0	50	2	1	51	0
11:30	1	1	0	0	2	0	5	3	28	3	33	0	29	38	9	3	73	0	1	36	3	6	34	0
11:45	10	1	0	0	11	0	2	3	24	1	28	0	45	33	9	5	87	0	1	42	2	6	39	0
12:00	7	4	1	0	12	0	4	11	29	0	44	1	50	51	26	6	123	0	5	48	5	2	56	0
12:15	8	5	1	0	14	0	7	9	25	2	39	0	94	59	16	1	170	0	0	70	9	4	76	0
12:30	9	5	0	0	14	0	4	5	33	1	41	0	35	42	12	2	88	0	1	56	7	3	60	0
12:45	5	3	0	1	7	0	7	10	49	2	64	1	52	51	15	3	116	0	3	62	5	3	67	0
1:00	7	1	0	0	8	0	9	11	70	2	88	0	45	53	17	4	112	0	0	63	6	5	63	0
2 hr total	57	27	2	1	85	0	44	53	279	13	363	2	387	363	110	28	844	0	11	427	39	30	446	0
		86		1%				376		3%				860		3%				477		6%		
peak hour	29	14	1				27	35	177				226	205	60				4	251	27			
		44						239						491						282				
4:15	14	7	0	0	21	0	6	3	35	1	43	0	57	59	3	10	112	0	0	55	4	3	56	0
4:30	7	1	3	0	11	0	11	2	29	3	39	0	39	59	4	6	96	0	0	62	5	5	62	0
4:45	7	2	1	0	10	0	8	1	27	3	34	0	63	80	6	6	144	0	0	55	7	5	57	0
5:00	7	1	0	0	8	1	14	2	30	0	46	0	72	63	17	2	143	0	1	72	4	4	73	0
5:15	20	3	1	1	23	0	13	3	27	0	43	0	76	76	11	2	157	0	0	70	9	4	75	0
5:30	23	3	2	0	28	0	9	3	40	0	52	0	57	61	14	2	130	0	2	63	8	5	68	0
5:45	13	5	2	0	20	0	7	10	26	0	43	0	61	51	12	5	117	0	1	59	9	7	62	0
6:00	11	7	2	0	20	0	10	6	26	0	42	0	70	38	22	2	127	0	1	39	3	3	40	0
2 hr total	102	29	11	1	141	1	78	30	240	7	342	0	495	487	89	35	1026	0	5	475	49	36	493	0
		142		1%				348		2%				1071		3%				529		7%		
peak hour	57	9	4				44	9	124				268	280	48				3	260	28			
		70						177						596						291				
4 hour total	113	40	12				133	50	592				680	703	140				9	726	76			
		165						775						1523						811				
6 hour total	170	67	14				177	103	871				1067	1066	250				32	1318	117			
		251						1151						2383						1467				
2 direct L total	SB	251	39%				NB	1151	48%				WB	2383	50%				EB	1467	54%			
	NB	385	61%				SB	1251	52%				EB	2359	50%				WB	1257	46%			
		636						2402						4742						2724				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location BROADWAY ST & BRADBROOKE DR

Date Tuesday 19 October 2010

Observers Lance

	FROM THE NORTH on PARKING						FROM THE SOUTH on BRADBROOKE DR						FROM THE EAST on BROADWAY ST						FROM THE WEST on BROADWAY ST					
time ending	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE
7:15	6	1	0	1	0	0	0	0	10	0	1	0	2	27	2	2	0	0	3	40	2	4	0	0
7:30	0	1	0	0	0	0	0	0	5	0	0	0	0	25	2	4	0	0	2	49	2	2	0	1
7:45	7	1	4	0	0	0	2	1	10	0	0	0	6	51	2	3	1	1	0	99	2	7	0	1
8:00	8	2	0	0	0	0	0	1	11	0	0	0	9	45	2	1	0	0	0	137	9	4	0	0
8:15	7	1	3	0	1	0	4	2	12	2	0	0	3	52	3	4	0	0	2	88	1	8	0	2
8:30	16	2	5	0	0	0	3	2	14	0	0	0	8	63	5	6	0	0	6	86	6	4	0	0
8:45	5	2	4	1	0	0	2	2	25	1	1	0	14	71	9	8	1	0	4	119	4	7	0	0
9:00	13	1	2	1	0	0	3	3	32	2	2	0	16	80	2	7	2	0	1	112	4	5	0	0
2 hr total	62	11	18	3	1	0	14	11	119	5	4	0	58	414	27	35	4	1	18	730	30	41	0	4
		91		3%				144		3%				499		7%				778		5%		
peak hour	41	6	14				12	9	83				41	266	19				13	405	15			
		61						104						326						433				
11:15	10	1	2	0	0	0	2	0	12	1	0	0	5	78	1	5	0	0	2	92	1	5	0	0
11:30	3	1	1	0	2	0	2	0	3	0	0	0	8	75	1	3	1	0	0	73	0	8	0	0
11:45	8	2	4	0	0	0	1	0	13	0	4	0	11	94	4	3	1	0	2	72	0	8	0	0
12:00	7	3	4	3	0	0	3	2	13	0	0	0	6	119	4	7	0	0	0	87	1	3	0	1
12:15	15	3	6	0	1	0	2	2	16	0	4	0	11	150	6	3	0	1	5	103	3	4	0	0
12:30	17	1	5	2	1	0	1	2	9	0	5	0	7	88	9	4	3	0	1	91	3	4	1	1
12:45	20	1	4	1	2	0	3	1	29	0	2	0	8	102	6	5	1	0	3	105	3	3	0	1
1:00	18	4	1	1	0	0	7	1	24	0	2	0	13	114	3	5	1	0	2	138	0	5	0	0
2 hr total	98	16	27	7	6	0	21	8	119	1	17	0	69	820	34	35	7	1	15	761	11	40	1	3
		141		5%				148		1%				923		4%				787		5%		
peak hour	70	9	16				13	6	78				39	454	24				11	437	9			
		95						97						517						457				
4:15	9	3	11	0	0	0	3	0	18	1	0	0	14	95	6	8	0	0	2	102	2	3	0	0
4:30	12	1	5	0	2	0	2	0	17	1	0	0	9	100	1	9	0	1	1	93	0	7	0	0
4:45	6	1	3	1	1	0	1	0	12	0	0	1	15	141	1	5	4	1	0	95	1	5	0	0
5:00	3	0	5	0	0	0	2	1	22	0	1	0	9	131	0	3	0	1	2	107	5	4	0	0
5:15	5	5	6	0	1	0	1	1	26	0	0	0	14	148	0	3	0	0	1	109	2	4	0	0
5:30	5	4	6	1	1	0	1	1	10	0	0	0	16	119	1	4	0	1	2	119	1	5	0	0
5:45	4	4	4	0	1	1	2	0	6	0	1	1	16	111	3	2	0	1	1	84	3	4	0	0
6:00	1	5	1	0	1	0	4	0	12	0	0	0	10	127	0	3	0	0	3	72	1	3	0	0
2 hr total	45	23	41	2	7	1	16	3	123	2	2	2	103	972	12	37	4	5	12	781	15	35	0	0
		109		2%				142		1%				1087		3%				808		4%		
peak hour	19	10	20				5	3	70				54	539	2				5	430	9			
		49						78						595						444				
4 hour	107	34	59				30	14	242				161	1386	39				23	1218	24			
total		200						286						1586						1265				
6 hour	205	50	86				51	22	361				230	2206	73				45	2272	56			
total		341						434						2509						2373				
2 direct L	SB	341	71%				NB	434	56%				WB	2509	47%				EB	2373	50%			
total	NB	140	29%				SB	336	44%				EB	2838	53%				WB	2343	50%			
		481						770						5347						4716				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location BROADWAY ST & GLADSTONE AVE

Date Tuesday 19 October 2010

Observers LM DOUG

time	FROM THE NORTH on GLADSTONE AVE						FROM THE SOUTH on GLADSTONE AVE						FROM THE EAST on BROADWAY ST						FROM THE WEST on BROADWAY ST					
ending	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30	2	15	11	3	0	0	2	15	6	0	0	2	6	20	8	2	1	0	13	49	4	4	0	0
7:45	8	21	23	2	0	0	10	30	13	3	0	1	10	39	7	2	0	0	36	86	3	9	2	1
8:00	6	27	25	1	1	0	7	52	42	0	1	0	17	44	7	0	0	0	55	127	4	6	1	0
8:15	8	26	27	11	1	0	3	26	14	1	0	0	16	56	5	1	0	0	32	94	2	14	0	0
8:30	5	27	22	6	0	0	9	38	21	5	1	0	12	61	6	4	0	0	42	89	7	4	1	0
8:45	11	28	46	13	0	0	9	70	13	1	0	1	13	67	12	2	0	1	84	74	4	6	1	0
9:00	7	21	39	4	0	0	6	69	15	0	0	0	9	55	8	3	0	0	34	43	0	2	0	0
2 hr total	47	165	193	40	2	0	46	300	124	10	2	4	83	342	53	14	1	1	296	562	24	45	5	1
		405		10%				470		2%				478		3%				882		5%		
peak hour	30	108	120				28	186	90				58	228	30				213	384	17			
		258						304						316						614				
11:15	7	14	18	3	0	1	6	8	19	1	1	0	15	61	7	1	0	0	28	84	6	5	0	0
11:30	16	23	24	4	0	0	3	11	17	1	0	0	17	81	13	6	0	0	20	63	3	5	0	0
11:45	10	17	26	3	5	0	7	14	15	5	1	0	25	86	6	2	0	0	35	79	8	8	0	0
12:00	29	35	35	5	1	1	6	20	12	0	2	0	24	111	3	4	0	0	31	89	3	5	1	0
12:15	30	52	70	3	1	0	7	23	23	0	3	0	33	144	9	1	0	0	27	83	5	5	0	0
12:30	13	18	32	2	1	0	6	26	22	2	1	0	18	115	14	4	1	2	31	89	7	6	0	1
12:45	13	18	28	4	0	0	4	36	16	0	0	0	23	90	13	2	0	0	52	113	6	5	3	0
1:00	36	33	45	2	0	0	13	43	26	0	0	0	18	95	13	3	0	0	55	128	5	5	3	0
2 hr total	154	210	278	26	8	2	52	181	150	9	8	0	173	783	78	23	1	2	279	728	43	44	7	1
		642		4%				383		2%				1034		2%				1050		4%		
peak hour	92	121	175				30	128	87				92	444	49				165	413	23			
		388						245						585						601				
4:15	16	30	33	3	0	0	3	16	22	1	2	0	23	96	14	8	4	0	34	109	6	4	1	0
4:30	16	30	37	5	2	1	5	27	24	0	1	0	26	112	8	8	0	0	35	93	9	9	1	0
4:45	21	31	55	2	1	0	6	36	13	4	2	0	22	124	8	5	0	1	39	83	7	4	1	0
5:00	9	30	41	1	1	1	7	19	24	1	1	0	33	113	8	4	0	0	56	109	9	5	2	0
5:15	15	43	63	3	4	1	8	32	19	0	3	0	51	135	4	1	0	0	57	101	7	3	0	0
5:30	14	24	42	1	4	0	4	19	16	1	1	0	24	123	15	1	0	3	53	97	4	7	0	0
5:45	19	39	45	3	0	0	1	27	20	0	0	0	19	118	9	2	3	0	27	62	5	5	0	0
6:00	19	34	41	2	2	0	9	26	18	0	0	0	13	102	18	1	0	0	25	63	4	1	0	0
2 hr total	129	261	357	20	14	3	43	202	156	7	10	0	211	923	84	30	7	4	326	717	51	38	5	0
		747		3%				401		2%				1218		2%				1094		3%		
peak hour	59	128	201				25	106	72				130	495	35				205	390	27			
		388						203						660						622				
4 hour	176	426	550				89	502	280				294	1265	137				491	1130	74			
total		1152						871						1696						1695				
6 hour	330	636	828				141	683	430				467	2048	215				901	2007	118			
total		1794						1254						2730						3026				
2 direct L	SB	1794	50%				NB	1254	51%				WB	2730	50%				EB	3026	50%			
total	NB	1799	50%				SB	1221	49%				EB	2767	50%				WB	3017	50%			
		3593						2475						5497						6043				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location BROADWAY STREET & MYRTLE AVE | Date Wednesday 20 October 2010 | Observers Lance PAT

time ending	FROM THE NORTH on MYRTLE AVE						FROM THE SOUTH on MYRTLE AVE						FROM THE EAST on BROADWAY ST						FROM THE WEST on BROADWAY ST					
	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE
7:15	3	0	5	1	3	0	3	2	4	2	7	0	1	31	1	3	12	0	3	44	1	2	46	0
7:30	5	2	14	2	0	0	1	4	1	0	6	0	2	30	2	2	0	0	7	54	1	2	60	0
7:45	5	2	16	1	2	0	4	4	4	2	11	0	1	45	5	2	0	0	16	112	3	7	124	0
8:00	9	5	23	2	1	0	7	8	2	1	16	0	4	52	5	1	0	0	37	160	4	10	191	0
8:15	4	1	24	3	3	0	3	4	2	2	8	0	2	57	6	3	0	0	27	111	0	3	135	0
8:30	3	5	29	1	2	0	2	6	3	0	11	0	1	54	4	1	0	0	31	110	1	8	134	0
8:45	11	3	33	4	1	0	3	7	3	0	13	0	1	63	10	0	0	0	22	118	2	5	137	0
9:00	15	5	57	5	1	0	5	13	7	0	25	0	5	87	12	1	0	0	22	147	2	4	165	1
2 hr total	11	2	19	1	4	0	0	0	0	0	0	0	1	92	10	0	0	0	0	0	0	0	0	0
		32		3%				0		#DIV/0!				103		0%				0		#DIV/0!		
peak hour	33	14	143				13	30	15				9	261	32				102	486	5			
		190						58						302						593				
11:15	11	2	19	1	4	0	0	4	2	0	6	0	1	92	10	0	0	0	16	111	4	7	124	0
11:30	11	3	22	2	5	0	1	2	2	2	3	0	0	129	14	2	0	0	22	112	5	3	136	0
11:45	21	3	26	0	7	0	1	3	2	1	5	0	7	127	17	2	0	0	18	140	2	2	158	0
12:00	11	2	36	0	2	0	3	2	2	2	5	0	4	132	7	0	0	0	27	142	0	6	162	0
12:15	24	7	48	0	4	0	1	10	10	0	21	0	2	179	13	3	0	0	33	135	1	3	167	0
12:30	17	3	31	2	11	0	5	3	7	3	12	0	2	132	4	2	0	0	26	176	2	2	202	0
12:45	10	3	20	1	5	0	2	4	4	1	9	0	4	134	12	1	0	2	21	164	2	2	185	0
1:00	14	7	39	1	4	0	4	12	4	1	19		3	143	16	2	1	0	50	237	3	4	286	0
2 hr total	119	30	241	7	42	0	17	40	33	10	80	0	23	1068	93	12	1	2	213	1217	19	29	1420	0
		390		2%				90		11%				1184		1%				1449		2%		
peak hour	65	20	138				12	29	25				11	588	45				130	712	8			
		223						66						644						850				
4:15	21	6	30	1	1	0	1	3	4	0	8	0	6	121	9	7	0	0	31	169	0	1	200	0
4:30	12	7	41	3	1	0	4	3	7	1	13	0	4	123	8	1	0	0	32	165	9	1	204	0
4:45	17	0	34	1	5	0	1	3	4	1	7	0	2	158	7	3	1	0	27	184	2	2	211	0
5:00	19	5	38	1	3	0	2	1	3	0	6	0	5	154	6	2	0	1	30	158	2	1	189	0
5:15	20	4	71	1	5	0	3	0	6	1	8	0	3	172	5	1	0	0	35	180	4	3	216	0
5:30	9	1	41	0	9	0	4	3	3	1	9	0	3	131	2	1	0	0	23	138	2	1	163	0
5:45	12	1	49	0	4	0	0	1	2	0	4	0	0	160	2	0	0	0	17	140	0	1	156	0
6:00	4	7	31	1	3	0	1	5	7	0	12	0	7	137	9	2	2	1	10	93	2	0	104	0
2 hr total	114	31	335	8	31	0	16	19	36	4	67	0	30	1156	48	17	3	2	205	1227	21	10	1443	0
		480		2%				71		6%				1234		1%				1453		1%		
peak hour	68	16	184				10	7	20				14	607	26				124	687	17			
		268						37						647						828				
4 hour total	125	33	354				16	19	36				31	1248	58				335	1939	29			
		512						71						1337						2303				
6 hour total	244	63	595				33	59	69				54	2316	151				418	2444	40			
		902						161						2521						2902				
2 direct L total	SB	902	59%				NB	161	51%				WB	2521	48%				EB	2902	50%			
	NB	628	41%				SB	157	49%				EB	2757	52%				WB	2944	50%			
		1530						318						5278						5846				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location BROADWAY ST & 1 AVE | Date Wednesday 20 October 2010 | Observers DARCY LAURA P

time ending	FROM THE NORTH on 1 AVENUE					
	LT	ST	RT	CV	PED	BIKE
7:15	2	0	3	0	0	0
7:30	2	0	0	0	0	0
7:45	0	0	2	0	0	0
8:00	4	0	5	0	0	1
8:15	2	0	6	1	1	0
8:30	7	5	6	2	0	1
8:45	9	2	2	0	0	0
9:00	12	5	3	3	2	1
2 hr total	38	12	27	6	3	3
		77		8%		
peak hour	30	12	17			
		59				
11:15	2	7	9	5	4	1
11:30	2	3	6	3	5	8
11:45	8	1	3	4	3	3
12:00	15	1	18	0	1	0
12:15	5	2	19	1	4	4
12:30	17	0	9	0	0	1
12:45	10	1	12	2	0	0
1:00	15	6	18	0	1	0
2 hr total	74	21	94	15	18	17
		189		8%		
peak hour	47	9	58			
		114				
4:15	15	2	2	2	1	0
4:30	24	3	12	0	0	1
4:45	7	2	13	0	1	2
5:00	13	5	16	1	5	1
5:15	14	9	8	0	1	0
5:30	18	10	21	0	6	0
5:45	18	2	15	1	0	0
6:00	10	6	13	0	0	0
2 hr total	119	39	100	4	14	4
		258		2%		
peak hour	63	26	60			
		149				
4 hour	157	51	127			
total		335				
6 hour	231	72	221			
total		524				
2 direct L	SB	524	50%			
total	NB	516	50%			
		1040				

time ending	FROM THE SOUTH on PARKING					
	LT	ST	RT	CV	PED	BIKE
7:15	0	0	0	0	0	0
7:30	1	1	1	1	1	0
7:45	0	0	0	0	0	0
8:00	0	0	0	0	0	0
8:15	0	0	0	0	0	0
8:30	0	0	0	0	0	0
8:45	0	0	0	0	0	0
9:00	0	2	0	0	0	0
2 hr total	1	3	1	1	1	0
		5		20%		
peak hour	0	2	0			
		2				
11:15	1	4	2	0	0	0
11:30	1	1	0	0	0	1
11:45	0	0	0	0	0	0
12:00	0	0	0	0	0	0
12:15	0	0	0	0	0	0
12:30	0	0	0	0	0	0
12:45	0	0	0	0	0	0
1:00	0	0	0	0	0	0
2 hr total	2	5	2	0	0	1
		9		0%		
peak hour	0	0	0			
		0				
4:15	0	0	0	0	0	0
4:30	0	0	0	0	0	0
4:45	0	0	0	0	0	0
5:00	0	0	0	0	0	0
5:15	0	0	0	0	0	0
5:30	0	0	0	0	0	0
5:45	0	0	0	0	0	0
6:00	3	1	4	1	4	0
2 hr total	3	1	4	1	4	0
		8		13%		
peak hour	0	0	0			
		0				
4 hour	4	4	5			
total		13				
6 hour	6	9	7			
total		22				
2 direct L	NB	22	6%			
total	SB	343	94%			
		365				

time ending	FROM THE EAST on BROADWAY ST					
	LT	ST	RT	CV	PED	BIKE
7:15	2	25	6	3	0	1
7:30	0	40	0	2	0	0
7:45	2	46	3	1	0	0
8:00	4	53	7	1	0	0
8:15	3	41	4	2	1	0
8:30	4	59	3	0	0	0
8:45	2	66	9	0	0	0
9:00	3	81	8	1	0	1
2 hr total	20	411	40	10	1	2
		471		2%		
peak hour	12	247	24			
		283				
11:15	3	37	5	0	1	2
11:30	5	92	17	1	1	0
11:45	6	97	8	1	1	0
12:00	9	98	18	2	4	0
12:15	7	130	19	3	3	0
12:30	6	89	15	0	3	0
12:45	6	100	16	2	3	0
1:00	4	165	16	1	3	0
2 hr total	46	808	114	10	19	2
		968		1%		
peak hour	23	484	66			
		573				
4:15	8	109	9	2	1	0
4:30	3	118	11	2	3	0
4:45	3	122	15	2	2	0
5:00	13	110	6	2	4	0
5:15	8	93	9	1	0	0
5:30	6	81	16	0	2	0
5:45	4	128	9	0	1	0
6:00	3	75	15	3	0	1
2 hr total	48	836	90	12	13	1
		974		1%		
peak hour	31	412	40			
		483				
4 hour	68	1247	130			
total		1445				
6 hour	114	2055	244			
total		2413				
2 direct L	WB	2413	44%			
total	EB	3038	56%			
		5451				

time ending	FROM THE WEST on BROADWAY ST					
	LT	ST	RT	CV	PED	BIKE
7:15	2	45	2	5	1	0
7:30	4	60	3	1	0	1
7:45	10	94	2	4	2	1
8:00	17	133	7	2	0	0
8:15	9	87	6	1	2	0
8:30	4	112	2	3	1	0
8:45	6	112	2	3	1	1
9:00	15	116	6	6	1	0
2 hr total	67	759	30	25	8	3
		856		3%		
peak hour	34	427	16			
		477				
11:15	16	63	9	3	4	0
11:30	3	100	4	4	4	0
11:45	17	105	11	1	0	0
12:00	19	107	9	6	1	1
12:15	18	125	7	3	3	1
12:30	14	149	4	1	8	0
12:45	16	116	6	2	5	0
1:00	21	233	15	3	3	0
2 hr total	124	998	65	23	28	2
		1187		2%		
peak hour	69	623	32			
		724				
4:15	9	169	6	0	1	0
4:30	5	144	6	3	1	0
4:45	7	130	11	2	5	0
5:00	6	116	8	1	3	0
5:15	8	117	8	1	0	0
5:30	13	149	6	6	10	0
5:45	10	118	10	2	3	3
6:00	14	100	7	14	1	0
2 hr total	72	1043	62	29	24	3
		1177		2%		
peak hour	37	500	32			
		569				
4 hour	141	1666	94			
total		1901				
6 hour	263	2800	157			
total		3220				
2 direct L	EB	3220	59%			
total	WB	2282	41%			
		5502				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location BROADWAY ST & 2 AVE

Date Wednesday 20 October 2010

Observers LM

time ending	FROM THE NORTH on 2 AVENUE						FROM THE SOUTH on						FROM THE EAST on BROADWAY ST						FROM THE WEST on BROADWAY ST					
	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE
7:15	1	0	2	0	0	0	0	0	0	0	0	0	0	26	1	3	0	0	0	27	0	2	0	0
7:30	1	0	3	0	0	0	0	0	0	0	0	0	0	31	1	1	0	0	5	49	0	1	0	0
7:45	6	0	2	0	2	0	0	0	0	0	0	0	0	56	4	2	0	0	4	87	0	6	0	1
8:00	4	0	7	0	1	0	0	0	0	0	0	0	0	66	4	1	1	0	4	120	0	3	1	0
8:15	2	0	5	0	3	0	0	0	0	0	0	0	0	57	2	2	0	1	5	71	0	1	3	0
8:30	2	0	5	0	1	0	0	0	0	0	0	0	0	52	2	2	2	0	7	85	0	2	0	0
8:45	1	0	0	0	1	0	0	0	0	0	0	0	0	87	7	0	3	0	12	86	0	2	2	1
9:00	4	0	11	0	0	0	0	0	0	0	0	0	0	95	8	2	5	0	15	101	0	4	1	0
2 hr total	21	0	35	0	8	0	0	0	0	0	0	0	0	470	29	13	11	1	52	626	0	21	7	2
		56		0%				0		#DIV/0!				499		3%				678		3%		
peak hour	9	0	21				0	0	0				0	291	19				39	343	0			
		30						0						310						382				
11:15	10	0	9	1	7	0	0	0	0	0	0	0	0	113	15	1	4	0	3	100	0	5	0	1
11:30	12	0	9	0	4	0	0	0	0	0	0	0	0	135	12	3	4	0	8	103	0	7	1	0
11:45	13	0	17	0	2	0	0	0	0	0	0	0	0	152	11	3	3	0	16	105	0	2	2	0
12:00	8	0	14	1	2	0	0	0	0	0	0	0	0	153	11	3	4	0	8	109	0	7	4	1
12:15	11	0	11	1	8	0	0	0	0	0	0	0	0	203	17	4	5	0	12	107	0	3	4	1
12:30	13	0	16	0	9	0	0	0	0	0	0	0	0	131	7	1	5	0	8	163	0	3	3	0
12:45	14	0	9	1	7	0	0	0	0	0	0	0	0	160	12	1	4	1	7	120	0	3	5	0
1:00	10	0	17	0	4	0	0	0	0	0	0	0	0	174	16	1	3	0	18	166	0	3	0	0
2 hr total	91	0	102	4	43	0	0	0	0	0	0	0	0	1221	101	17	32	1	80	973	0	33	19	3
		193		2%				0		#DIV/0!				1322		1%				1053		3%		
peak hour	48	0	53				0	0	0				0	668	52				45	556	0			
		101						0						720						601				
4:15	11	0	17	0	6	0	0	0	0	0	0	0	0	146	16	9	3	0	8	145	0	4	0	0
4:30	12	0	18	0	4	0	0	0	0	0	1	0	0	148	23	2	1	0	10	129	0	4	1	1
4:45	3	0	20	0	6	0	0	0	0	0	0	0	0	155	11	3	7	0	8	137	0	3	1	1
5:00	9	0	13	0	1	0	0	0	0	0	0	0	0	165	13	4	9	2	14	110	0	2	2	2
5:15	12	0	16	0	5	0	0	0	0	0	0	0	0	178	14	1	4	0	10	141	0	4	1	0
5:30	10	0	4	0	11	0	0	0	0	0	0	0	0	151	9	2	2	2	10	116	0	3	0	0
5:45	12	0	11	0	0	0	0	0	0	0	0	0	0	145	8	0	3	0	10	112	0	0	6	0
6:00	6	0	12	0	0	0	0	0	0	0	1	0	0	165	11	2	0	0	9	79	0	2	6	0
2 hr total	75	0	111	0	33	0	0	0	0	0	2	0	0	1253	105	23	29	4	79	969	0	22	17	4
		186		0%				0		#DIV/0!				1358		2%				1048		2%		
peak hour	36	0	67				0	0	0				0	646	61				42	517	0			
		103						0						707						559				
4 hour	96	0	146				0	0	0				0	1723	134				124	1525	0			
total		242						0						1857						1649				
6 hour	187	0	248				0	0	0				0	2944	235				211	2568	0			
total		435						0						3179						2779				
2 direct L	SB	435	49%				NB	0	#DIV/0!				WB	3179	54%				EB	2779	47%			
total	NB	446	51%				SB	0	#DIV/0!				EB	2755	46%				WB	3192	53%			
		881						0						5934						5971				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location BROADWAY ST & 3 AVE

Date Wednesday 20 October 2010

Observers DOUG

	FROM THE NORTH on						FROM THE SOUTH on						FROM THE EAST on						FROM THE WEST on					
time	3 AVENUE												BROADWAY ST						BROADWAY ST					
ending	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE
7:15	1	0	0	0	0	0	0	0	0	0	1	0	1	30	0	3	0	0	2	31	0	2	0	
7:30	3	1	2	0	0	0	0	0	0	0	0	0	0	30	8	1	1	0	7	43	0	1	0	
7:45	5	0	8	0	2	0	0	0	0	0	0	0	0	52	7	2	0	0	11	82	1	6	0	
8:00	4	0	3	0	0	0	0	0	0	0	1	0	2	69	10	1	1	0	15	105	0	3	1	
8:15	2	2	6	0	2	0	0	0	0	0	1	1	0	51	6	2	0	1	7	63	0	2	0	
8:30	7	1	2	0	3	0	0	0	0	0	0	0	6	52	8	2	3	0	12	80	0	3	0	
8:45	3	0	9	0	1	0	0	0	0	0	0	0	0	82	12	0	0	0	4	72	4	3	0	
9:00	8	1	8	1	1	0	0	0	0	0	0	0	0	106	16	3	0	0	11	96	0	4	1	
2 hr total	33	5	38	1	9	0	0	0	0	0	3	1	9	472	67	14	5	1	69	572	5	24	2	0
		76		1%				0		#DIV/0!				548		3%				646		4%		
peak hour	20	4	25				0	0	0				6	291	42				34	311	4			
		49						0						339						349				
11:15	2	0	4	0	6	0	0	0	0	0	0	0	5	128	19	2	0	0	10	91	4	4	0	
11:30	11	1	4	1	3	0	1	0	0	0	2	0	1	150	11	3	3	0	7	104	4	10	1	
11:45	6	3	12	0	4	0	0	0	0	0	1	0	3	148	14	6	1	0	7	97	6	1	3	
12:00	4	2	7	0	6	1	0	0	0	0	1	0	2	163	12	3	0	0	8	113	2	6	5	
12:15	13	5	14	0	5	0	0	0	0	0	1	1	5	198	18	4	0	0	15	101	9	3	4	
12:30	10	5	6	0	4	0	0	0	0	0	3	1	5	133	7	3	3	0	8	163	6	4	0	
12:45	13	5	10	0	5	0	0	0	0	0	2	0	1	165	15	1	3	1	8	117	4	3	8	
1:00	7	3	17	0	1	0	0	0	1	0	1	0	3	174	19	1	2	0	11	154	6	3	0	
2 hr total	66	24	74	1	34	1	1	0	1	0	11	2	25	1259	115	23	12	1	74	940	41	34	21	0
		164		1%				2		0%				1399		2%				1055		3%		
peak hour	43	18	47				0	0	1				14	670	59				42	535	25			
		108						1						743						602				
4:15	6	3	15	1	7	1	0	0	0	0	0	0	4	137	13	6	1	0	10	135	7	4	1	
4:30	8	2	8	0	6	0	0	0	0	0	0	0	2	161	10	1	0	0	5	129	8	6	1	
4:45	10	7	10	0	3	0	0	0	0	0	0	0	6	151	8	2	2	0	6	121	8	3	0	
5:00	7	5	6	0	5	0	0	0	0	0	1	0	6	165	8	4	3	3	3	114	7	3	1	
5:15	11	8	7	0	2	0	0	0	0	0	0	0	3	185	14	1	0	0	5	136	9	4	0	
5:30	5	8	14	0	11	0	0	0	0	0	0	0	12	146	5	1	1	2	4	112	9	3	1	
5:45	2	5	3	0	0	0	0	0	0	0	1	0	12	150	6	1	0	0	5	106	10	0	0	
6:00	3	2	8	0	0	0	0	0	1	0	0	0	4	166	7	1	0	0	6	81	5	2	0	
2 hr total	52	40	71	1	34	1	0	0	1	0	2	0	49	1261	71	17	7	5	44	934	63	25	4	0
		163		1%				1		0%				1381		1%				1041		2%		
peak hour	36	22	31				0	0	0				17	662	40				19	500	32			
		89						0						719						551				
4 hour	85	45	109				0	0	1				58	1733	138				86	1469	88			
total		239						1						1929						1643				
6 hour	151	69	183					0	2				83	2992	253				187	2446	109			
total		403						2						3328						2742				
2 direct L	SB	403	48%				NB	2	1%				WB	3328	56%				EB	2742	46%			
total	NB	440	52%				SB	261	99%				EB	2599	44%				WB	3175	54%			
		843						263						5927						5917				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location BROADWAY ST & 4 AVE

Date Wednesday 20 October 2010

Observers KYLE RYAN

time ending	FROM THE NORTH on 4 AVE						FROM THE SOUTH on						FROM THE EAST on BROADWAY ST						FROM THE WEST on BROADWAY ST					
	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE
7:15	7	0	0	1	0	0	3	5	2	0	1	0	0	22	2	3	0	0	2	28	0	1	1	0
7:30	6	5	1	0	1	0	1	8	1	1	0	0	1	22	2	2	1	0	0	43	1	1	0	0
7:45	5	6	3	1	3	0	5	6	2	0	0	1	8	35	3	2	2	0	3	71	2	5	0	0
8:00	5	3	5	1	0	0	9	19	5	0	0	0	4	55	9	0	0	0	17	94	2	3	0	0
8:15	0	1	5	0	0	0	6	4	0	0	1	0	5	28	4	3	1	0	8	56	0	0	2	0
8:30	7	7	0	1	1	0	11	17	2	2	2	0	1	36	3	1	1	0	5	71	0	1	2	0
8:45	0	1	3	0	0	1	8	12	4	0	0	0	3	47	1	1	0	0	6	71	1	4	4	0
9:00	0	0	4	1	2	0	15	12	4	1	1	0	4	61	8	1	0	0	10	101	1	4	1	0
2 hr total	30	23	21	5	7	1	58	83	20	4	5	1	26	306	32	13	5	0	51	535	7	19	10	0
		74		7%				161		2%				364		4%				593		3%		
peak hour	12	12	13				34	52	11				13	166	17				36	292	3			
		37						97						196						331				
11:15	5	7	24	0	1	0	15	50	5	5	2	0	25	84	26	0	0	0	21	48				
11:30	6	5	11	0	0	0	16	87	8	8	1	0	8	86	5	1	1	0	29	12				
11:45	15	21	10	1	12	0	28	22	1	0	0	0	11	107	16	5	4	0	10	76				
12:00	11	11	7	0	5	0	33	15	3	0	1	0	27	134	11	1	0	0	9	80				
12:15	26	28	42	2	1	0	36	26	2	0	1	0	25	220	2	3	1	0	23	102				
12:30	14	16	29	1	5	0	29	22	2	0	0	0	9	55	17	6	2	0	7	134				
12:45	14	10	4	0	3	0	28	22	5	0	0	0	30	93	25	3	2	0	7	113				
1:00	2	4	2	0	2	1	30	15	9	1	0	0	7	54	0	0	3	0	12	114				
2 hr total	93	102	129	4	29	1	215	259	35	14	5	0	142	833	102	19	13	0	118	679	0	0	0	0
		324		1%				509		3%				1077		2%				797		0%		
peak hour	65	65	82				126	85	12				91	502	55				46	429	0			
		212						223						648						475				
4:15	3	29	16	1	0	0	28	35	4	2	2	1	6	112	7	8	1	1	11	135				
4:30	6	14	31	0	2	1	21	7	6	1	0	0	2	146	15	0	5	1	13	85				
4:45	23	16	14	2	1	3	14	20	13	0	0	0	13	144	6	3	3	1	16	117				
5:00	13	11	9	0	1	0	33	23	15	0	0	0	6	129	8	5	2	0	5	106				
5:15	9	15	7	0	3	0	45	35	14	0	0	0	13	129	3	0	8	0	12	129				
5:30	7	2	4	0	0	0	14	13	6	0	0	0	3	148	3	3	16	1	6	115				
5:45	7	7	7	0	0	0	23	20	5	0	0	0	2	96	1	1	0	0	5	91				
6:00	10	7	4	0	1	0	8	5	3	0	0	0	0	77	1	1	0	0	3	53				
2 hr total	78	101	92	3	8	4	186	158	66	3	2	1	45	981	44	21	35	4	71	831	0	0	0	0
		271		1%				410		1%				1070		2%				902		0%		
peak hour	51	56	61				113	85	48				34	548	32				46	437	0			
		168						246						614						483				
4 hour	108	124	113				244	241	86				71	1287	76				117	1260	0			
total		345						571						1434						1377				
6 hour	201	226	242				459	500	121				213	2120	178				240	2045	7			
total		669						1080						2511						2292				
2 direct L	SB	669	42%				NB	1080	71%				WB	2511	51%				EB	2292	45%			
total	NB	918	58%				SB	446	29%				EB	2367	49%				WB	2821	55%			
		1587						1526						4878						5113				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location YORK RD & GLADSTONE AVE- YORKTON

Date Tuesday 19 October 2010

Observers Laura P

FROM THE NORTH on GLADSTONE AVE

time ending	LT	ST	RT	CV	PED	BIKE
7:15	2	5	1	0	0	0
7:30	5	7	9	2	0	0
7:45	4	3	5	2	0	1
8:00	3	4	1	3	0	0
8:15	4	7	3	4	0	0
8:30	8	8	3	4	0	0
8:45	0	3	1	1	1	0
9:00	2	4	4	2	0	0
2 hr total	28	41	27	18	1	1
		96		19%		
peak hour	19	22	12			
		53				
11:15	7	12	6	2	0	0
11:30	7	8	4	4	0	0
11:45	5	17	0	2	0	0
12:00	8	18	2	0	0	0
12:15	10	25	7	2	0	0
12:30	4	11	2	2	0	0
12:45	4	9	0	2	0	0
1:00	5	10	2	2	0	0
2 hr total	50	110	23	16	0	0
		183		9%		
peak hour	27	71	11			
		109				
4:15	7	13	1	1	0	0
4:30	1	8	1	0	0	1
4:45	3	15	4	3	0	0
5:00	7	14	4	6	0	0
5:15	9	18	2	0	0	0
5:30	4	15	4	2	0	0
5:45	4	8	1	0	0	0
6:00	2	8	5	3	0	0
2 hr total	37	99	22	15	0	1
		158		9%		
peak hour	23	62	14			
		99				
4 hour total	65	140	49			
		254				
6 hour total	115	250	72			
		437				
2 direct L total	SB	437	54%			
	NB	367	46%			
		804				

FROM THE SOUTH on GLADSTONE AVE

time ending	LT	ST	RT	CV	PED	BIKE
7:15	2	2	1	1	0	0
7:30	0	5	3	3	0	0
7:45	10	6	15	4	0	1
8:00	9	18	29	5	0	0
8:15	3	9	14	3	0	0
8:30	4	6	5	3	0	0
8:45	2	3	5	3	0	0
9:00	3	9	15	3	0	0
2 hr total	33	58	87	25	0	1
		178		14%		
peak hour	26	39	63			
		128				
11:15	6	10	8	5	0	0
11:30	4	8	14	3	0	0
11:45	7	10	6	6	0	0
12:00	3	8	16	2	0	0
12:15	4	10	26	3	0	0
12:30	8	5	21	3	0	0
12:45	9	11	11	3	1	0
1:00	7	14	31	2	0	0
2 hr total	48	76	133	27	1	0
		257		11%		
peak hour	22	33	69			
		124				
4:15	8	10	20	2	0	0
4:30	3	10	12	5	0	0
4:45	8	11	16	2	0	0
5:00	5	8	21	4	0	0
5:15	5	4	22	1	0	0
5:30	5	7	12	3	1	1
5:45	1	9	11	4	0	0
6:00	7	2	11	0	0	0
2 hr total	42	61	125	21	1	1
		228		9%		
peak hour	23	30	71			
		124				
4 hour total	75	119	212			
		406				
6 hour total	123	195	345			
		663				
2 direct L total	NB	663	44%			
	SB	843	56%			
		1506				

FROM THE EAST on YORK ROAD

time ending	LT	ST	RT	CV	PED	BIKE
7:15	2	6	2	2	0	0
7:30	1	19	0	5	0	0
7:45	9	23	4	8	0	0
8:00	25	35	10	10	0	0
8:15	16	28	8	10	0	0
8:30	21	28	3	12	0	0
8:45	29	15	4	13	0	0
9:00	66	26	2	9	0	0
2 hr total	169	180	33	69	0	0
		382		18%		
peak hour	71	114	25			
		210				
11:15	9	24	4	9	0	0
11:30	10	18	3	8	0	0
11:45	14	26	1	15	0	0
12:00	11	17	3	6	0	0
12:15	36	35	1	10	0	0
12:30	15	24	6	11	0	0
12:45	23	21	0	8	0	0
1:00	32	32	5	11	0	1
2 hr total	150	197	23	78	0	1
		370		21%		
peak hour	76	102	11			
		189				
4:15	20	33	2	13	0	0
4:30	11	24	5	8	0	0
4:45	30	37	6	20	0	0
5:00	25	24	1	10	0	1
5:15	31	28	3	4	0	2
5:30	22	38	2	12	0	0
5:45	20	22	5	7	0	0
6:00	19	20	3	4	0	0
2 hr total	178	226	27	78	0	3
		431		18%		
peak hour	108	127	12			
		247				
4 hour total	347	406	60			
		813				
6 hour total	497	603	83			
		1183				
2 direct L total	WB	1183	52%			
	EB	1090	48%			
		2273				

FROM THE WEST on YORK ROAD

time ending	LT	ST	RT	CV	PED	BIKE
7:15	6	8	2	5	1	0
7:30	9	20	4	8	0	1
7:45	8	18	3	9	0	0
8:00	8	29	0	6	0	0
8:15	5	25	5	13	0	0
8:30	6	43	4	16	0	0
8:45	0	12	9	3	0	0
9:00	2	29	6	11	0	0
2 hr total	44	184	33	71	1	1
		261		27%		
peak hour	27	115	12			
		154				
11:15	2	24	0	10	0	0
11:30	1	26	3	12	0	0
11:45	5	27	2	7	0	0
12:00	3	25	3	9	0	0
12:15	3	39	11	11	0	1
12:30	1	26	4	11	0	0
12:45	1	27	3	8	0	0
1:00	3	18	0	9	1	0
2 hr total	19	212	26	77	1	1
		257		30%		
peak hour	12	117	20			
		149				
4:15	4	28	1	5	0	0
4:30	4	22	2	9	0	0
4:45	4	37	5	9	0	0
5:00	2	20	5	5	0	0
5:15	5	45	14	10	0	1
5:30	4	28	3	9	0	0
5:45	1	32	6	9	0	0
6:00	2	22	1	4	0	0
2 hr total	26	234	37	60	0	1
		297		20%		
peak hour	15	130	27			
		172				
4 hour total	38	351	57			
		446				
6 hour total	89	630	96			
		815				
2 direct L total	EB	815	51%			
	WB	798	49%			
		1613				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location BROADWAY ST & 7 AVE | Date Wednesday 20 October 2010 | Observers CORY BRENDA

time	FROM THE NORTH on 7 AVENUE						FROM THE SOUTH on 7 AVENUE						FROM THE EAST on BROADWAY STREET						FROM THE WEST on BROADWAY STREET					
ending	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE
7:15	0	1	0	0	0	0	0	1	7	0	0	0	16	29	2	6	0	0	3	27	4	1	0	0
7:30	0	0	0	0	0	0	3	1	8	0	0	0	8	42	6	2	0	0	3	41	5	1	0	1
7:45	1	0	4	0	0	0	4	5	13	0	0	0	9	65	2	3	0	0	0	71	1	1	0	2
8:00	0	2	2	0	0	0	4	3	14	0	0	0	18	84	8	1	0	0	6	76	15	1	0	0
8:15	3	0	1	0	0	0	4	2	14	1	0	0	7	40	3	1	0	0	1	44	5	0	0	0
8:30	0	0	0	0	0	0	5	2	18	3	0	0	11	78	2	0	0	0	1	63	11	1	0	0
8:45	0	0	1	0	0	0	7	0	22	1	0	0	7	84	3	1	0	0	2	74	8	1	0	1
9:00	2	0	1	0	0	0	6	1	16	2	0	0	21	90	2	3	0	0	2	74	6	1	2	0
2 hr total	6	3	9	0	0	0	33	15	112	7	0	0	97	512	28	17	0	0	18	470	55	7	2	4
		18		0%				160		4%				637		3%				543		1%		
peak hour	3	2	4				20	7	68				43	286	16				10	257	39			
		9						95						345						306				
11:15	1	2	3	1	0	0	14	1	26	2	1	0	24	119	2	1	1	0	1	80	17	1	0	0
11:30	2	1	3	0	1	0	8	2	27	1	3	0	24	124	3	5	1	1	0	113	10	6	1	0
11:45	2	2	4	0	0	0	11	2	27	2	1	2	16	123	5	4	0	1	3	101	9	3	0	0
12:00	2	3	7	0	0	0	15	4	38	0	2	1	21	130	3	2	0	0	3	111	8	5	1	0
12:15	2	1	7	0	1	0	12	1	35	0	4	0	19	168	2	4	0	1	1	118	5	1	0	0
12:30	1	0	2	0	0	0	5	2	37	0	7	0	23	113	8	3	0	0	9	138	12	3	0	1
12:45	0	1	2	0	0	0	7	3	27	1	4	0	26	178	4	1	0	0	5	125	12	4	0	0
1:00	0	0	2	0	1	0	9	5	34	0	4	0	43	165	5	0	0	0	10	135	8	3	0	0
2 hr total	10	10	30	1	3	0	81	20	251	6	26	3	196	1120	32	20	2	3	32	921	81	26	2	1
		50		2%				352		2%				1348		1%				1034		3%		
peak hour	3	2	13				33	11	133				111	624	19				25	516	37			
		18						177						754						578				
4:15	2	1	2	1	0	0	7	4	32	1	1	0	22	141	2	8	0	0	2	146	9	5	0	1
4:30	2	0	5	0	1	0	11	4	21	2	2	0	13	157	5	1	0	0	2	113	11	3	0	2
4:45	3	3	1	0	0	0	5	5	35	3	3	1	18	124	5	3	0	3	1	135	9	1	0	1
5:00	0	4	6	0	2	0	9	6	38	2	0	0	13	124	3	5	0	0	1	120	12	3	0	0
5:15	4	5	4	0	0	0	6	6	44	0	6	0	30	147	4	0	0	0	9	152	5	4	0	0
5:30	1	2	3	0	1	0	8	7	38	0	4	0	27	126	2	3	0	0	3	115	8	1	0	0
5:45	2	2	1	0	0	0	7	3	30	1	12	0	15	136	2	0	0	0	2	118	11	1	0	0
6:00	1	1	3	0	0	0	6	1	27	1	1	0	16	144	1	0	0	2	0	76	8	2	0	0
2 hr total	15	18	25	1	4	0	59	36	265	10	29	1	154	1099	24	20	0	5	20	975	73	20	0	4
		58		2%				360		3%				1277		2%				1068		2%		
peak hour	9	12	16				31	21	138				74	552	17				13	520	37			
		37						190						643						570				
4 hour	21	21	34				92	51	377				251	1611	52				45	1491	110			
total		76						520						1914						1646				
6 hour	31	31	64				173	71	628				447	2731	84				70	2366	209			
total		126						872						3262						2645				
2 direct L	SB	126	36%				NB	872	56%				WB	3262	52%				EB	2645	47%			
total	NB	225	64%				SB	687	44%				EB	3025	48%				WB	2968	53%			
		351						1559						6287						5613				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location BROADWAY ST & DRACUP AVE

Date Monday, October 18, 2010

Observers lm

time	FROM THE NORTH on DRACUP AVE						FROM THE SOUTH on DRACUP AVE						FROM THE EAST on BROADWAY STREET						FROM THE WEST on BROADWAY STREET\					
ending	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE
7:15	1	14	10	1	0	0	1	4	3	0	0	0	13	39	11	0	0	0	1	23	16	2	0	0
7:30	1	13	12	0	0	0	2	4	4	1	3	0	15	36	6	6	0	0	6	38	16	4	0	0
7:45	3	16	8	0	1	0	8	15	9	2	0	0	17	48	11	1	0	0	10	40	29	2	2	1
8:00	7	16	27	3	0	0	9	6	6	0	0	0	7	69	7	5	0	0	10	70	15	6	0	0
8:15	3	12	3	2	1	0	10	6	5	1	0	0	8	40	14	2	0	0	8	40	14	2	2	0
8:30	5	17	10	2	1	0	5	5	8	1	0	0	15	61	19	9	0	0	7	55	7	5	0	0
8:45	12	19	17	0	0	0	7	4	7	1	0	0	12	74	15	3	0	0	12	42	17	1	0	0
9:00	6	30	26	2	0	0	9	3	5	1	2	0	13	82	13	2	2	0	13	72	29	6	2	0
2 hr total	38	137	113	10	3	0	51	47	47	7	5	0	100	449	96	28	2	0	67	380	143	28	6	1
		288		3%				145		5%				645		4%				590		5%		
peak hour	26	78	56				31	18	25				48	257	61				40	209	67			
		160						74						366						316				
11:15	8	16	25	0	0	0	23	25	17	4	1	0	18	79	11	4	0	0	15	82	18	2	0	0
11:30	14	15	13	0	0	0	18	23	20	2	0	0	19	87	13	1	0	0	15	93	29	7	0	0
11:45	4	20	14	1	0	0	21	25	18	4	0	0	20	75	11	3	0	1	19	92	29	2	0	0
12:00	3	22	16	0	2	0	23	23	15	4	0	0	25	86	18	2	0	0	21	84	35	1	0	0
12:15	17	34	25	3	0	0	26	20	20	0	0	0	42	101	20	2	0	0	27	102	41	2	0	0
12:30	6	41	28	3	1	0	36	37	26	1	0	0	26	85	17	3	0	0	24	92	36	0	5	0
12:45	13	34	32	0	1	0	22	31	19	0	2	0	26	106	21	1	1	0	16	89	31	3	3	1
1:00	10	39	20	1	2	0	34	41	37	2	0	0	36	121	18	3	0	0	24	93	26	2	5	0
2 hr total	75	221	173	8	6	0	203	225	172	17	3	0	212	740	129	19	1	1	161	727	245	19	13	1
		469		2%				600		3%				1081		2%				1133		2%		
peak hour	46	148	105				118	129	102				130	413	76				91	376	134			
		299						349						619						601				
4:15	3	27	18	0	0	0	27	23	14	1	0	0	17	48	20	2	0	0	20	75	29	0	0	0
4:30	10	20	17	1	0	0	33	23	33	4	0	0	17	81	22	8	0	1	19	79	35	1	0	0
4:45	11	27	19	1	0	1	32	28	24	2	1	0	24	79	21	4	0	0	20	84	32	2	1	0
5:00	3	31	21	0	0	0	23	26	20	1	0	0	15	89	20	4	0	1	32	80	33	2	0	0
5:15	11	43	23	1	0	0	37	42	42	1	0	0	18	93	27	0	0	0	24	129	34	4	0	0
5:30	7	44	19	2	0	0	30	40	28	2	2	0	26	72	19	4	0	0	23	83	38	1	0	0
5:45	11	26	18	0	0	0	27	37	24	0	0	0	37	81	22	4	0	0	25	77	28	4	0	0
6:00	5	26	21	1	0	0	29	35	30	2	0	0	16	82	19	3	0	0	20	52	25	1	0	0
2 hr total	61	244	156	6	0	1	238	254	215	13	3	0	170	625	170	29	0	2	183	659	254	15	1	0
		461		1%				707		2%				965		3%				1096		1%		
peak hour	32	144	81				117	145	114				96	335	88				104	369	133			
		257						376						519						606				
4 hour	99	381	269				289	301	262				270	1074	266				274	1035	388			
total		749						852						1610						1697				
6 hour	174	602	442				492	526	434				482	1814	395				411	1766	642			
total		1218						1452						2691						2819				
2 direct L	SB	1218	48%				NB	1452	46%				WB	2691	53%				EB	2819	51%			
total	NB	1332	52%				SB	1726	54%				EB	2374	47%				WB	2748	49%			
		2550						3178						5065						5567				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location BROADWAY ST & HIGHWAY 9 | Date Monday, October 18, 2010 | Observers Ryan Kyle

time ending	FROM THE NORTH on HIGHWAY 9 LT	ST	RT	CV	PED	BIKE
7:15	12	25	14	7	0	0
7:30	3	14	18	2	0	0
7:45	30	27	18	5	0	0
8:00	24	44	11	8	0	0
8:15	21	31	13	13	1	0
8:30	30	29	14	11	1	0
8:45	20	35	15	14	0	0
9:00	22	40	17	11	1	0
2 hr total	162	245	120	71	3	0
		527		13%		
peak hour	95	139	53			
		287				
11:15	36	57	15	11	1	0
11:30	28	23	11	7	0	0
11:45	40	40	18	16	0	1
12:00	37	46	19	12	0	1
12:15	48	60	15	18	1	1
12:30	31	27	14	7	0	0
12:45	35	41	11	8	1	1
1:00	42	61	13	10	1	1
2 hr total	297	355	116	89	4	5
		768		12%		
peak hour	156	189	53			
		398				
4:15	24	45	11	10	1	0
4:30	24	39	16	18	0	0
4:45	23	36	17	3	0	0
5:00	30	52	14	17	0	1
5:15	38	68	14	14	1	1
5:30	21	43	13	15	0	0
5:45	23	62	16	26	7	6
6:00	14	24	14	7	0	1
2 hr total	197	369	115	110	9	9
		681		16%		
peak hour	115	195	61			
		371				
4 hour total	359	614	235			
		1208				
6 hour total	656	969	351			
		1976				
2 direct L total	SB	1976	59%			
	NB	1368	41%			
		3344				

time ending	FROM THE SOUTH on HIGHWAY 9 LT	ST	RT	CV	PED	BIKE
7:15	11	11	5	6	0	0
7:30	23	13	10	7	2	0
7:45	28	24	18	11	0	0
8:00	17	41	21	4	0	0
8:15	34	22	14	14	1	0
8:30	31	52	21	18	0	0
8:45	43	27	16	10	0	0
9:00	30	28	17	13	1	0
2 hr total	217	218	122	83	4	0
		557		15%		
peak hour	125	142	72			
		339				
11:15	25	24	17	11	0	0
11:30	24	35	12	18	0	2
11:45	33	32	9	13	4	3
12:00	23	22	19	7	2	2
12:15	43	51	28	12	2	1
12:30	37	29	19	7	1	0
12:45	51	39	17	17	0	0
1:00	42	42	13	10	1	0
2 hr total	278	274	134	95	10	8
		686		14%		
peak hour	173	161	77			
		411				
4:15	39	38	10	12	1	3
4:30	40	45	18	18	1	2
4:45	45	40	28	14	1	2
5:00	37	50	22	8	0	1
5:15	48	23	28	12	0	0
5:30	46	39	17	9	0	0
5:45	34	26	7	18	4	3
6:00	31	31	13	11	2	2
2 hr total	320	292	143	102	9	13
		755		14%		
peak hour	170	158	96			
		424				
4 hour total	537	510	265			
		1312				
6 hour total	815	784	399			
		1998				
2 direct L total	NB	1998	49%			
	SB	2071	51%			
		4069				

time ending	FROM THE EAST on BROADWAY ST LT	ST	RT	CV	PED	BIKE
7:15	4	18	2	3	0	0
7:30	13	25	4	5	0	0
7:45	14	40	7	6	0	0
8:00	36	44	7	4	0	0
8:15	10	35	10	6	0	0
8:30	19	27	6	13	0	0
8:45	28	52	4	6	0	0
9:00	13	68	2	7	0	0
2 hr total	137	309	42	50	0	0
		488		10%		
peak hour	93	158	27			
		278				
11:15	13	91	6	6	0	1
11:30	18	62	7	7	17	5
11:45	25	78	4	5	0	0
12:00	33	70	14	4	0	0
12:15	41	128	13	20	6	5
12:30	32	57	12	5	1	0
12:45	39	85	8	3	4	2
1:00	37	72	11	3	1	0
2 hr total	238	643	75	53	29	13
		956		6%		
peak hour	149	342	44			
		535				
4:15	47	57	4	6	0	0
4:30	52	72	9	6	0	0
4:45	48	69	4	3	0	0
5:00	45	84	12	10	3	1
5:15	54	70	5	4	0	0
5:30	39	72	5	1	2	0
5:45	32	69	4	5	1	2
6:00	35	68	5	8	2	3
2 hr total	352	561	48	43	8	6
		961		4%		
peak hour	199	295	30			
		524				
4 hour total	489	870	90			
		1449				
6 hour total	727	1513	165			
		2405				
2 direct L total	WB	2405	49%			
	EB	2501	51%			
		4906				

time ending	FROM THE WEST on BROADWAY ST LT	ST	RT	CV	PED	BIKE
7:15	10	15	15	1	0	0
7:30	11	31	14	0	2	0
7:45	18	24	15	1	0	1
8:00	19	61	16	5	0	0
8:15	17	31	14	2	0	0
8:30	10	43	16	2	0	0
8:45	18	32	17	1	0	0
9:00	20	50	13	3	1	0
2 hr total	123	287	120	15	3	1
		530		3%		
peak hour	64	167	63			
		294				
11:15	17	57	16	3	0	0
11:30	17	86	19	8	0	0
11:45	15	57	12	3	0	0
12:00	19	64	10	2	1	0
12:15	15	75	17	0	0	0
12:30	18	82	16	1	0	0
12:45	25	100	17	1	0	1
1:00	17	92	14	3	0	0
2 hr total	143	613	121	21	1	1
		877		2%		
peak hour	75	349	64			
		488				
4:15	10	69	16	0	0	0
4:30	12	58	18	1	0	0
4:45	11	85	17	3	0	0
5:00	17	66	14	0	1	0
5:15	27	97	18	2	0	0
5:30	13	64	16	1	0	0
5:45	37	53	19	8	1	0
6:00	26	54	16	1	0	0
2 hr total	153	546	134	16	2	0
		833		2%		
peak hour	67	306	67			
		440				
4 hour total	228	895	198			
		1321				
6 hour total	419	1446	375			
		2240				
2 direct L total	EB	2240	46%			
	WB	2679	54%			
		4919				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location BROADWAY ST & MEYHEW AVE | Date Monday, October 18, 2010 | Observers Dracy

FROM THE NORTH on MAYHEW AVE

time ending	LT	ST	RT	CV	PED	BIKE
7:15	2	4	8	1	0	0
7:30	4	14	20	0	0	0
7:45	4	12	24	0	0	1
8:00	13	46	33	0	0	0
8:15	7	22	24	3	0	0
8:30	6	20	9	0	0	0
8:45	2	13	15	2	0	0
9:00	6	29	20	4	0	0
2 hr total	44	160	153	10	0	1
		357		3%		
peak hour	28	101	81			
		210				
11:15	7	30	12	1	0	0
11:30	6	25	22	3	0	0
11:45	4	21	21	2	0	0
12:00	4	11	16	0	0	0
12:15	9	24	19	1	0	0
12:30	2	20	15	2	0	0
12:45	6	23	13	1	0	0
1:00	14	32	39	2	0	0
2 hr total	52	186	157	12	0	0
		395		3%		
peak hour	31	99	86			
		216				
4:15	10	15	18	5	0	0
4:30	11	21	23	2	0	0
4:45	10	16	21	3	0	0
5:00	12	17	24	4	0	0
5:15	9	19	20	0	0	0
5:30	6	13	25	1	0	0
5:45	5	12	37	1	0	0
6:00	4	14	19	0	0	0
2 hr total	67	127	187	16	0	0
		381		4%		
peak hour	42	73	88			
		203				
4 hour total	111	287	340			
		738				
6 hour total	163	473	497			
		1133				
2 direct L	SB	1133	40%			
total	NB	1676	60%			
		2809				

FROM THE SOUTH on LAWRENCE AVE

time ending	LT	ST	RT	CV	PED	BIKE
7:15	3	1	6	0	0	0
7:30	0	4	3	1	0	0
7:45	1	7	4	0	1	0
8:00	10	11	4	1	0	0
8:15	5	12	3	1	0	0
8:30	8	13	5	0	0	0
8:45	5	23	4	1	0	0
9:00	7	25	0	1	0	0
2 hr total	39	96	29	5	1	0
		164		3%		
peak hour	28	59	16			
		103				
11:15	8	37	8	1	0	0
11:30	7	41	8	0	0	0
11:45	13	37	2	1	0	0
12:00	8	40	5	0	0	0
12:15	11	67	1	0	0	0
12:30	5	37	4	0	0	0
12:45	8	35	9	1	0	0
1:00	12	39	8	1	0	0
2 hr total	72	333	45	4	0	0
		450		1%		
peak hour	36	178	22			
		236				
4:15	7	46	4	1	0	0
4:30	7	38	12	0	0	0
4:45	6	40	4	1	0	0
5:00	8	45	9	0	0	0
5:15	6	68	14	0	1	0
5:30	5	29	8	0	0	0
5:45	2	42	9	1	0	0
6:00	3	30	5	2	0	0
2 hr total	44	338	65	5	1	0
		447		1%		
peak hour	27	191	39			
		257				
4 hour total	83	434	94			
		611				
6 hour total	155	767	139			
		1061				
2 direct L	NB	1061	58%			
total	SB	757	42%			
		1818				

FROM THE EAST on BROADWAY ST

time ending	LT	ST	RT	CV	PED	BIKE
7:15	2	12	1	4	0	0
7:30	3	20	3	5	0	0
7:45	3	30	2	7	0	0
8:00	8	31	8	2	0	0
8:15	3	22	10	6	0	0
8:30	7	38	4	11	0	0
8:45	4	39	8	2	0	0
9:00	5	34	6	7	0	0
2 hr total	35	226	42	44	0	0
		303		15%		
peak hour	22	130	30			
		182				
11:15	4	27	4	5	0	0
11:30	5	34	9	4	0	0
11:45	6	29	6	7	0	0
12:00	4	34	13	3	0	0
12:15	13	53	11	8	0	0
12:30	9	34	8	5	1	0
12:45	4	24	4	2	0	0
1:00	4	33	2	4	0	0
2 hr total	49	268	57	38	1	0
		374		10%		
peak hour	30	144	25			
		199				
4:15	5	34	5	6	0	0
4:30	2	25	11	5	0	0
4:45	7	35	3	4	0	0
5:00	10	34	13	6	0	0
5:15	5	70	11	6	1	0
5:30	7	24	6	2	0	0
5:45	4	38	5	1	0	0
6:00	5	35	4	4	0	2
2 hr total	45	295	58	34	1	2
		398		9%		
peak hour	24	164	38			
		226				
4 hour total	80	521	100			
		701				
6 hour total	129	789	157			
		1075				
2 direct L	WB	1075	54%			
total	EB	905	46%			
		1980				

FROM THE WEST on BROADWAY ST

time ending	LT	ST	RT	CV	PED	BIKE
7:15	6	19	5	2	0	0
7:30	15	22	0	5	0	0
7:45	17	29	6	7	0	0
8:00	25	43	10	5	0	0
8:15	22	22	5	5	0	0
8:30	25	31	13	8	0	0
8:45	28	20	4	4	0	0
9:00	20	27	9	8	0	0
2 hr total	158	213	52	44	0	0
		423		10%		
peak hour	100	116	32			
		248				
11:15	32	20	8	2	0	0
11:30	20	26	8	10	0	0
11:45	32	18	9	4	1	0
12:00	35	22	4	2	0	0
12:15	56	19	10	8	0	0
12:30	41	17	5	4	0	0
12:45	35	28	8	3	0	0
1:00	31	35	7	6	0	0
2 hr total	282	185	59	39	1	0
		526		7%		
peak hour	163	99	30			
		292				
4:15	46	24	10	5	0	0
4:30	34	29	8	9	0	0
4:45	37	31	6	8	0	0
5:00	25	26	4	3	1	0
5:15	62	41	9	3	0	0
5:30	54	18	3	4	0	0
5:45	25	19	3	4	0	0
6:00	29	17	1	3	0	2
2 hr total	312	205	44	39	1	2
		561		7%		
peak hour	158	127	27			
		312				
4 hour total	475	304	74			
		853				
6 hour total	752	603	155			
		1510				
2 direct L	EB	1510	51%			
total	WB	1441	49%			
		2951				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

ME2 TRANSPORTATION DATA CORP.

Location INDEPENDENT ST \ PARK ST & BRODIE AVE/ LAURIER AVE — SEE DIAGRAM — Date Thursday 21 October 2010 — Observers B

FROM THE NORTH on BRODIE AVE 1

time ending	LT 2	ST 3	RT 4	RT 5	CV	PED	BIKE
7:15		3					
7:30		4					
7:45	1	2	2		1		
8:00		5	2				
8:15		2	1		1	1	
8:30		2	1		2		
8:45		1	3			1	
9:00		3	2				
2 hr total	1	22	11	0	4	2	0
		34		12%			
peak hour	1	11	6	0			
		18					
11:15		3	2	1		1	
11:30		1					
11:45	1	3	3				
12:00	1	1	1	1			
12:15		7	6				
12:30		2	4			1	
12:45		3	2				
13:00		2	4	1			
2 hr total	2	22	22	3	0	2	0
		49		0%			
peak hour	0	14	16	1			
		31					
16:15			1			1	
16:30		3	2				
16:45		4	3				
17:00		5	3			1	
17:15		3					1
17:30		6	1				4
17:45	1	9	2				
18:00	1	5				1	
2 hr total	2	35	12	0	0	3	5
		49		0%			
peak hour	1	23	6	0			
		30					
4 hour	3	57	23	0			
total		83					
6 hour	5	79	45	3			
total		129					
6 hour	43	119	167	34			
total			363				
2 direct L		SB	363				67%
total		NB	181				33%
			544				

From the NORTH on LAURIER AVE 5

time ending	LT 1	LT 2	ST 3	RT 4	CV	PED	BIKE
7:15			1				
7:30			1				
7:45			2	1			
8:00	1	1	3				
8:15						1	
8:30			5	1			
8:45	1		4			1	
9:00		1	1				
2 hr total	2	2	17	2	0	2	0
		23		0%			
peak hour	1	1	10	2			
		14					
11:15	5	3	1	1	2	1	
11:30	1		3				
11:45			3	2			
12:00			5				
12:15		2	11	2			
12:30			4	2		1	
12:45	1		3				
13:00		1	2	1		1	
2 hr total	7	6	32	8	2	3	0
		53		4%			
peak hour	1	3	20	5			
		29					
16:15		2	2	3		1	
16:30		1	1				
16:45			8	2			
17:00			4	1			
17:15		1	14				
17:30	1	2	4	1		6	
17:45		2	7				2
18:00		2	5			1	
2 hr total	1	10	45	7	0	8	2
		63		0%			
peak hour	1	5	29	2			
		37					
4 hour	3	12	62	9			
total		77					
6 hour	10	18	94	17			
total		122					
6 hour	41	84	155	34			
total			314				
2 direct L		NB	314				66%
total		SB	163				34%
			477				

FROM THE SOUTH on LAURIER AVE 3

time ending	LT 4	ST 5	ST 1	RT 2	CV	PED	BIKE
7:15		3	2		2		
7:30	3	1	6		1	1	
7:45	6	2	6	1			
8:00	2	6	19	4	1		
8:15	2	1	12	2			
8:30	3	1	10	2			
8:45	1	3	8	2	1	2	
9:00	4	2	13	2			
2 hr total	21	19	76	13	5	3	0
		129		4%			
peak hour	13	10	47	9			
		79					
11:15	4	3	5	1			
11:30		4	5	1	1		
11:45	2	6	4				
12:00	1	3	7	3	1		
12:15	1	4	9	2			
12:30	1	3	6	1	1		
12:45	7	4	6	1			
13:00		9	18	3			
2 hr total	16	36	60	12	3	0	0
		124		2%			
peak hour	9	20	39	7			
		75					
16:15	2		8	2	1		
16:30	3	2	10	1			
16:45	1	3	9	2	1		
17:00	1	1	5	3			
17:15	1	2	12		1	1	
17:30	3	2	4			1	
17:45	2	2	7	1			
18:00		4	6		1		
2 hr total	13	16	61	9	4	2	0
		99		4%			
peak hour	7	7	28	4			
		46					
4 hour	34	35	137	22			
total		206					
6 hour	50	71	197	34			
total		318					
6 hour	40	74	110	27			
total			251				
2 direct L		NB	251				44%
total		SB	316				56%
			567				

FROM THE EAST on PARK STREET 2

time ending	LT 3	ST 4	RT 5	RT 1	CV	PED	BIKE
7:15							
7:30	2	1			1		
7:45	1	4					
8:00	1					2	
8:15	1	7			1		
8:30	2	3	1		2		
8:45	1	3				1	
9:00		9	1				
2 hr total	8	27	2	0	4	3	0
		37		11%			
peak hour	5	14	1	0			
		20					
11:15		3					
11:30		3					
11:45		4					
12:00		6	1			1	
12:15	3	5		2	1		
12:30	3	6					
12:45	2	6			1	1	
13:00	3	9			1		
2 hr total	11	42	1	2	3	2	0
		56		5%			
peak hour	11	26	0	2			
		39					
16:15	3	4					
16:30	5	9		1			
16:45	1	2					
17:00	3	6	1	1		2	
17:15	5	9					
17:30	4	4	1			1	
17:45		8		1		2	
18:00		4					
2 hr total	21	46	2	3	0	5	0
		72		0%			
peak hour	12	27	2	2			
		43					
4 hour	29	73	4	3			
total		106					
6 hour	40	115	5	5			
total		160					
6 hour	27	58	49	18			
total			152				
2 direct L		WB	152				43%
total		EB	201				57%
			353				

FROM THE WEST on INDEPENDENT STEET 4

time ending	LT 5	LT 1	ST 2	RT 3	CV	PED	BIKE
7:15	1		2				
7:30							
7:45		3	1	3			
8:00		3	5			1	
8:15	3	2	2			1	
8:30	1	2	3	1			
8:45	2		2	1	1		
9:00	1	3	4	2	1		
2 hr total	8	13	19	7	2	2	0
		47		4%			
peak hour	4	10	11	4			
		29					
11:15		2	3				1
11:30	1	1	4	1			
11:45		3	5	1			
12:00	1	1	7	4			
12:15	4	2	5	2		1	
12:30	1	1	10			1	
12:45	1	3	5	3			1
13:00	1	5	6	4			
2 hr total	9	18	45	15	0	2	2
		87		0%			
peak hour	7	11	26	9			
		53					
16:15		2	10	2	1		
16:30	1	2	4	1			1
16:45		1	8				
17:00	1	1	5	4			
17:15	1	2	6	4			
17:30	1		7	2		3	1
17:45		3	3	1			
18:00	2	1	4	1			
2 hr total	6	12	47	15	1	3	2
		80		1%			
peak hour	3	6	21	11			
		41					
4 hour	14	25	66	22			
total		105					
6 hour	23	43	111	37			
total		177					
6 hour	6	12	47	15			
total		80					
2 direct L		EB	80				21%
total		WB	299				79%
			379				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location HAMILTON ROAD & HIGHWAY 9

Date Thursday 21 October 2010

Observers kyle ryan

time	FROM THE NORTH on HIGHWAY 9						FROM THE SOUTH on HIGHWAY 9						FROM THE EAST on						FROM THE WEST on					
ending	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE
7:15	5	19	1	6	0	0	4	17	13	9	0	0	8	4	5	3	0	0	0	9	2	0	0	0
7:30	14	24	1	7	0	0	5	41	17	8	0	1	9	3	2	2	0	0	0	5	6	1	0	0
7:45	8	21	1	5	0	1	16	50	20	8	0	0	4	3	7	4	0	0	3	5	4	4	0	0
8:00	11	33	2	5	0	0	14	61	44	9	0	0	10	2	13	2	0	0	7	23	2	4	0	0
8:15	17	38	1	8	0	0	12	63	32	13	0	0	8	8	4	2	0	0	2	18	1	1	0	0
8:30	25	26	0	11	0	0	11	64	26	18	0	0	12	3	9	2	0	0	5	12	3	4	0	1
8:45	9	39	1	10	1	1	14	64	29	11	10	0	10	3	3	1	0	0	6	14	7	3	0	0
9:00	13	32	4	5	0	0	12	39	26	9	0	0	9	6	8	1	0	0	4	18	5	7	0	0
2 hr total	102	232	11	57	1	2	88	399	207	85	10	1	70	32	51	17	0	0	27	104	30	24	0	1
		345		17%				694		12%				153		11%				161		15%		
peak hour	62	136	4				51	252	131				40	16	29				20	67	13			
		202						434						85						100				
11:15	39	46	7	15	0	0	17	42	13	17	2	1	18	26	12	2	0	0	11	18	7	5	0	0
11:30	25	39	1	12	1	0	2	26	2	2	0	0	10	10	6	1	0	0	15	47	20	10	0	0
11:45	32	30	2	3	0	0	4	27	9	3	0	0	24	9	3	2	0	0	8	46	27	15	0	0
12:00	22	49	1	10	0	0	2	21	3	2	0	0	47	25	13	2	0	0	10	61	27	15	0	0
12:15	98	98	10	26	0	0	8	15	0	0	0	0	31	24	13	6	0	0	17	51	11	14	0	0
12:30	25	53	4	18	1	0	4	17	2	0	0	0	17	27	21	2	0	0	7	56	22	10	0	0
12:45	31	40	15	33	5	4	4	35	12	4	0	0	21	10	3	9	0	0	17	56	28	11	5	4
1:00	19	37	26	21	0	0	10	27	20	10	1	0	26	24	23	15	1	1	3	6	0	0	0	0
2 hr total	291	392	66	138	7	4	51	210	61	38	3	1	194	155	94	39	1	1	88	341	142	80	5	4
		749		18%				322		12%				443		9%				571		14%		
peak hour	176	240	30				18	88	17				116	86	50				51	224	88			
		446						123						252						363				
4:15	29	57	12	5	0	0	16	66	15	18	3	0	36	32	23	1	0	1	4	19	6	2	0	0
4:30	25	57	4	9	0	1	20	44	4	13	0	0	24	41	24	5	0	0	4	32	6	1	0	0
4:45	27	52	1	11	0	0	10	29	2	11	0	1	33	13	20	4	0	0	7	15	11	7	4	4
5:00	30	33	3	9	0	0	8	39	3	15	0	0	10	21	17	3	4	6	1	27	3	0	1	1
5:15	20	54	18	3	1	0	5	29	1	7	0	0	17	37	24	0	0	0	4	18	3	2	0	0
5:30	22	47	9	9	3	1	16	35	10	25	11	7	26	32	22	0	0	2	12	24	20	5	5	7
5:45	27	35	2	7	1	0	7	24	2	11	0	0	23	8	12	0	0	0	0	15	1	0	0	0
6:00	7	22	1	7	0	0	11	50	14	13	0	0	3	3	2	0	0	0	3	15	1	1	0	0
2 hr total	187	357	50	60	5	2	93	316	51	113	14	8	172	187	144	13	4	9	35	165	51	18	10	12
		594		10%				460		25%				503		3%				251		7%		
peak hour	111	199	20				54	178	24				103	107	84				16	93	26			
		330						256						294						135				
4 hour	289	589	61				181	715	258				242	219	195				86	389	139			
total		939						1154						656						614				
6 hour	580	981	127				232	925	319				436	374	289				150	610	223			
total		1688						1476						1099						983				
2 direct L	SB	1688	55%				NB	1476	47%				WB	1099	42%				EB	983	57%			
total	NB	1364	45%				SB	1640	53%				EB	1509	58%				WB	733	43%			
		3052						3116						2608						1716				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location

Date

Observers PAT

time	FROM THE NORTH on						FROM THE SOUTH on						FROM THE EAST on						FROM THE WEST on					
ending	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE
7:15	8	5	21	1	0	0	0	1	2	0	0	0	0	0	0	0	0	0	1	22	1	1	3	0
7:30	4	5	27	1	0	0	2	9	7	0	1	0	3	42	7	0	0	0	12	28	2	0	0	0
7:45	10	5	25	0	1	0	3	6	10	0	0	1	4	38	14	3	0	0	27	28	1	1	0	0
8:00	5	4	33	0	0	0	5	18	14	0	0	0	6	59	18	3	0	0	42	31	9	1	0	0
8:15	10	4	19	4	0	0	2	14	8	1	2	0	4	30	18	1	0	1	21	34	1	4	0	0
8:30	8	6	18	2	0	0	1	6	7	0	0	0	8	33	18	6	0	0	26	25	3	0	0	1
8:45	20	0	29	8	0	0	1	16	9	0	0	0	3	44	40	21	0	0	21	46	1	1	0	0
9:00	11	4	25	3	0	1	2	26	18	1	0	0	4	54	33	4	0	0	48	34	1	0	1	0
2 hr total	76	33	197	19	1	1	16	96	75	2	3	1	32	300	148	38	0	1	198	248	19	8	4	1
		306		6%				187		1%				480		8%				465		2%		
peak hour	49	14	91				6	62	42				19	161	109				116	139	6			
		154						110						289						261				
11:15	4	8	34	5	0	0	1	5	7	0	1	0	3	25	12	1	0	0	25	29	2	0	0	1
11:30	6	13	28	0	1	0	1	5	6	0	0	1	2	36	10	2	0	0	27	33	5	2	0	0
11:45	8	3	21	0	0	0	2	7	8	0	0	0	5	41	7	2	0	0	22	48	5	3	1	0
12:00	11	5	37	2	0	0	1	13	14	0	0	1	3	44	14	1	0	0	27	40	4	2	0	0
12:15	10	17	44	2	0	0	2	6	3	0	1	0	10	58	18	0	0	0	30	39	7	3	0	0
12:30	11	9	39	0	2	0	0	7	5	1	0	0	11	36	10	0	0	2	20	36	3	0	0	0
12:45	7	11	32	2	0	0	0	7	7	0	0	0	6	38	21	0	0	0	23	44	4	1	1	0
1:00	9	5	33	1	0	0	1	16	16	2	1	0	8	41	29	1	0	0	32	57	7	0	0	0
2 hr total	66	71	268	12	3	0	8	66	66	3	3	2	48	319	121	7	0	2	206	326	37	11	2	1
		405		3%				140		2%				488		1%				569		2%		
peak hour	29	29	120				5	30	35				13	146	43				101	150	16			
		178						70						202						267				
4:15	6	8	40	0	0	0	4	15	16	2	2	1	5	33	16	1	0	0	35	54	3	4	0	0
4:30	9	10	30	2	0	0	0	17	13	0	0	0	11	37	17	6	0	0	28	39	7	3	0	0
4:45	6	11	23	1	0	0	3	28	13	0	0	0	7	37	16	2	0	1	45	76	2	1	0	0
5:00	12	17	29	0	0	0	0	11	11	0	0	0	6	43	26	3	0	1	24	35	5	1	1	0
5:15	12	18	42	0	0	1	0	9	9	0	0	0	11	47	27	3	0	1	35	62	9	2	0	0
5:30	18	20	33	2	0	2	0	5	7	0	0	0	13	52	19	0	0	0	26	38	3	2	0	0
5:45	13	6	34	1	0	0	1	9	8	0	0	0	12	39	14	7	0	1	26	24	9	0	1	0
6:00	12	8	31	3	0	1	2	10	4	1	1	0	10	35	14	1	0	0	12	39	3	2	0	0
2 hr total	88	98	262	9	0	4	10	104	81	3	0	1	75	323	149	23	0	4	231	367	41	15	2	0
		448		2%				195		2%				547		4%				639		2%		
peak hour	55	52	140				3	33	28				46	173	74				99	163	24			
		247						64						293						286				
4 hour	164	131	459				26	200	156				107	623	297				332	517	57			
total		754						382						1027						906				
6 hour	230	202	727				34	266	222				155	942	418				635	941	97			
total		1159						522						1515						1673				
2 direct L	SB	1159	47%				NB	522	53%				WB	1515	52%				EB	1673	50%			
total	NB	1319	53%				SB	454	47%				EB	1393	48%				WB	1703	50%			
		2478						976						2908						3376				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location KING ST & MELVILLE AVE / GLADSTONE AVE Date Thursday 21 October 2010 Observers LAURA P

time	FROM THE NORTH on MELVILLE AVE						FROM THE SOUTH on GLADSTONE AVE						FROM THE EAST on KING STREET						FROM THE WEST on KING STREET					
ending	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE
7:15		1			1		10		2					12	1					16		1		
7:30							12	1	3	1			1	42						31	2			
7:45	1				1		20	2	11	1			5	43	2	1			1	59	7	2		
8:00	2	1					15	1	11	1			1	34		1				32	1	1		
8:15		1					15	2	8	2			3	44		3				40	2			
8:30	1	2			1		22	5	8	5			4	46		1			1	43	13	2	4	
8:45		1	1	2			53		27	8			14	49		2			1	42	21	2	4	
9:00			2				34	5	25	3			9	50		1			2	60	22	4		
2 hr total	4	6	3	2	3	0	181	16	95	21	0	0	37	320	3	9	0	0	5	323	68	12	8	0
		13		15%				292		7%				360		3%				396		3%		
peak hour	1	4	3				124	12	68				30	189	0				4	185	58			
		8						204						219						247				
11:15			1				7		3				2	40					1	32	2	2		
11:30							5	1	4				3	34		1				37	6	1		
11:45	1		1				4	3	2				2	32						35	3	1		
12:00		2	1				4	1	2				3	44	1				1	38	6		1	
12:15		1	2				8	1	7	2			8	72	1	1			3	75	11	2		
12:30	1	1	1				6		4				3	46			1		2	50	8			
12:45			1				5	4	6				6	43			1			57	9		1	
1:00	1		1				17	2	11	2			4	72		2			4	61	7	1		
2 hr total	3	4	8	0	0	0	56	12	39	4	0	0	31	383	2	4	2	0	11	385	52	7	2	0
		15		0%				107		4%				416		1%				448		2%		
peak hour	2	2	5				36	7	28				21	233	1				9	243	35			
		9						71						255						287				
4:15							15	1	3	2			8	65		3	4		5	59	11		1	
4:30		1	1				12	1	7	1			5	58		1			1	53	4	3		
4:45			1				6	2	6				3	66		2				72	16	2		
5:00							10	1	11				13	71			1			67	3			
5:15		1					4		11				7	72	1	1				61	7		5	
5:30		3	2				3	1	8				3	60	1					51	10			
5:45							7		5				4	55					1	37	9			
6:00	2	2	2				8	2	4	1			7	52		1			1	42	12	1		
2 hr total	2	7	6	0	0	0	65	8	55	4	0	0	50	499	2	8	5	0	8	442	72	6	6	0
		15		0%				128		3%				551		1%				522		1%		
peak hour	2	6	4				22	3	28				21	239	2				2	191	38			
		12						53						262						231				
4 hour	6	13	9				246	24	150				87	819	5				17	685	107			
total		28						420						911						809				
6 hour	9	17	17				302	36	189				118	1202	7				24	1150	192			
total		43						527						1327						1366				
2 direct L	SB	43	39%				NB	527	62%				WB	1327	50%				EB	1366	47%			
total	NB	67	61%				SB	327	38%				EB	1348	50%				WB	1521	53%			
		110						854						2675						2887				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location Highway 9 & King Street | Date 15-Nov-10 | Observers Pat

time	FROM THE NORTH on Highway 9						FROM THE SOUTH on Highway 9						FROM THE EAST on						FROM THE WEST on King Street					
ending	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE
7:15		40	16	13				31		6									13		2			
7:30		40	10	4			5	38		6									10					
7:45		63	31	24			7	78		8									16		4	1		
8:00		55	30	6			9	112		2									23		3			
8:15		57	21	16			7	60		4									16					
8:30		61	27	16			7	89		10									17		2			
8:45		57	32	15			11	81		12									26		2	2		
9:00		61	31	16			13	88		17									31		6	6		
2 hr total	0	434	198	110	0	0	59	577	0	65	0	0	0	0	0	0	0	0	152	0	19	9	0	0
		632		17%				636		10%				0		#DIV/0!				171		5%		
peak hour	0	230	110				34	342	0				0	0	0				82	0	7			
		340						376						0						89				
11:15		53	32	7			4	64		16									16		4			
11:30		52	21	14			3	37		9									24		2		1	
11:45		52	22	11				58		13									20		7	4		
12:00		61	30	18		1		63		12									23		3			
12:15		106	42	16			7	78		15									30		3			
12:30		71	26	11			3	68		16									20		4			
12:45		68	35	8			2	72		7									20		2			
1:00		89	27	15			5	82		10									30		10			
2 hr total	0	552	235	100	0	1	24	522	0	98	0	0	0	0	0	0	0	0	183	0	35	4	1	0
		787		13%				546		18%				0		#DIV/0!				218		2%		
peak hour	0	334	130				17	300	0				0	0	0				100	0	19			
		464						317						0						119				
4:15		88	30	13			4	44		8									24		2			
4:30		98	26	11			8	74		12									20		2			
4:45		70	38	16			6	75		18									40		8			
5:00		83	23	16			5	75		9									27		7			
5:15		100	43	20			26	73		9									13		13			
5:30		93	26	11			15	103		14									23		16			
5:45		88	34	8			7	94		11									29		18			
6:00		62	26	18			16	103		17									29		8	2		
2 hr total	0	682	246	113	0	0	87	641	0	98	0	0	0	0	0	0	0	0	205	0	74	2	0	0
		928		12%				728		13%				0		#DIV/0!				279		1%		
peak hour	0	343	129				64	373	0				0	0	0				94	0	55			
		472						437						0						149				
4 hour	0	1116	444				146	1218	0				0	0	0				305	0	93			
total		1560						1364						0						398				
6 hour	0	1668	679				170	1740	0				0	0	0				540	0	128			
total		2347						1910						0						668				
2 direct L	SB	2347	51%				NB	1910	52%				WB	0	#DIV/0!				EB	668	44%			
total	NB	2280	49%				SB	1796	48%				EB	0	#DIV/0!				WB	849	56%			
		4627						3706						0						1517				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location QUEEN STREET (HGH 10) & ALLENBROOKE DR | Date Thursday 21 October 2010 | Observers Lance

time	FROM THE NORTH on ALLENBROOKE DRIVE						FROM THE SOUTH on						FROM THE EAST on HIGHWAY 10						FROM THE WEST on HIGHWAY 10					
ending	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE
7:15	5	0	3	0	0	0	0	0	0	0	0	0	0	13	2	2	0	0	6	8	0	0	0	0
7:30	5	0	3	0	0	0	0	0	0	0	0	0	0	19	12	6	0	0	7	22	0	0	0	0
7:45	10	0	5	0	0	0	0	0	0	0	0	0	0	23	7	3	0	0	7	42	0	5	0	0
8:00	16	0	4	1	1	0	0	0	0	0	0	0	0	22	10	3	0	0	10	47	0	5	0	0
8:15	11	0	3	0	0	0	0	0	0	0	0	0	0	23	9	3	0	0	6	26	0	5	0	0
8:30	7	0	5	0	0	0	0	0	0	0	0	0	0	22	12	3	0	0	4	29	0	8	0	0
8:45	13	0	2	3	0	0	0	0	0	0	0	0	0	19	16	3	0	0	9	40	0	9	0	0
9:00	10	0	3	1	0	0	0	0	0	0	0	0	0	28	10	6	0	0	6	27	0	3	0	0
2 hr total	77	0	28	5	1	0	0	0	0	0	0	0	0	169	78	29	0	0	55	241	0	35	0	0
		105		5%				0		#DIV/0!				247		12%				296		12%		
peak hour	47	0	14				0	0	0				0	86	47				29	142	0			
		61						0						133						171				
11:15	9	0	3	1	0	0	0	0	0	0	0	0	0	30	12	9	0	0	2	20	0	5	0	0
11:30	9	0	5	1	0	0	0	0	0	0	0	0	0	17	4	2	0	0	3	22	0	7	0	0
11:45	6	0	1	0	0	0	0	0	0	0	0	0	0	22	9	4	0	0	2	20	0	5	0	0
12:00	13	0	3	2	0	0	0	0	0	0	0	0	0	26	3	2	0	0	1	24	0	8	0	0
12:15	5	0	3	0	0	0	0	0	0	0	0	0	0	51	23	5	0	0	3	26	0	2	0	0
12:30	7	0	6	1	0	0	0	0	0	0	0	0	0	30	10	4	0	0	5	22	0	6	0	0
12:45	4	0	4	0	0	0	0	0	0	0	0	0	0	27	10	3	0	0	4	24	0	3	0	0
1:00	17	0	4	0	0	0	0	0	0	0	0	0	0	34	15	5	0	0	1	31	0	2	0	1
2 hr total	70	0	29	5	0	0	0	0	0	0	0	0	0	237	86	34	0	0	21	189	0	38	0	1
		99		5%				0		#DIV/0!				323		11%				210		18%		
peak hour	33	0	17				0	0	0				0	142	58				13	103	0			
		50						0						200						116				
4:15	9	0	9	0	0	0	0	0	0	0	0	0	0	41	12	1	0	0	2	34	0	5	0	0
4:30	13	0	8	0	0	0	0	0	0	0	0	0	0	38	15	2	0	0	4	32	0	2	0	0
4:45	13	0	11	0	0	0	0	0	0	0	0	0	0	40	15	4	0	1	9	33	0	5	0	0
5:00	15	0	6	0	0	0	0	0	0	0	0	0	0	65	13	4	0	1	4	27	0	4	0	0
5:15	12	0	7	1	0	0	0	0	0	0	0	0	0	67	21	6	0	0	4	33	0	2	0	1
5:30	8	0	4	0	0	0	0	0	0	0	0	0	0	51	16	3	0	0	8	31	0	2	0	0
5:45	8	0	7	0	0	0	0	0	0	0	0	0	0	57	12	4	0	3	2	19	0	1	0	0
6:00	13	0	4	0	0	0	0	0	0	0	0	0	0	36	10	5	0	0	2	23	0	2	0	0
2 hr total	91	0	56	1	0	0	0	0	0	0	0	0	0	395	114	29	0	5	35	232	0	23	0	1
		147		1%				0		#DIV/0!				509		6%				267		9%		
peak hour	48	0	28				0	0	0				0	223	65				25	124	0			
		76						0						288						149				
4 hour	168	0	84				0	0	0				0	564	192				48	335	0			
total		252						0						756						383				
6 hour	238	0	113				0	0	0				0	801	278				111	662	0			
total		351						0						1079						773				
2 direct L	SB	351	47%				NB	0	#DIV/0!				WB	1079	55%				EB	773	46%			
total	NB	389	53%				SB	0	#DIV/0!				EB	900	45%				WB	914	54%			
		740						0						1979						1687				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location YORK RD & DRACUP AVE | Date Monday, October 18, 2010 | Observers Lance

time	FROM THE NORTH on DRACUP AVE						FROM THE SOUTH on DRACUP AVE						FROM THE EAST on YORK ROAD						FROM THE WEST on YORK ROAD					
ending	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE
7:15	0	0	0	0	0	0	0	0	4	0	0	0	5	15	0	8	0	0	0	24	6	6	0	1
7:30	0	0	0	0	0	0	1	0	2	0	0	0	2	33	0	6	0	0	0	33	4	9	0	0
7:45	0	0	0	0	0	0	7	0	7	1	0	0	3	59	0	12	0	0	0	30	4	13	0	0
8:00	0	0	0	0	0	0	12	0	7	3	0	0	6	92	0	10	0	0	0	59	10	9	0	0
8:15	0	0	0	0	0	0	6	0	6	4	0	0	4	46	0	11	0	0	0	47	5	18	0	1
8:30	0	0	0	0	0	0	4	0	7	1	0	0	1	58	0	13	0	0	0	42	7	15	0	0
8:45	0	0	0	0	0	0	5	0	8	1	0	0	6	74	0	17	0	1	0	64	3	14	0	0
9:00	0	0	0	0	0	0	17	0	6	3	0	0	7	81	0	19	0	0	0	48	4	16	0	0
2 hr total	0	0	0	0	0	0	52	0	47	13	0	0	34	458	0	96	0	1	0	347	43	100	0	2
		0		#DIV/0!				99		13%				492		20%				390		26%		
peak hour	0	0	0				27	0	28				17	270	0				0	212	25			
		0						55						287						237				
11:15	0	0	0	0	0	0	23	0	9	3	0	0	2	60	0	22	0	0	0	45	6	13	0	0
11:30	0	0	0	0	0	0	12	0	9	2	0	0	4	54	0	19	0	0	0	62	11	19	0	0
11:45	0	0	0	0	0	0	17	0	10	0	0	0	5	64	0	14	0	0	0	55	5	13	0	0
12:00	0	0	0	0	0	0	21	0	13	2	0	0	6	48	0	7	0	0	0	57	17	12	0	0
12:15	0	0	0	0	0	0	13	0	6	0	1	0	10	59	0	21	0	0	0	85	17	9	0	0
12:30	0	0	0	0	0	0	15	0	5	1	0	0	2	48	0	4	0	0	0	49	10	13	0	0
12:45	0	0	0	0	0	0	10	0	6	1	0	0	3	59	0	18	0	0	0	46	8	7	0	0
1:00	0	0	0	0	0	0	23	0	12	0	0	0	12	84	0	17	1	0	0	48	12	13	0	0
2 hr total	0	0	0	0	0	0	134	0	70	9	1	0	44	476	0	122	1	0	0	447	86	99	0	0
		0		#DIV/0!				204		4%				520		23%				533		19%		
peak hour	0	0	0				63	0	38				25	225	0				0	259	50			
		0						101						250						309				
4:15	0	0	0	0	0	0	11	0	5	0	0	0	5	66	0	14	0	0	0	60	12	16	0	0
4:30	0	0	0	0	0	0	11	0	6	3	0	1	5	63	0	16	0	0	0	52	10	9	0	0
4:45	0	0	0	0	0	0	13	0	9	0	0	0	7	41	0	9	0	0	0	62	21	7	0	0
5:00	0	0	0	0	0	0	19	0	16	0	0	0	4	63	0	18	0	0	0	61	10	13	0	0
5:15	0	0	0	0	0	0	7	0	18	0	0	0	11	76	0	6	0	1	0	86	27	13	0	1
5:30	0	0	0	0	0	0	10	0	10	1	0	0	5	56	0	13	0	0	0	64	7	15	0	0
5:45	0	0	0	0	0	0	6	0	11	0	0	0	6	44	0	7	0	0	0	60	7	8	0	0
6:00	0	0	0	0	0	0	9	0	6	2	0	0	10	48	0	8	0	0	0	44	6	7	0	0
2 hr total	0	0	0	0	0	0	86	0	81	6	0	1	53	457	0	91	0	1	0	489	100	88	0	1
		0		#DIV/0!				167		4%				510		18%				589		15%		
peak hour	0	0	0				49	0	53				27	236	0				0	273	65			
		0						102						263						338				
4 hour	0	0	0				138	0	128				87	915	0				0	748	150			
total		0						266						1002						898				
6 hour	0	0	0				272	0	198				131	1391	0				0	1283	229			
total		0						470						1522						1512				
2 direct L	SB	0	#DIV/0!				NB	470	57%				WB	1522	51%				EB	1512	48%			
total	NB	0	#DIV/0!				SB	360	43%				EB	1481	49%				WB	1663	52%			
		0						830						3003						3175				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location QUEEN STREET / HIGHWAY 16 & HIGHWAY 9 Date Thursday 21 October 2010 Observers CORY

FROM THE NORTH on HIGHWAY 9

time ending	LT	ST	RT	CV	PED	BIKE
7:15	12	4	14	5	0	0
7:30	18	9	24	6	0	0
7:45	15	10	23	9	0	0
8:00	11	17	20	12	0	0
8:15	13	12	29	9	0	0
8:30	24	14	29	16	0	0
8:45	20	15	29	15	0	0
9:00	18	22	25	10	1	0
2 hr total	131	103	193	82	1	0
		427		19%		
peak hour	68	58	107			
		233				
11:15	21	11	36	14	0	0
11:30	29	11	28	15	0	0
11:45	18	19	25	17	0	0
12:00	25	16	40	14	0	0
12:15	31	18	68	23	0	0
12:30	36	18	40	15	0	0
12:45	32	25	41	9	0	0
1:00	30	14	45	13	0	0
2 hr total	222	132	323	120	0	0
		677		18%		
peak hour	129	75	194			
		398				
4:15	40	29	44	6	0	0
4:30	37	25	53	6	0	0
4:45	48	30	59	11	0	0
5:00	43	25	74	18	0	0
5:15	49	31	99	13	0	0
5:30	44	28	75	9	0	0
5:45	38	24	52	10	0	0
6:00	27	18	40	7	0	0
2 hr total	326	210	496	80	0	0
		1032		8%		
peak hour	184	114	307			
		605				
4 hour	457	313	689			
total		1459				
6 hour	679	445	1012			
total		2136				
2 direct L	SB	2136	52%			
total	NB	1967	48%			
		4103				

FROM THE SOUTH on HIGHWAY 9

time ending	LT	ST	RT	CV	PED	BIKE
7:15	2	10	0	1	0	0
7:30	5	20	0	5	0	0
7:45	4	15	0	1	0	0
8:00	9	33	1	2	0	0
8:15	6	16	1	7	0	0
8:30	6	31	0	12	0	0
8:45	5	24	1	4	0	0
9:00	8	23	1	5	0	0
2 hr total	45	172	4	37	0	0
		221		17%		
peak hour	26	104	3			
		133				
11:15	1	22	3	8	0	0
11:30	1	15	3	4	0	0
11:45	6	21	0	10	0	0
12:00	3	29	3	8	0	0
12:15	0	13	1	4	0	0
12:30	3	20	1	1	0	0
12:45	1	20	2	4	0	0
1:00	3	33	1	3	0	0
2 hr total	18	173	14	42	0	0
		205		20%		
peak hour	7	86	5			
		98				
4:15	4	24	0	3	0	0
4:30	2	24	0	8	0	0
4:45	5	18	1	6	0	0
5:00	2	29	1	8	0	0
5:15	3	21	0	1	0	0
5:30	1	25	3	13	0	0
5:45	1	9	0	4	0	0
6:00	2	23	0	5	0	0
2 hr total	20	173	5	48	0	0
		198		24%		
peak hour	11	93	5			
		109				
4 hour	65	345	9			
total		419				
6 hour	83	518	23			
total		624				
2 direct L	NB	624	54%			
total	SB	536	46%			
		1160				

FROM THE EAST on HIGHWAY 16

time ending	LT	ST	RT	CV	PED	BIKE
7:15	0	5	12	4	0	0
7:30	0	10	24	4	0	0
7:45	1	13	42	8	0	0
8:00	0	7	41	5	0	0
8:15	0	7	16	2	0	0
8:30	0	3	30	6	0	0
8:45	0	12	30	4	0	0
9:00	0	7	26	2	0	0
2 hr total	1	64	221	35	0	0
		286		12%		
peak hour	0	29	117			
		146				
11:15	1	4	20	6	0	0
11:30	0	1	26	2	0	0
11:45	1	4	22	5	0	0
12:00	4	2	28	9	0	0
12:15	1	7	23	7	0	0
12:30	0	3	29	4	0	0
12:45	0	6	36	4	0	0
1:00	1	7	25	4	0	0
2 hr total	8	34	209	41	0	0
		251		16%		
peak hour	2	23	113			
		138				
4:15	0	4	36	4	0	0
4:30	1	6	38	5	0	0
4:45	0	5	20	1	0	0
5:00	1	4	37	8	0	0
5:15	1	4	34	8	0	0
5:30	1	5	29	4	0	0
5:45	1	6	30	8	0	0
6:00	0	5	27	6	0	0
2 hr total	5	39	251	44	0	0
		295		15%		
peak hour	3	18	120			
		141				
4 hour	6	103	472			
total		581				
6 hour	14	137	681			
total		832				
2 direct L	WB	832	50%			
total	EB	820	50%			
		1652				

FROM THE WEST on QUEEN STREET

time ending	LT	ST	RT	CV	PED	BIKE
7:15	10	5	1	1	0	0
7:30	21	1	3	0	0	0
7:45	36	10	1	4	0	0
8:00	66	8	5	6	0	0
8:15	32	2	4	4	0	0
8:30	36	0	2	4	0	0
8:45	36	2	1	3	0	0
9:00	32	5	1	3	1	0
2 hr total	269	33	18	25	1	0
		320		8%		
peak hour	170	12	12			
		194				
11:15	22	3	0	4	0	0
11:30	23	4	3	4	0	0
11:45	21	1	3	5	0	0
12:00	36	2	2	8	0	0
12:15	29	6	4	6	0	0
12:30	26	2	2	5	1	0
12:45	33	6	5	4	0	0
1:00	45	6	3	2	0	0
2 hr total	235	30	22	38	1	0
		287		13%		
peak hour	133	20	14			
		167				
4:15	32	5	6	5	0	0
4:30	40	4	2	0	0	0
4:45	44	10	6	7	0	0
5:00	28	9	2	3	0	0
5:15	37	10	6	3	0	0
5:30	29	5	8	5	0	0
5:45	22	5	6	1	0	0
6:00	32	7	1	2	0	0
2 hr total	264	55	37	26	0	0
		356		7%		
peak hour	138	34	22			
		194				
4 hour	397	75	51			
total		523				
6 hour	768	118	77			
total		963				
2 direct L	EB	963	44%			
total	WB	1232	56%			
		2195				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location YORK RD & HIGHWAY 9 — Date Monday, October 18, 2010 — Observers Cory

time ending	FROM THE NORTH on HIGHWAY 9						FROM THE SOUTH on HIGHWAY 9						FROM THE EAST on YORK ROAD						FROM THE WEST on YORK ROAD					
	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE
7:15	1	16	5	2	0	0	6	12	4	6	0	0	2	6	0	0	0	0	8	10	7	6	1	0
7:30	6	26	5	3	0	0	15	4	2	5	0	0	3	16	6	2	0	0	10	12	6	8	0	0
7:45	1	38	18	3	0	0	20	13	3	11	0	0	8	23	3	3	0	0	9	7	16	11	0	0
8:00	3	41	26	3	0	0	34	13	4	8	0	0	7	39	4	2	0	0	17	22	16	8	0	0
8:15	5	22	12	7	0	0	17	11	6	10	0	0	4	15	7	3	1	0	16	13	18	16	1	0
8:30	7	42	13	5	0	0	21	17	0	11	0	0	6	21	8	1	0	0	13	14	18	12	0	0
8:45	6	29	20	7	0	0	17	14	1	8	0	0	6	38	3	4	3	0	13	26	28	15	1	0
9:00	6	42	21	7	0	0	19	18	5	14	0	0	5	44	7	3	0	0	12	22	19	15	0	0
2 hr total	35	256	120	37	0	0	149	102	25	73	0	0	41	202	38	18	4	0	98	126	128	91	3	0
		411		9%				276		26%				281		6%				352		26%		
peak hour	21	134	71				89	55	11				23	113	22				59	75	80			
		226						155						158						214				
11:15	4	28	17	5	0	0	23	19	4	14	0	0	2	15	3	5	0	0	11	17	22	10	1	0
11:30	3	28	14	4	0	0	22	19	5	11	0	0	1	17	3	0	2	0	23	27	23	20	0	0
11:45	2	31	12	4	0	0	26	28	11	16	0	0	4	26	3	4	0	0	15	18	22	9	0	0
12:00	6	47	15	7	0	0	17	17	7	7	0	0	10	20	4	1	0	0	21	26	26	12	0	0
12:15	5	36	12	5	0	0	24	23	9	15	0	0	2	17	6	2	0	0	9	45	30	9	1	0
12:30	2	35	9	7	0	0	23	17	6	7	0	0	2	17	2	1	0	0	10	25	20	13	0	0
12:45	0	21	13	5	0	0	28	20	3	18	0	0	7	23	3	0	0	0	12	13	22	7	0	1
1:00	4	25	16	4	0	0	48	24	4	12	0	0	7	39	4	0	0	0	13	20	25	10	0	0
2 hr total	26	251	108	41	0	0	211	167	49	100	0	0	35	174	28	13	2	0	114	191	190	90	2	1
		385		11%				427		23%				237		5%				495		18%		
peak hour	16	142	53				89	87	32				17	80	16				68	116	101			
		211						208						113						285				
4:15	4	18	13	3	0	0	31	26	5	11	0	0	2	24	9	2	0	0	18	29	22	12	0	0
4:30	2	27	11	5	0	0	37	19	7	15	0	0	4	20	5	1	0	0	16	18	23	10	0	0
4:45	8	27	7	3	0	0	22	23	9	10	0	0	6	16	8	3	0	0	23	16	28	8	0	0
5:00	4	28	19	9	1	0	28	32	9	14	0	0	9	17	6	1	0	0	24	23	35	12	1	0
5:15	6	32	10	3	0	0	35	37	11	12	0	0	10	26	9	1	1	0	27	42	25	5	2	0
5:30	3	31	14	4	1	0	23	30	7	10	0	0	3	20	5	1	0	0	23	19	35	17	0	0
5:45	6	30	12	4	0	0	18	43	3	5	0	0	5	19	6	1	0	0	17	28	26	5	0	0
6:00	0	20	14	6	0	0	23	32	7	8	0	0	11	18	6	0	0	0	19	17	17	7	0	1
2 hr total	33	213	100	37	2	0	217	242	58	85	0	0	50	160	54	10	1	0	167	192	211	76	3	1
		346		11%				517		16%				264		4%				570		13%		
peak hour	19	121	55				104	142	30				27	82	26				91	112	121			
		195						276						135						324				
4 hour total	68	469	220				366	344	83				91	362	92				235	308	312			
		757						793						545						855				
6 hour total	94	720	328				577	511	132				126	536	120				379	509	529			
		1142						1220						782						1417				
2 direct L	SB	1142	53%				NB	1220	47%				WB	782	52%				EB	1417	50%			
total	NB	1010	47%				SB	1375	53%				EB	735	48%				WB	1441	50%			
		2152						2595						1517						2858				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location DARLINGTON STREET & GLADSTONE AVE | Date Tuesday 19 October 2010 | Observers Lance

time	FROM THE NORTH on GLADSTONE AVE						FROM THE SOUTH on GLADSTONE AVE						FROM THE EAST on DARLINGTON STREET						FROM THE WEST on DARLINGTON STREET					
ending	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE
7:15	3	1	0	0	0	0	0	1	0	0	0	0	0	13	3	0	0	0	0	0	0	0	0	0
7:30	2	13	0	2	0	0	0	26	8	3	0	0	9	0	1	0	0	0	0	0	0	0	0	2
7:45	1	15	0	2	1	0	1	45	14	4	0	0	16	0	6	0	0	1	0	0	0	0	0	0
8:00	9	28	0	4	0	0	2	65	26	3	0	0	21	2	11	1	0	0	0	0	0	0	0	0
8:15	6	40	0	4	0	0	3	37	11	3	0	0	12	2	14	3	0	0	0	0	0	0	0	0
8:30	4	24	0	11	5	0	9	43	10	9	0	0	20	2	15	3	1	0	0	0	0	0	1	0
8:45	10	64	0	18	12	0	20	90	16	22	0	0	24	3	36	1	0	0	0	0	0	0	0	0
9:00	15	53	0	6	11	0	25	95	13	5	0	0	26	6	28	0	0	0	0	0	0	0	0	0
2 hr total	50	238	0	47	29	0	60	402	98	49	0	0	128	28	114	8	1	1	0	0	0	0	1	2
		288		16%				560		9%				270		3%				0		#DIV/0!		
peak hour	35	181	0				57	265	50				82	13	93				0	0	0			
		216						372						188						0				
11:15	3	33	0	3	0	0	0	39	5	3	0	0	8	0	0	0	0	0	0	0	0	0	0	1
11:30	2	31	0	2	0	0	1	31	4	3	0	0	14	0	2	2	0	0	0	0	0	0	0	0
11:45	3	37	0	6	0	0	0	26	13	4	0	0	10	0	1	0	0	0	0	0	0	0	0	0
12:00	9	40	1	1	3	0	1	34	11	3	0	0	8	2	1	1	0	0	0	0	0	0	0	0
12:15	18	114	0	2	7	0	3	33	10	3	0	0	21	2	6	0	0	0	0	0	0	0	11	0
12:30	1	33	0	1	0	0	1	50	17	1	0	0	12	2	7	0	3	0	0	0	0	0	18	0
12:45	4	32	0	2	0	0	6	45	13	2	0	0	21	2	22	4	0	0	0	0	0	0	3	0
1:00	3	52	0	6	0	0	6	95	27	2	1	2	23	4	21	0	1	0	0	0	0	0	0	0
2 hr total	43	372	1	23	10	0	18	353	100	21	1	2	117	12	60	7	4	0	0	0	0	0	32	1
		416		6%				471		4%				189		4%				0		#DIV/0!		
peak hour	26	231	0				16	223	67				77	10	56				0	0	0			
		257						306						143						0				
4:15	7	48	0	4	0	0	2	45	19	2	0	0	12	0	3	0	1	2	0	0	0	0	3	0
4:30	3	28	0	2	0	0	1	34	18	4	0	0	24	1	10	0	0	1	0	0	0	0	0	0
4:45	5	51	0	1	0	0	1	39	20	2	0	0	15	1	4	0	0	1	0	0	0	0	0	0
5:00	6	44	0	3	3	0	1	50	27	3	0	0	14	1	2	0	1	0	0	0	0	0	0	0
5:15	8	58	0	0	0	0	2	34	38	2	0	0	32	0	5	0	0	0	0	0	0	0	0	1
5:30	4	37	0	2	0	1	2	31	25	2	0	0	25	1	3	0	0	0	0	0	0	0	0	0
5:45	5	35	1	0	1	1	3	26	24	5	0	0	28	2	4	2	0	0	0	0	0	0	0	0
6:00	3	30	0	0	1	0	2	37	43	0	0	0	25	1	10	0	2	0	0	0	0	0	1	0
2 hr total	41	331	1	12	5	2	14	296	214	20	0	0	175	7	41	2	4	4	0	0	0	0	4	1
		373		3%				524		4%				223		1%				0		#DIV/0!		
peak hour	23	190	0				6	154	110				86	3	14				0	0	0			
		213						270						103						0				
4 hour	91	569	1				74	698	312				303	35	155				0	0	0			
total		661						1084						493						0				
6 hour	134	941	2				92	1051	412				420	47	215				0	0	0			
total		1077						1555						682						0				
2 direct L	SB	1077	46%				NB	1555	53%				WB	682	56%				EB	0	0%			
total	NB	1266	54%				SB	1361	47%				EB	546	44%				WB	141	100%			
		2343						2916						1228						141				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location DARLINGTON ST & DRACUP AVE

Date Monday, October 18, 2010

Observers pat

time	FROM THE NORTH on DRACUP AVE						FROM THE SOUTH on DRACUP AVE						FROM THE EAST on DARLINGTON STREET						FROM THE WEST on DARLINGTON STREET					
ending	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE
7:15	2	8	2	2	10	0	3	1	4	0	8	0	4	10	1	0	15	0	0	6	3	0	9	0
7:30	2	13	5	0	20	0	1	9	3	0	13	0	12	12	1	0	25	0	0	11	4	0	15	0
7:45	2	7	2	1	10	0	5	13	6	2	22	0	16	27	5	2	46	0	4	24	4	0	32	0
8:00	8	21	5	1	33	0	0	14	3	2	15	0	36	64	1	1	100	0	3	26	12	2	39	0
8:15	2	10	2	2	12	0	4	21	6	2	28	1	18	59	5	4	80	0	2	33	5	2	38	0
8:30	2	10	1	2	11	0	6	8	6	0	21	0	20	43	3	1	65	1	4	19	8	1	30	1
8:45	7	17	3	1	26	0	6	14	9	1	27	0	16	49	5	1	70	0	4	39	14	3	54	0
9:00	3	17	6	2	24	2	3	15	5	2	21	0	37	66	5	4	104	1	1	36	7	1	43	1
2 hr total	28	103	26	11	146	2	28	95	42	9	155	1	159	330	26	13	505	2	18	194	57	9	260	2
		157		7%				165		5%				515		3%				269		3%		
peak hour	14	54	12				19	58	26				91	217	18				11	127	34			
		80						103						326						172				
11:15	1	12	1	0	14	0	10	25	13	1	47	0	11	21	4	1	36	0	0	22	7	0	29	0
11:30	3	11	3	0	17	0	7	22	9	2	36	0	12	26	3	4	36	0	2	19	6	0	27	0
11:45	2	9	1	0	12	0	11	22	20	2	51	0	15	11	2	0	28	0	3	38	10	1	50	0
12:00	3	21	7	1	30	0	10	23	22	4	50	0	11	32	6	0	49	0	4	41	10	0	55	0
12:15	0	31	3	2	32	0	14	22	41	0	77	0	16	50	5	3	68	0	4	71	8	0	84	0
12:30	2	13	10	1	24	0	11	27	21	1	56	0	20	33	1	1	53	0	2	35	15	1	51	0
12:45	3	17	0	1	19	0	16	23	16	0	55	0	29	55	2	1	85	0	4	29	7	1	39	0
1:00	6	23	8	1	36	0	16	29	15	0	60	0	36	70	4	1	108	1	2	40	7	0	49	0
2 hr total	20	137	33	6	184	0	95	193	157	10	432	0	150	298	27	11	463	1	21	295	70	3	384	0
		190		3%				445		2%				475		2%				386		1%		
peak hour	11	84	21				57	101	93				101	208	12				12	175	37			
		116						251						321						224				
4:15	1	14	1	0	16	0	12	22	19	1	52	0	10	33	2	1	44	0	3	36	8	4	43	0
4:30	5	18	1	1	23	0	16	24	19	1	58	0	15	31	2	2	46	0	2	21	6	2	27	0
4:45	6	17	3	0	26	0	14	21	16	0	51	0	10	41	4	1	54	0	1	40	11	2	50	0
5:00	3	19	4	0	26	0	15	25	20	0	61	0	23	42	0	0	63	0	3	39	11	2	52	0
5:15	7	28	12	1	46	0	15	23	24	2	61	1	11	48	5	1	62	0	10	56	12	3	75	0
5:30	3	23	5	0	31	0	12	29	23	2	62	1	16	44	4	2	63	0	5	43	18	2	64	0
5:45	4	15	9	1	27	0	14	28	19	1	60	0	17	62	3	1	79	0	2	31	13	0	46	0
6:00	2	10	5	1	16	0	20	18	25	3	60	0	10	45	3	1	56	1	3	29	5	0	37	0
2 hr total	31	144	40	4	211	0	118	190	165	10	465	2	112	346	23	9	467	1	29	295	84	15	394	0
		215		2%				473		2%				481		2%				408		4%		
peak hour	17	85	30				56	105	86				67	196	12				20	169	54			
		132						247						275						243				
4 hour	59	247	66				146	285	207				271	676	49				41	470	121			
total		372						638						996						632				
6 hour	79	384	99				241	478	364				421	974	76				68	784	211			
total		562						1083						1471						1063				
2 direct L	SB	562	47%				NB	1083	52%				WB	1471	55%				EB	1063	45%			
total	NB	622	53%				SB	1016	48%				EB	1227	45%				WB	1314	55%			
		1184						2099						2698						2377				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location DARLINGTON STREET & MAYHEW AVE | Date Monday, October 18, 2010 | Observers Laura P

time	FROM THE NORTH on MAYHEW AVE						FROM THE SOUTH on MAYHEW AVE						FROM THE EAST on DARLINGTON STREET						FROM THE WEST on DARLINGTON STREET					
ending	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE
7:15	0	5	1	3	2	0	3	0	0	2	0	0	1	7	0	2	0	0	1	5	5	8	1	0
7:30	0	11	1	7	1	0	2	5	4	6	0	0	8	13	3	12	1	1	2	5	10	7	0	0
7:45	0	12	1	1	0	0	5	5	6	5	0	0	9	14	3	16	1	0	4	9	10	9	0	0
8:00	2	34	9	14	0	0	15	11	5	12	0	0	19	41	3	19	1	0	3	7	19	13	0	0
8:15	8	16	5	9	0	0	11	9	7	7	0	0	10	27	3	11	1	0	4	16	18	17	0	1
8:30	3	15	3	5	0	0	6	14	8	8	0	0	6	38	3	9	2	0	5	18	8	6	0	0
8:45	9	18	9	7	0	0	12	15	20	11	1	0	14	39	8	21	0	0	8	23	11	14	9	0
9:00	7	11	7	6	0	0	10	13	10	7	0	0	24	57	8	13	0	0	2	19	15	5	0	3
2 hr total	29	122	36	52	3	0	64	72	60	58	1	0	91	236	31	103	6	1	29	102	96	79	10	4
		187		28%				196		30%				358		29%				227		35%		
peak hour	27	60	24				39	51	45				54	161	22				19	76	52			
		111						135						237						147				
11:15	2	15	2	1	0	0	7	13	9	1	0	0	5	6	2	0	0	0	4	4	11	1	0	0
11:30	2	17	4	3	0	0	14	15	3	1	2	0	2	8	4	1	1	0	5	9	8	0	0	0
11:45	3	13	5	2	0	0	10	20	4	3	0	0	6	6	1	1	0	0	2	16	12	1	0	0
12:00	5	17	6	2	0	0	17	22	8	0	0	0	2	11	3	0	4	0	10	26	8	0	0	0
12:15	6	18	8	2	0	0	42	27	9	2	0	0	12	24	3	0	2	3	8	45	13	1	2	0
12:30	8	16	3	3	0	0	13	16	11	0	0	0	4	18	0	1	0	0	1	21	11	0	1	2
12:45	0	8	7	0	0	0	19	12	8	1	0	0	10	25	2	1	0	0	9	22	12	1	1	2
1:00	4	18	11	0	0	0	11	18	9	2	0	0	17	41	2	1	0	0	9	15	24	0	0	1
2 hr total	30	122	46	13	0	0	133	143	61	10	2	0	58	139	17	5	7	3	48	158	99	4	4	5
		198		7%				337		3%				214		2%				305		1%		
peak hour	18	60	29				85	73	37				43	108	7				27	103	60			
		107						195						158						190				
4:15	3	10	3	1	0	0	14	26	15	0	0	0	11	11	2	0	0	0	4	23	13	2	1	0
4:30	4	9	5	0	1	0	17	23	13	1	0	0	3	12	1	0	1	0	9	16	7	2	0	0
4:45	2	13	5	0	3	0	12	15	8	3	0	0	10	26	1	1	1	0	8	22	9	3	1	0
5:00	2	17	12	1	3	0	12	21	17	0	1	0	5	20	1	2	2	0	6	27	16	2	0	0
5:15	7	18	4	0	1	0	36	34	20	3	1	0	17	22	3	1	6	1	12	27	13	2	0	0
5:30	6	10	6	1	2	1	11	17	19	1	0	0	8	25	2	0	1	0	8	19	12	3	2	0
5:45	2	18	2	1	1	0	15	22	9	1	0	0	9	28	2	1	0	4	5	26	6	3	2	0
6:00	3	7	6	0	0	0	18	20	10	1	2	0	7	14	0	1	2	0	5	22	13	1	0	0
2 hr total	29	102	43	4	11	1	135	178	111	10	4	0	70	158	12	6	13	5	57	182	89	18	6	0
		174		2%				424		2%				240		3%				328		5%		
peak hour	17	63	24				74	94	65				39	95	8				31	99	47			
		104						233						142						177				
4 hour total	58	224	79				199	250	171				161	394	43				84	285	149			
		361						620						598						518				
6 hour total	88	346	125				332	393	232				219	533	60				134	442	284			
		559						957						812						860				
2 direct L	SB	559	49%				NB	957	53%				WB	812	52%				EB	860	46%			
total	NB	587	51%				SB	849	47%				EB	762	48%				WB	990	54%			
		1146						1806						1574						1850				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location SMITH STREET & GLADSTONE AVE

Date Tuesday 19 October 2010

Observers Kyle RYAN

time	FROM THE NORTH on GLADSTONE AVE						FROM THE SOUTH on GLADSTONE AVE						FROM THE EAST on SMITH ST						FROM THE WEST on SMITH ST					
ending	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE
7:15	0	18	1	1	0	0	6	26	2	2	0	0	2	2	2	0	0	0	0	1	2	1	0	0
7:30	1	28	1	3	0	0	8	34	0	4	0	0	0	4	2	1	0	0	1	2	1	0	0	0
7:45	0	21	1	3	0	0	12	66	3	8	1	0	5	2	3	1	1	1	0	7	2	0	0	0
8:00	6	18	1	1	0	0	12	109	0	3	0	0	2	1	4	0	0	0	2	4	2	0	2	0
8:15	1	27	1	6	0	0	5	52	0	6	0	0	8	4	6	1	4	0	2	0	1	0	1	0
8:30	7	20	0	6	1	0	3	84	0	12	1	0	15	2	1	1	0	0	1	0	0	0	1	0
8:45	13	59	0	17	2	0	10	159	1	26	0	0	20	2	9	1	1	0	6	7	4	0	4	1
9:00	25	42	4	2	0	0	8	181	3	5	0	0	14	5	24	1	1	0	8	1	1	0	0	2
2 hr total	53	233	9	39	3	0	64	711	9	66	2	0	66	22	51	6	7	1	20	22	13	1	8	3
		295		13%				784		8%				139		4%				55		2%		
peak hour	46	148	5				26	476	4				57	13	40				17	8	6			
		199						506						110						31				
11:15	3	16	1	3	0	4	2	45	1	4	0	0	3	3	5	1	0	0	0	0	0	0	0	0
11:30	2	31	0	2	0	0	8	39	1	5	0	0	6	1	4	4	0	0	0	0	0	0	0	0
11:45	3	27	0	5	0	0	2	37	0	5	0	0	6	0	1	0	0	1	0	0	0	0	0	0
12:00	6	48	0	3	7	0	1	52	0	4	0	0	12	0	1	2	1	0	0	0	0	0	0	0
12:15	10	125	0	2	0	1	4	59	0	2	0	0	15	3	3	2	0	0	0	1	1	0	0	0
12:30	2	25	0	0	3	0	6	64	2	3	0	0	11	0	1	0	0	0	1	1	0	0	1	0
12:45	4	24	3	3	0	0	9	91	0	3	0	1	23	11	7	7	1	0	1	1	2	0	0	0
1:00	12	63	3	4	1	3	6	111	0	2	0	0	17	6	6	2	2	2	0	0	0	0	0	0
2 hr total	42	359	7	22	11	8	38	498	4	28	0	1	93	24	28	18	4	3	2	3	3	0	1	0
		408		5%				540		5%				145		12%				8		0%		
peak hour	28	237	6				25	325	2				66	20	17				2	3	3			
		271						352						103						8				
4:15	2	26	1	2	0	0	6	40	4	0	0	0	22	4	1	1	0	0	3	3	2	1	1	0
4:30	1	28	0	0	0	0	5	59	3	5	0	0	4	2	1	1	0	1	2	0	1	1	0	0
4:45	6	67	1	1	0	0	3	67	7	2	0	0	19	4	4	0	0	0	0	1	2	1	0	1
5:00	3	50	0	2	0	0	12	73	4	3	0	0	19	10	3	1	0	0	3	2	2	0	1	1
5:15	2	47	0	1	0	0	4	63	7	2	0	0	14	2	1	0	0	0	2	0	4	1	0	0
5:30	6	29	2	2	0	0	7	56	9	1	0	0	14	2	3	0	0	0	0	0	2	0	0	0
5:45	12	55	0	2	0	0	7	52	2	5	0	0	10	3	3	0	0	0	1	5	6	0	0	0
6:00	4	43	4	0	0	0	6	57	2	0	0	0	5	4	5	0	0	0	2	7	1	0	0	0
2 hr total	36	345	8	10	0	0	50	467	38	18	0	0	107	31	21	3	0	1	13	18	20	4	2	2
		389		3%				555		3%				159		2%				51		8%		
peak hour	17	193	3				26	259	27				66	18	11				5	3	10			
		213						312						95						18				
4 hour	89	578	17				114	1178	47				173	53	72				15	21	23			
total		684						1339						298						59				
6 hour	131	937	24				152	1676	51				266	77	100				35	43	36			
total		1092						1879						443						114				
2 direct L	SB	1092	38%				NB	1879	60%				WB	443	66%				EB	114	31%			
total	NB	1811	62%				SB	1239	40%				EB	225	34%				WB	253	69%			
		2903						3118						668						367				

INTERSECTION TRAFFIC FLOW ANALYSIS REPORT

Location SMITH STREET & MYRTLE AVE | Date Thursday 21 October 2010 | Observers DOUG

time	FROM THE NORTH on MYRTLE AVE						FROM THE SOUTH on MYRTLE AVE						FROM THE EAST on SMITH STREET						FROM THE WEST on SMITH STREE					
ending	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE	LT	ST	RT	CV	PED	BIKE
7:15	1	2	0	0	0	0	0	3	0	0	0	0	4	3	1	2	0	0	0	2	0	0	0	0
7:30	4	11	0	0	0	0	5	9	3	2	0	1	4	17	2	1	0	0	1	13	1	0	0	0
7:45	4	16	0	0	0	0	3	10	2	0	0	0	13	14	3	1	0	0	5	22	3	0	0	0
8:00	5	37	4	2	0	0	3	20	14	2	0	0	13	16	3	1	0	0	5	56	5	3	0	0
8:15	3	31	2	2	1	0	1	12	11	0	0	0	9	17	5	2	1	0	4	32	2	2	0	0
8:30	1	21	4	3	0	0	5	8	5	1	0	0	12	20	4	2	1	0	3	31	0	5	1	0
8:45	6	23	7	3	1	0	3	12	12	4	0	0	15	32	1	1	0	0	2	33	7	6	0	0
9:00	11	15	5	1	0	0	9	23	10	2	0	0	14	38	9	1	0	0	10	52	7	5	0	0
2 hr total	35	156	22	11	2	0	29	97	57	11	0	1	84	157	28	11	2	0	30	241	25	21	1	0
		213		5%				183		6%				269		4%				296		7%		
peak hour	21	90	18				18	55	38				50	107	19				19	148	16			
		129						111						176						183				
11:15	5	16	1	3	0	0	2	12	14	0	0	0	11	25	3	2	0	0	1	17	4	1	1	0
11:30	8	13	2	0	2	0	6	11	25	0	0	0	13	27	7	0	0	0	2	30	5	2	0	0
11:45	6	20	1	2	1	0	4	17	17	2	1	0	8	26	8	3	1	0	5	34	7	0	2	0
12:00	3	26	4	0	2	0	5	20	11	1	0	0	17	22	11	1	0	0	6	34	4	1	0	0
12:15	15	37	5	1	1	0	4	30	20	0	1	0	28	61	7	0	0	0	7	42	9	3	2	0
12:30	7	23	1	0	2	0	7	10	10	0	1	0	15	34	3	0	0	0	4	45	3	1	0	0
12:45	4	19	3	0	1	0	0	9	19	1	0	0	16	34	4	4	0	1	7	25	5	2	0	0
1:00	10	32	3	2	0	0	5	14	23	0	0	0	17	27	9	0	1	0	2	46	7	0	3	0
2 hr total	58	186	20	8	9	0	33	123	139	4	3	0	125	256	52	10	2	1	34	273	44	10	8	0
		264		3%				295		1%				433		2%				351		3%		
peak hour	36	111	12				16	63	72				76	156	23				20	158	24			
		159						151						255						202				
4:15	7	30	4	2	0	0	3	27	18	2	0	2	11	38	7	0	2	0	6	31	3	0	1	0
4:30	7	20	3	1	0	0	3	17	18	2	0	0	29	43	2	3	0	0	5	34	12	0	0	1
4:45	10	22	1	1	1	0	2	26	11	0	0	0	13	39	6	0	0	0	7	43	5	0	2	0
5:00	9	26	3	1	0	0	6	15	11	1	0	0	21	47	7	0	0	0	5	39	6	0	2	0
5:15	8	28	3	0	0	0	9	25	11	0	0	0	31	46	7	1	1	0	7	49	3	2	0	0
5:30	6	26	4	0	2	0	3	23	12	3	0	0	11	49	4	0	1	0	11	27	6	0	0	1
5:45	5	26	1	0	0	0	7	20	12	1	0	0	17	37	8	1	2	0	5	23	2	0	1	0
6:00	3	23	0	2	0	0	4	10	16	0	0	0	14	25	5	1	0	0	2	21	8	1	0	0
2 hr total	55	201	19	7	3	0	37	163	109	9	0	2	147	324	46	6	6	0	48	267	45	3	6	2
		275		3%				309		3%				517		1%				360		1%		
peak hour	34	96	10				20	83	51				94	175	22				24	165	26			
		140						154						291						215				
4 hour total	90	357	41				66	260	166				231	481	74				68	425	69			
		488						492						786						562				
6 hour total	148	543	61				99	383	305				356	737	126				112	781	114			
		752						787						1219						1007				
2 direct L	SB	752	55%				NB	787	44%				WB	1219	50%				EB	1007	53%			
total	NB	621	45%				SB	1013	56%				EB	1234	50%				WB	897	47%			
		1373						1800						2453						1904				

Appendix B

ME2 TRANSPORTATION DATA CORP.
Event Counts

EventCount-40 -- English (ENU)

Datasets:

Site: Yorkton - Crescent Ave site 1 NB

Filter time: 20:18 Monday, October 18, 2010 => 20:47 Tuesday, October 19, 2010

Direction: North (bound)

*** Monday, October 18, 2010=45 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**25**	**15**	**5**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	5	3	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4	3	0	1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	3	4	1	1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	10	3	1	1

*** Tuesday, October 19, 2010=1212 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
3	**3**	**1**	**0**	**6**	**28**	**120**	**80**	**61**	**61**	**76**	**95**	**96**	**96**	**80**	**91**	**85**	**98**	**71**	**34**	**-**	**-**	**-**	**-**	
0	0	0	0	0	3	13	**19**	16	15	16	31	23	23	19	14	25	27	12	5	9	-	-	-	-
1	0	0	0	0	5	**17**	17	12	16	18	23	17	25	15	18	23	33	19	11	12	-	-	-	-
1	3	0	0	3	11	**51**	17	16	15	20	18	29	21	20	34	22	19	25	11	8	-	-	-	-
1	0	1	0	4	9	**39**	28	18	15	23	24	28	28	27	26	16	19	15	7	-	-	-	-	-

AM Peak 0615 - 0715 (126), AM PHF=0.62

ME2 TRANSPORTATION DATA CORP.
Event Counts

EventCount-39 -- English (ENU)

Datasets:
Site: Yorkton - Crescent Ave site 1 SB
Filter time: 20:18 Monday, October 18, 2010 => 20:47 Tuesday, October 19, 2010
Direction: South (bound)

*** Monday, October 18, 2010=13 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**8**	**4**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	2	1	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	2	2	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	1	2	1	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	2	0	1

*** Tuesday, October 19, 2010=388 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
1	**0**	**2**	**0**	**0**	**4**	**5**	**21**	**10**	**17**	**25**	**25**	**31**	**21**	**31**	**39**	**41**	**56**	**27**	**23**	**-**	**-**	**-**	**-**	
0	0	0	0	0	1	0	4	3	9	2	7	**12**	3	4	8	16	20	10	11	2	-	-	-	-
0	0	0	0	0	0	0	3	3	3	5	2	**4**	8	9	10	12	9	4	7	4	-	-	-	-
0	0	2	0	0	0	2	8	1	2	11	7	**8**	6	8	15	10	18	13	3	4	-	-	-	-
1	0	0	0	0	3	3	7	3	3	8	**9**	8	4	10	6	3	9	1	2	-	-	-	-	-

AM Peak 1145 - 1245 (33), AM PHF=0.68

ME2 tRANSPORTATION DATA CORP.
Vehicle Counts

VehicleCount-33 -- English (ENU)

Datasets:

Site:	**Yorkton - Broadway St. site 10 EB**
Filter time:	**18:35 Wednesday, October 20, 2010 => 19:27 Thursday, October 21, 2010**
Direction:	East (bound)

*** Wednesday, October 20, 2010 - Total=1141 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**318**	**266**	**309**	**154**	**94**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	73	75	50	63	21	20
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	81	69	51	32	34	12
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19	86	58	78	37	22	12
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	69	78	64	130	22	17	15

*** Thursday, October 21, 2010 - Total=5368 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
59	**26**	**11**	**13**	**25**	**47**	**120**	**282**	**352**	**356**	**396**	**420**	**478**	**458**	**438**	**471**	**449**	**437**	**370**	**-**	**-**	**-**	**-**	**-**	
20	8	3	3	6	2	14	49	87	91	99	104	**113**	109	126	94	109	115	83	99	-	-	-	-	-
12	5	4	4	3	12	18	53	75	80	101	109	**121**	118	96	111	108	101	83	61	-	-	-	-	-
12	7	2	4	8	14	48	85	83	93	92	101	**118**	126	114	132	114	120	87	-	-	-	-	-	-
15	6	2	2	8	19	40	95	107	92	104	**106**	126	105	102	134	118	101	117	-	-	-	-	-	-

AM Peak 1145 - 1245 (458), AM PHF=0.95

ME2 TRANSPORTATION DATA CORP.
Vehicle Counts

VehicleCount-34 -- English (ENU)

Datasets:

Site: **Yorkton - Broadway St site 10 WB**

Filter time: **18:21 Wednesday, October 20, 2010 => 19:34 Thursday, October 21, 2010**

Direction: West (bound)

*** Wednesday, October 20, 2010 - Total=1157 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**369**	**302**	**234**	**160**	**92**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	109	77	64	58	33	20
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36	95	72	72	40	16	9
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	117	75	76	61	25	22	13
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	123	90	77	37	37	21	12

*** Thursday, October 21, 2010 - Total=6205 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
54	**20**	**8**	**13**	**12**	**27**	**78**	**185**	**275**	**342**	**442**	**542**	**623**	**525**	**532**	**557**	**618**	**631**	**487**	**-**	**-**	**-**	**-**	**-**	
20	3	4	5	0	4	16	33	54	80	96	138	**165**	139	126	124	168	172	130	94	-	-	-	-	-
9	9	2	2	2	3	22	45	58	86	104	136	**147**	137	138	136	129	162	142	108	-	-	-	-	-
13	4	1	0	4	8	18	43	77	83	100	133	**162**	126	139	136	170	158	123	32	-	-	-	-	-
12	4	1	6	6	12	22	64	86	93	142	**135**	149	123	129	161	151	139	92	-	-	-	-	-	-

AM Peak 1145 - 1245 (609), AM PHF=0.92

ME2 TRANSPORTATION DATA CORP.
Event Counts

EventCount-45 -- English (ENU)

Datasets:

Site:	**Yorkton - Broadway St site 11 EB**
Filter time:	**13:47 Tuesday, October 19, 2010 => 14:50 Wednesday, October 20, 2010**
Direction:	**East (bound)**

*** Tuesday, October 19, 2010=4682 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**625**	**693**	**730**	**831**	**528**	**418**	**338**	**276**	**167**	**78**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	162	151	195	283	144	119	92	66	55	30	4
-	-	-	-	-	-	-	-	-	-	-	-	-	-	160	172	182	189	132	110	73	77	46	17	9
-	-	-	-	-	-	-	-	-	-	-	-	-	-	146	171	172	205	121	108	87	72	39	16	6
-	-	-	-	-	-	-	-	-	-	-	-	-	138	158	199	183	154	132	81	86	62	28	15	11

*** Wednesday, October 20, 2010=5414 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
29	**18**	**13**	**15**	**20**	**57**	**245**	**394**	**450**	**637**	**652**	**640**	**903**	**763**	**581**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
4	3	3	3	5	9	37	71	89	173	155	127	**196**	188	170	-	-	-	-	-	-	-	-	-	-
9	9	1	5	4	8	73	72	106	144	132	181	**241**	189	167	-	-	-	-	-	-	-	-	-	-
6	5	8	4	8	20	64	115	123	158	187	143	**216**	195	180	-	-	-	-	-	-	-	-	-	-
11	1	1	4	3	21	71	136	133	163	179	**190**	251	192	65	-	-	-	-	-	-	-	-	-	-

AM Peak 1145 - 1245 (842), AM PHF=0.87

ME2 TRANSPORTATION DATA CORP.
Event Counts

EventCount-46 -- English (ENU)

Datasets:

Site: Yorkton - Broadway St site 11 WB
Filter time: 13:47 Tuesday, October 19, 2010 => 14:50 Wednesday, October 20, 2010
Direction: West (bound)

*** Tuesday, October 19, 2010=3435 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**601**	**503**	**563**	**565**	**399**	**287**	**205**	**182**	**91**	**41**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	151	112	141	170	89	85	52	51	29	18	8
-	-	-	-	-	-	-	-	-	-	-	-	-	-	160	134	128	135	106	72	62	61	21	10	4
-	-	-	-	-	-	-	-	-	-	-	-	-	-	154	123	139	157	121	68	47	42	24	9	2
-	-	-	-	-	-	-	-	-	-	-	-	-	107	137	135	156	103	84	62	44	29	17	4	6

*** Wednesday, October 20, 2010=4099 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
20	**13**	**6**	**16**	**15**	**44**	**104**	**251**	**347**	**429**	**465**	**558**	**746**	**640**	**448**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
8	6	3	3	2	8	9	43	50	117	111	141	**183**	174	125	-	-	-	-	-	-	-	-	-	-
4	4	0	4	2	10	23	43	87	113	129	124	**143**	152	143	-	-	-	-	-	-	-	-	-	-
2	1	3	5	6	14	30	63	86	95	103	127	**206**	149	138	-	-	-	-	-	-	-	-	-	-
6	2	0	4	5	12	42	103	125	105	122	**167**	215	165	43	-	-	-	-	-	-	-	-	-	-

AM Peak 1145 - 1245 (698), AM PHF=0.85

ME2 TRANSPORTATION DATA CORP.
Vehicle Counts

VehicleCount-35 -- English (ENU)

Datasets:

Site:	**Yorkton - Broadway St site 12 EB**
Filter time:	**13:57 Tuesday, October 19, 2010 => 14:57 Wednesday, October 20, 2010**
Direction:	East (bound)

*** Tuesday, October 19, 2010 - Total=2564 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**387**	**453**	**474**	**407**	**286**	**195**	**154**	**105**	**79**	**24**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	91	95	104	145	83	54	46	19	24	9	3
-	-	-	-	-	-	-	-	-	-	-	-	-	-	111	107	121	85	67	56	39	30	20	7	5
-	-	-	-	-	-	-	-	-	-	-	-	-	-	101	114	135	101	58	49	28	32	18	4	2
-	-	-	-	-	-	-	-	-	-	-	-	-	20	84	137	114	76	78	36	41	24	17	4	4

*** Wednesday, October 20, 2010 - Total=3319 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
14	**9**	**4**	**4**	**8**	**33**	**77**	**227**	**309**	**321**	**439**	**426**	**557**	**490**	**401**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
3	2	2	1	0	4	8	34	73	80	103	79	**153**	136	111	-	-	-	-	-	-	-	-	-	-
5	2	1	2	1	3	18	44	76	63	105	125	**119**	133	100	-	-	-	-	-	-	-	-	-	-
2	2	1	1	4	11	21	54	79	89	122	113	**143**	112	92	-	-	-	-	-	-	-	-	-	-
4	3	0	0	3	15	30	95	81	89	109	**109**	142	109	98	-	-	-	-	-	-	-	-	-	-

AM Peak 1145 - 1245 (524), AM PHF=0.86

ME2 TRANSPORTATION DATA CORP.
Vehicle Counts

VehicleCount-36 -- English (ENU)

Datasets:
Site: **Yorkton - Broadway St site 12 WB**
Filter time: **14:09 Tuesday, October 19, 2010 => 15:09 Wednesday, October 20, 2010**
Direction: West (bound)

***   Tuesday, October 19, 2010 - Total=2685 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**366**	**462**	**516**	**508**	**325**	**201**	**127**	**108**	**48**	**24**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	114	117	167	88	64	36	37	14	9	3
-	-	-	-	-	-	-	-	-	-	-	-	-	-	119	93	111	107	82	50	31	30	12	10	3
-	-	-	-	-	-	-	-	-	-	-	-	-	-	119	130	150	130	79	49	32	23	14	2	2
-	-	-	-	-	-	-	-	-	-	-	-	-	-	111	125	138	104	76	38	28	18	8	3	1

***   Wednesday, October 20, 2010 - Total=3381 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
9	**2**	**3**	**4**	**4**	**34**	**86**	**204**	**292**	**314**	**366**	**433**	**592**	**520**	**456**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
3	1	0	1	2	2	14	29	45	77	86	106	**162**	144	111	62	-	-	-	-	-	-	-	-	-
3	0	0	1	0	10	14	43	81	72	82	92	**121**	125	113	-	-	-	-	-	-	-	-	-	-
2	1	2	2	1	9	24	60	81	74	94	111	**149**	119	108	-	-	-	-	-	-	-	-	-	-
1	0	1	0	1	13	34	72	85	91	104	**124**	160	132	124	-	-	-	-	-	-	-	-	-	-

AM Peak 1145 - 1245 (556), AM PHF=0.86

ME2 TRANSPORTATION DATA CORP.
Vehicle Counts

VehicleCount-51 -- English (ENU)

Datasets:

Site:	**Yorkton - Bradbrooke St site 13 EB**
Filter time:	**14:58 Tuesday, October 19, 2010 => 15:26 Wednesday, October 20, 2010**
Direction:	East (bound)

*** Tuesday, October 19, 2010 - Total=1283 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**239**	**231**	**194**	**198**	**127**	**131**	**80**	**54**	**29**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	46	54	67	45	39	35	19	19	13	7
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	61	46	55	41	36	21	16	2	3
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75	55	41	50	21	28	21	10	7	4
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	68	61	40	48	26	32	19	9	7	2

*** Wednesday, October 20, 2010 - Total=1887 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
16	**10**	**6**	**3**	**9**	**33**	**91**	**186**	**245**	**171**	**179**	**180**	**257**	**230**	**172**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
7	2	1	0	1	4	6	18	**52**	32	40	37	51	59	49	47	-	-	-	-	-	-	-	-	-
3	3	2	2	3	6	11	27	**48**	52	44	46	54	52	32	52	-	-	-	-	-	-	-	-	-
4	2	2	1	3	12	31	55	**60**	44	52	46	62	60	53	-	-	-	-	-	-	-	-	-	-
2	3	1	0	2	11	43	**86**	85	43	43	51	90	59	38	-	-	-	-	-	-	-	-	-	-

AM Peak 0745 - 0845 (246), AM PHF=0.72

ME2 TRANSPORTATION DATA CORP.
Vehicle Counts

VehicleCount-52 -- English (ENU)

Datasets:

Site:	**Yorkton - Bradbrooke St site 13 WB**
Filter time:	**15:05 Tuesday, October 19, 2010 => 15:28 Wednesday, October 20, 2010**
Direction:	West (bound)

***   Tuesday, October 19, 2010 - Total=1644 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**280**	**332**	**271**	**224**	**177**	**136**	**112**	**65**	**47**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	78	75	41	53	43	29	23	13	8
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	69	80	69	49	46	35	32	15	15	8
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	70	61	61	44	34	25	13	11	2
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	84	104	66	73	34	24	26	14	8	4

***   Wednesday, October 20, 2010 - Total=2060 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
22	**10**	**6**	**2**	**2**	**12**	**61**	**162**	**194**	**202**	**213**	**221**	**303**	**271**	**254**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
8	0	3	1	1	0	4	18	44	64	63	52	**104**	60	63	66	-	-	-	-	-	-	-	-	-
8	4	2	1	0	0	8	43	45	45	44	60	**61**	75	48	59	-	-	-	-	-	-	-	-	-
2	6	1	0	1	2	15	50	47	50	55	55	**72**	62	73	-	-	-	-	-	-	-	-	-	-
4	0	0	0	0	10	34	51	58	43	51	**54**	66	74	70	-	-	-	-	-	-	-	-	-	-

AM Peak 1145 - 1245 (291), AM PHF=0.70

ME2 TRANSPORTATION DATA CORP.
Vehicle Counts

VehicleCount-47 -- English (ENU)

Datasets:

Site:	**Yorkton - Queen St site 14 EB**
Filter time:	**14:39 Tuesday, October 19, 2010 => 15:18 Wednesday, October 20, 2010**
Direction:	East (bound)

***   Tuesday, October 19, 2010 - Total=867 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**132**	**152**	**182**	**122**	**98**	**73**	**48**	**44**	**16**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27	25	56	29	20	22	15	14	3	5
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38	46	50	32	33	15	13	12	7	6
-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	31	43	37	28	20	19	7	12	4	2
-	-	-	-	-	-	-	-	-	-	-	-	-	-	29	36	38	39	33	25	17	13	6	2	4

***   Wednesday, October 20, 2010 - Total=1232 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
17	**7**	**6**	**9**	**4**	**33**	**71**	**168**	**172**	**114**	**124**	**95**	**137**	**128**	**107**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
5	3	3	1	0	1	11	21	**40**	28	29	20	33	32	29	35	-	-	-	-	-	-	-	-	-
6	2	1	5	1	7	14	25	**42**	33	32	27	25	26	16	5	-	-	-	-	-	-	-	-	-
2	2	0	0	1	10	19	43	**47**	30	32	31	34	35	33	-	-	-	-	-	-	-	-	-	-
4	0	2	3	2	15	27	**79**	43	23	31	17	45	35	29	-	-	-	-	-	-	-	-	-	-

AM Peak 0745 - 0845 (208), AM PHF=0.66

ME2 TRANSPORTATION DATA CORP.
Vehicle Counts

VehicleCount-48 -- English (ENU)

Datasets:

Site:	**Yorkton - Queen St site 14 WB**
Filter time:	**14:39 Tuesday, October 19, 2010 => 15:18 Wednesday, October 20, 2010**
Direction:	West (bound)

*** Tuesday, October 19, 2010 - Total=1304 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**215**	**224**	**317**	**200**	**122**	**88**	**78**	**38**	**22**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	47	97	67	33	28	27	6	8	4
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48	53	81	55	37	22	25	17	3	4
-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	60	67	63	42	27	19	12	8	6	2
-	-	-	-	-	-	-	-	-	-	-	-	-	-	29	55	57	76	36	25	19	14	7	5	1

*** Wednesday, October 20, 2010 - Total=1236 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
11	**6**	**1**	**2**	**11**	**10**	**62**	**110**	**140**	**104**	**109**	**126**	**192**	**159**	**138**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
4	1	0	0	4	0	11	18	40	32	24	22	**68**	42	35	43	-	-	-	-	-	-	-	-	-
4	0	0	1	3	3	16	26	30	29	29	29	**39**	44	38	12	-	-	-	-	-	-	-	-	-
2	2	1	0	2	4	17	24	37	19	20	36	**38**	34	29	-	-	-	-	-	-	-	-	-	-
1	3	0	1	2	3	18	42	33	24	36	**39**	47	39	36	-	-	-	-	-	-	-	-	-	-

AM Peak 1145 - 1245 (184), AM PHF=0.68

ME2 TRANSPORTATION DATA CORP.
Vehicle Counts

VehicleCount-50 -- English (ENU)

Datasets:

Site:	**Yorkton - Grain Millers Rd site 15 EB**
Filter time:	**19:54 Monday, October 18, 2010 => 20:30 Tuesday, October 19, 2010**
Direction:	East (bound)

*** Monday, October 18, 2010 - Total=4 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**2**	**0**	**1**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	0	1	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0

*** Tuesday, October 19, 2010 - Total=172 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
0	**0**	**0**	**0**	**5**	**0**	**16**	**11**	**8**	**15**	**10**	**17**	**16**	**12**	**15**	**13**	**11**	**7**	**11**	**3**	**-**	**-**	**-**	**-**	
0	0	0	0	1	0	0	**1**	3	4	2	5	2	6	4	4	2	1	2	2	0	-	-	-	-
0	0	0	0	0	0	2	**4**	0	3	1	4	6	1	0	1	4	3	6	1	2	-	-	-	-
0	0	0	0	3	0	**7**	1	2	4	3	5	5	0	6	3	3	3	1	0	-	-	-	-	-
0	0	0	0	1	0	**7**	5	3	4	4	3	3	5	5	5	2	0	2	0	-	-	-	-	-

AM Peak 0630 - 0730 (19), AM PHF=0.68

ME2 TRANSPORTATION DATA CORP.
Vehicle Counts

VehicleCount-49 -- English (ENU)

Datasets:

Site:	**Yorkton - Grain Millers Rd site 15 WB**
Filter time:	**19:54 Monday, October 18, 2010 => 20:30 Tuesday, October 19, 2010**
Direction:	West (bound)

*** Monday, October 18, 2010 - Total=4 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**0**	**0**	**3**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	0	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	3	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0

*** Tuesday, October 19, 2010 - Total=141 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
0	**0**	**0**	**0**	**0**	**0**	**8**	**10**	**9**	**8**	**3**	**13**	**14**	**11**	**10**	**20**	**10**	**18**	**3**	**2**	**-**	**-**	**-**	**-**	
0	0	0	0	0	0	1	4	3	2	0	4	**4**	1	4	5	2	6	2	1	2	-	-	-	-
0	0	0	0	0	0	1	1	2	1	2	0	**2**	1	2	6	1	5	0	0	0	-	-	-	-
0	0	0	0	0	0	4	3	3	2	0	**5**	2	6	4	7	6	3	1	1	-	-	-	-	-
0	0	0	0	0	0	2	2	1	3	1	**4**	6	3	0	2	1	4	0	0	-	-	-	-	-

AM Peak 1130 - 1230 (15), AM PHF=0.75

ME2 TRANSPORTATION DATA CORP.
Vehicle Counts

VehicleCount-42 -- English (ENU)

Datasets:
Site: **Yorkton - York Rd site 2 EB**
Filter time: **20:08 Monday, October 18, 2010 => 20:39 Tuesday, October 19, 2010**
Direction: East (bound)

*** Monday, October 18, 2010 - Total=99 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**20**	**29**	**29**	**21**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	3	14	6	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	16	6	7	3
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	4	6	6	3
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	6	3	2	1

*** Tuesday, October 19, 2010 - Total=1426 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
7	**3**	**2**	**4**	**7**	**37**	**45**	**108**	**128**	**106**	**92**	**104**	**110**	**100**	**90**	**115**	**99**	**118**	**69**	**53**	**-**	**-**	**-**	**-**	
0	3	0	2	1	7	8	11	**27**	14	27	19	32	18	15	29	23	28	19	18	12	-	-	-	-
3	0	2	0	1	5	3	27	**40**	29	11	31	21	24	21	29	21	29	21	15	10	-	-	-	-
3	0	0	1	3	9	14	**26**	24	29	26	26	30	28	27	37	35	36	14	11	7	-	-	-	-
1	0	0	1	2	16	20	**44**	37	34	28	28	27	30	27	20	20	25	15	9	-	-	-	-	-

AM Peak 0730 - 0830 (137), AM PHF=0.78

ME2 TRANSPORTATION DATA CORP.
Vehicle Counts

VehicleCount-41 -- English (ENU)

Datasets:

Site:	**Yorkton - York Rd site 2 WB**
Filter time:	**20:08 Monday, October 18, 2010 => 20:39 Tuesday, October 19, 2010**
Direction:	West (bound)

*** Monday, October 18, 2010 - Total=122 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**34**	**35**	**35**	**18**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	12	9	4	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	9	3	7	1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	7	12	7	2
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	7	11	0	0

*** Tuesday, October 19, 2010 - Total=1485 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
3	**6**	**4**	**4**	**5**	**22**	**92**	**93**	**99**	**94**	**103**	**98**	**110**	**100**	**111**	**122**	**126**	**132**	**81**	**44**	**-**	**-**	**-**	**-**	
0	2	0	2	0	3	8	19	26	24	22	**35**	30	28	26	21	41	44	27	11	15	-	-	-	-
1	0	0	0	1	6	22	20	27	22	**21**	19	29	26	18	28	24	40	19	17	13	-	-	-	-
2	0	3	1	3	6	27	25	25	32	**23**	22	19	22	25	44	37	25	26	8	8	-	-	-	-
0	4	1	1	1	7	35	29	21	16	**37**	22	32	24	42	29	24	23	9	8	-	-	-	-	-

AM Peak 1015 - 1115 (116), AM PHF=0.78

ME2 TRANSPORTATION DATA CORP.
Vehicle Counts

VehicleCount-20 -- English (ENU)

Datasets:
Site: **Yorkton - York Rd site 3 EB**
Filter time: **19:43 Monday, October 18, 2010 => 20:20 Tuesday, October 19, 2010**
Direction: East (bound)

* Monday, October 18, 2010 - Total=255 (Incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**82**	**84**	**58**	**31**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	24	18	8	4
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	26	14	6	6
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	17	19	14	9	4
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	16	15	12	8	3

* Tuesday, October 19, 2010 - Total=3325 (Incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
17	**17**	**6**	**4**	**10**	**44**	**81**	**211**	**280**	**214**	**233**	**260**	**309**	**236**	**250**	**296**	**282**	**266**	**156**	**119**	**-**	**-**	**-**	**-**	
4	7	1	1	4	3	17	30	70	46	61	54	**98**	72	64	56	92	102	34	36	28	-	-	-	-
6	7	2	0	2	7	14	40	84	46	53	64	**70**	56	46	72	50	45	40	29	6	-	-	-	-
4	0	2	1	4	7	20	52	62	53	66	**67**	59	55	76	107	75	76	54	28	-	-	-	-	-
3	3	1	2	0	27	30	89	64	69	53	**75**	82	53	64	61	65	43	28	26	-	-	-	-	-

AM Peak 1130 - 1230 (310), AM PHF=0.79

ME2 TRANSPORTATION DATA CORP.
Vehicle Counts

VehicleCount-21 -- English (ENU)

Datasets:

Site:	**Yorkton - York Rd site 3 WB**
Filter time:	**19:34 Monday, October 18, 2010 => 20:16 Tuesday, October 19, 2010**
Direction:	West (bound)

***   Monday, October 18, 2010 - Total=231 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**81**	**66**	**54**	**30**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	19	14	11	1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	23	11	11	2
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	20	13	17	5	4
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19	23	11	12	3	3

***   Tuesday, October 19, 2010 - Total=3339 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
10	**9**	**3**	**7**	**15**	**66**	**127**	**222**	**317**	**214**	**208**	**232**	**322**	**259**	**227**	**272**	**300**	**261**	**143**	**102**	**-**	**-**	**-**	**-**	
1	2	1	3	1	9	10	32	**66**	54	43	67	84	68	56	57	75	90	40	30	22	-	-	-	-
2	0	0	1	2	12	27	40	**68**	61	46	43	62	60	53	80	60	60	38	33	1	-	-	-	-
4	1	1	2	7	21	38	57	**81**	47	62	63	69	67	65	74	89	55	38	19	-	-	-	-	-
3	6	1	1	5	24	52	93	**102**	52	57	59	107	64	53	61	76	56	27	20	-	-	-	-	-

AM Peak 0800 - 0900 (317), AM PHF=0.78

ME2 TRANSPORTATION DATA CORP.
Vehicle Counts

VehicleCount-22 -- English (ENU)

Datasets:
Site: **Yorkton - Gladstone Ave site 4 NB**
Filter time: **20:30 Monday, October 18, 2010 => 21:49 Tuesday, October 19, 2010**
Direction: North (bound)

***   Monday, October 18, 2010 - Total=146 (Incomplete) , 15 minute drops**

```
 0000 0100 0200 0300 0400 0500 0600 0700 0800 0900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200
2300
    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -   66
56   24
    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -   26
21    6    6
    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -   14
15    7    1
    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -   19   12
14    4    2
    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -   27   14
6    7    1
```

***   Tuesday, October 19, 2010 - Total=2999 (Incomplete) , 15 minute drops**

```
 0000 0100 0200 0300 0400 0500 0600 0700 0800 0900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200
2300
   10    7    5    6   17   45   84  190  399  183  150  145  303  196  194  286  187  158  184  102   90   58
-    -
    6    3    1    1    2    7   11   23   59   53   32   41   46   53   59   62   50   42   43   30   23   26
-    -    -
    1    2    2    2    0    9   13   27   67   44   27   37   52   48   40   67   51   37   46   36   28   16
-    -    -
    2    1    1    1    8   11   36   56  142   36   48   29   80   51   49   99   39   38   38   20   18   11
-    -    -
    1    1    1    2    7   18   24   84  131   50   43   38  125   44   46   58   47   41   57   16   21    5
-    -    -
```

AM Peak 0800 - 0900 (399), AM PHF=0.70

ME2 TRANSPORTATION DATA CORP.
Vehicle Counts

VehicleCount-23 -- English (ENU)

Datasets:

Site:	**Yorkton - Gladstone Ave site 4 SB**
Filter time:	**20:38 Monday, October 18, 2010 => 21:55 Tuesday, October 19, 2010**
Direction:	South (bound)

*** Monday, October 18, 2010 - Total=199 (Incomplete) , 15 minute drops**

```
 0000 0100 0200 0300 0400 0500 0600 0700 0800 0900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200
2300
    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -  114
55   30
    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -   50
9    8    2
    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -   30
7    9    4
    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    6   21
22    7    3
    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -   29   13
17    6    8
```

*** Tuesday, October 19, 2010 - Total=2958 (Incomplete) , 15 minute drops**

```
 0000 0100 0200 0300 0400 0500 0600 0700 0800 0900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200
2300
   17   10    7    4    2   14   51   93  275  149  158  184  283  172  212  379  215  219  161  113  125  115
-    -
    2    9    0    1    0    0    6   17   49   55   43   41  139   49   52   48   58   76   40   22   43   39
-    -    -
    4    0    1    1    0    4    8   14   46   34   37   34   39   37   54  134   37   56   35   33   16   28
-    -    -
    3    0    5    2    1    1   23   19   97   27   44   42   44   44   61  117   65   50   56   28   30   35
-    -    -
    8    1    1    0    1    9   14   43   83   33   34   67   61   42   45   80   55   37   30   30   36   13
-    -    -
```

AM Peak 1145 - 1245 (289), AM PHF=0.52

ME2 TRANSPORTATION DATA CORP.
Vehicle Counts

VehicleCount-24 -- English (ENU)

Datasets:
Site: **Yorkton - Gladstone Ave site 5 NB**
Filter time: **21:25 Tuesday, October 19, 2010 => 13:58 Thursday, October 21, 2010**
Direction: North (bound)

* Tuesday, October 19, 2010 - Total=71 (Incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**48**	**23**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	9	3
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	11	5	5
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	12	5	3
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	8	4	6

* Wednesday, October 20, 2010 - Total=3051, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
17	**4**	**1**	**4**	**13**	**39**	**80**	**200**	**300**	**154**	**154**	**170**	**244**	**202**	**163**	**260**	**239**	**214**	**182**	**135**	**107**	**78**	**62**	**29**	
3	2	0	0	2	3	7	21	41	**43**	43	38	63	57	53	44	**52**	60	47	34	32	15	21	7	4
5	1	0	1	3	10	9	26	**61**	43	45	35	44	44	37	**68**	61	55	47	41	23	21	19	7	4
3	1	1	2	2	11	23	56	**96**	35	33	51	60	53	36	**89**	76	58	38	31	28	16	15	5	3
6	0	0	1	6	15	41	97	**102**	33	33	46	77	48	37	**59**	50	41	50	29	24	26	7	10	1

AM Peak 0815 - 0915 (302), AM PHF=0.74   PM Peak 1515 - 1615 (268), PM PHF=0.75

* Thursday, October 21, 2010 - Total=1537 (Incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
12	**6**	**3**	**5**	**10**	**33**	**97**	**188**	**307**	**148**	**135**	**177**	**226**	**190**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
4	0	0	0	2	3	11	20	**47**	46	32	42	51	64	-	-	-	-	-	-	-	-	-	-	-
4	1	0	1	1	9	16	29	**56**	37	27	48	40	46	-	-	-	-	-	-	-	-	-	-	-
3	3	2	1	4	7	33	52	**81**	29	38	34	52	40	-	-	-	-	-	-	-	-	-	-	-
1	2	1	3	3	14	37	87	**123**	36	38	53	83	40	-	-	-	-	-	-	-	-	-	-	-

AM Peak 0800 - 0900 (307), AM PHF=0.62

ME2 TRANSPORTATION DATA CORP.
Vehicle Counts

VehicleCount-25 -- English (ENU)

Datasets:
Site: **Yorkton - Gladstone Ave site 5 SB**
Filter time: **21:23 Tuesday, October 19, 2010 => 14:00 Thursday, October 21, 2010**
Direction: South (bound)

* Tuesday, October 19, 2010 - Total=91 (Incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**49**	**42**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	18	5
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	14	10	6
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	9	11	3
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	14	3	1

* Wednesday, October 20, 2010 - Total=2816, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
15	**6**	**4**	**2**	**6**	**10**	**66**	**133**	**163**	**161**	**135**	**162**	**237**	**178**	**166**	**284**	**238**	**261**	**174**	**133**	**85**	**100**	**61**	**36**	
5	2	1	1	1	1	7	11	32	51	34	43	**79**	47	34	47	**57**	81	54	28	24	20	18	10	13
6	1	2	0	2	0	7	33	30	31	30	31	**63**	44	36	**69**	62	68	38	35	25	26	22	6	5
3	3	1	0	1	1	22	42	49	39	28	**47**	47	40	42	**93**	67	60	39	37	20	28	10	5	4
1	0	0	1	2	8	30	47	52	40	43	**41**	48	47	54	**75**	52	52	43	33	16	26	11	15	2

AM Peak 1130 - 1230 (230), AM PHF=0.73 PM Peak 1515 - 1615 (294), PM PHF=0.79

* Thursday, October 21, 2010 - Total=1288 (Incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
24	**17**	**7**	**5**	**9**	**15**	**68**	**141**	**167**	**119**	**131**	**187**	**233**	**165**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
13	6	4	0	1	3	7	15	22	37	28	45	**71**	55	-	-	-	-	-	-	-	-	-	-	-
5	4	2	1	1	1	13	35	40	33	24	54	**64**	38	-	-	-	-	-	-	-	-	-	-	-
4	4	1	0	2	2	22	39	63	30	38	34	**47**	33	-	-	-	-	-	-	-	-	-	-	-
2	3	0	4	5	9	26	52	42	19	41	**54**	51	39	-	-	-	-	-	-	-	-	-	-	-

AM Peak 1145 - 1245 (236), AM PHF=0.83

ME2 TRANSPORTATION DATA CORP.
Vehicle Counts

VehicleCount-27 -- English (ENU)

Datasets:

Site:	**Yorkton - Darlington St site 6 EB**
Filter time:	**22:11 Tuesday, October 19, 2010 => 13:33 Thursday, October 21, 2010**
Direction:	East (bound)

*** Tuesday, October 19, 2010 - Total=44 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**19**	**25**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	6	7
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	9	3
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	4	1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	6	1

*** Wednesday, October 20, 2010 - Total=2734, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
12	**8**	**4**	**3**	**9**	**12**	**49**	**115**	**215**	**124**	**121**	**181**	**237**	**142**	**143**	**258**	**243**	**228**	**158**	**143**	**106**	**118**	**68**	**37**	
7	1	1	0	0	0	12	16	35	36	29	43	**79**	36	33	47	**61**	73	60	42	30	26	21	8	12
3	2	2	0	1	6	4	20	40	28	21	33	**61**	34	47	**64**	60	51	32	29	32	23	21	13	2
1	1	1	2	2	0	15	32	64	33	34	**48**	39	42	34	**88**	72	61	41	39	27	24	16	8	5
1	4	0	1	6	6	18	47	76	27	37	**57**	58	30	29	**59**	50	43	25	33	17	45	10	8	3

AM Peak 1130 - 1230 (245), AM PHF=0.78 PM Peak 1515 - 1615 (272), PM PHF=0.77

*** Thursday, October 21, 2010 - Total=1152 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
22	**10**	**11**	**2**	**8**	**16**	**52**	**111**	**181**	**131**	**116**	**171**	**225**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
12	2	3	0	0	0	5	17	39	34	24	34	**93**	53	-	-	-	-	-	-	-	-	-	-	-
2	2	5	1	3	5	6	14	36	30	37	37	**42**	38	-	-	-	-	-	-	-	-	-	-	-
5	4	2	0	1	4	14	27	36	27	30	**46**	38	5	-	-	-	-	-	-	-	-	-	-	-
3	2	1	1	4	7	27	53	70	40	25	**54**	52	-	-	-	-	-	-	-	-	-	-	-	-

AM Peak 1130 - 1230 (235), AM PHF=0.63

ME2 TRANSPORTATION DATA CORP.
Vehicle Counts

VehicleCount-28 -- English (ENU)

Datasets:

Site:	**Yorkton - Darlington St site 6 WB**
Filter time:	**22:14 Tuesday, October 19, 2010 => 13:24 Thursday, October 21, 2010**
Direction:	West (bound)

* Tuesday, October 19, 2010 - Total=55 (Incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**25**	**30**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	10	2
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	9	3
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	7	5
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	4	0

* Wednesday, October 20, 2010 - Total=3247, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
10	**3**	**2**	**3**	**5**	**15**	**59**	**189**	**327**	**170**	**163**	**167**	**287**	**180**	**174**	**283**	**240**	**259**	**266**	**162**	**113**	**87**	**44**	**39**	
2	1	1	0	1	1	5	14	**67**	48	32	25	**71**	70	38	74	49	53	66	49	36	17	18	12	7
3	0	1	1	0	1	13	39	**73**	38	38	51	**52**	43	44	70	61	64	54	40	24	22	7	12	2
5	1	0	2	0	5	15	59	**79**	40	41	50	**71**	30	45	77	65	79	70	32	26	26	10	7	2
0	1	0	0	4	8	26	77	**108**	44	52	41	**93**	37	47	62	65	63	76	41	27	22	9	8	3

AM Peak 0800 - 0900 (327), AM PHF=0.76   PM Peak 1200 - 1300 (287), PM PHF=0.77

* Thursday, October 21, 2010 - Total=1391 (Incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
14	**13**	**3**	**4**	**5**	**23**	**64**	**146**	**301**	**144**	**149**	**159**	**277**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
7	6	1	0	0	2	7	20	**64**	47	35	44	65	62	-	-	-	-	-	-	-	-	-	-	-
2	3	2	3	1	3	16	26	**47**	34	37	32	61	27	-	-	-	-	-	-	-	-	-	-	-
2	3	0	1	2	9	19	36	**82**	31	37	41	64	-	-	-	-	-	-	-	-	-	-	-	-
3	1	0	0	2	9	22	64	**108**	32	40	42	87	-	-	-	-	-	-	-	-	-	-	-	-

AM Peak 0800 - 0900 (301), AM PHF=0.70

ME2 TRANSPORTATION DATA CORP.
Vehicle Counts

VehicleCount-29 -- English (ENU)

Datasets:

Site:	**Yorkton - Smith St site 7 EB**
Filter time:	**18:51 Wednesday, October 20, 2010 => 19:50 Thursday, October 21, 2010**
Direction:	East (bound)

*** Wednesday, October 20, 2010 - Total=361 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**127**	**91**	**69**	**42**	**32**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	45	20	14	13	12	1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31	22	13	10	9	4
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	19	17	8	4	1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	25	30	25	11	7	2

*** Thursday, October 21, 2010 - Total=3270 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
8	**8**	**3**	**4**	**7**	**11**	**41**	**125**	**222**	**191**	**239**	**283**	**367**	**280**	**244**	**352**	**334**	**263**	**160**	**128**	**-**	**-**	**-**	**-**	
1	3	1	0	4	3	6	13	50	47	52	60	**94**	82	59	67	81	97	37	40	-	-	-	-	-
4	0	0	1	2	2	6	24	42	53	62	73	**89**	69	75	70	85	58	47	49	-	-	-	-	-
1	4	2	0	0	5	13	22	54	47	52	73	**79**	62	47	105	81	51	29	32	-	-	-	-	-
2	1	0	3	1	1	16	66	76	44	73	**77**	105	67	63	110	87	57	47	7	-	-	-	-	-

AM Peak 1145 - 1245 (339), AM PHF=0.90

ME2 TRANSPORTATION DATA CORP.
Vehicle Counts

VehicleCount-30 -- English (ENU)

Datasets:

Site:	**Yorkton - Smith St site 7 WB**
Filter time:	**19:04 Wednesday, October 20, 2010 => 19:45 Thursday, October 21, 2010**
Direction:	West (bound)

*** Wednesday, October 20, 2010 - Total=267 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**83**	**69**	**66**	**27**	**22**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	14	12	5	9	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	18	15	9	6	6
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27	16	20	7	5	1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	21	19	6	2	6

*** Thursday, October 21, 2010 - Total=2705 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
13	**9**	**3**	**3**	**6**	**9**	**59**	**126**	**192**	**158**	**192**	**218**	**290**	**238**	**196**	**256**	**270**	**236**	**155**	**-**	**-**	**-**	**-**	**-**	
0	6	0	1	1	1	9	17	33	47	36	58	**96**	71	37	52	69	78	50	31	-	-	-	-	-
6	0	1	0	1	2	12	21	45	45	39	50	**63**	65	55	69	62	59	47	22	-	-	-	-	-
1	3	1	1	2	3	24	37	46	34	60	53	**63**	51	40	69	67	55	26	23	-	-	-	-	-
6	0	1	1	2	3	14	51	68	32	57	**57**	68	51	64	66	72	44	32	-	-	-	-	-	-

AM Peak 1145 - 1245 (279), AM PHF=0.73

ME2 TRANSPORTATION DATA CORP.
Event Counts

EventCount-44 -- English (ENU)

Datasets:
Site: Yorkton - Mayhew St. site 8 NB
Filter time: 14:25 Tuesday, October 19, 2010 => 15:03 Wednesday, October 20, 2010
Direction: North (bound)

*** Tuesday, October 19, 2010=1191 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**206**	**244**	**265**	**145**	**116**	**85**	**71**	**47**	**13**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	45	61	98	42	29	25	19	12	3	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	60	69	54	33	31	23	23	15	6	6
-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	47	59	60	38	32	13	17	8	1	4
-	-	-	-	-	-	-	-	-	-	-	-	-	-	36	55	56	53	32	24	24	12	12	3	4

*** Wednesday, October 20, 2010=1230 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
14	**6**	**0**	**1**	**2**	**4**	**23**	**79**	**142**	**113**	**141**	**169**	**219**	**173**	**136**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
0	1	0	0	1	0	0	14	29	25	46	39	**76**	59	39	11	-	-	-	-	-	-	-	-	-
6	1	0	0	0	1	2	11	33	27	21	35	**41**	44	26	-	-	-	-	-	-	-	-	-	-
4	2	0	1	1	1	7	22	42	31	39	42	**46**	33	32	-	-	-	-	-	-	-	-	-	-
4	2	0	0	0	2	14	32	39	31	35	**53**	56	37	39	-	-	-	-	-	-	-	-	-	-

AM Peak 1145 - 1245 (216), AM PHF=0.71

MetroCount Traffic Executive
Event Counts

EventCount-43 -- English (ENU)

Datasets:
Site: Yorkton - Mayhew St. site 8 SB
Filter time: 14:25 Tuesday, October 19, 2010 => 15:03 Wednesday, October 20, 2010
Direction: South (bound)

*** Tuesday, October 19, 2010=814 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**164**	**175**	**151**	**113**	**81**	**53**	**44**	**24**	**10**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	48	47	20	25	12	15	6	2	3
-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	31	41	39	32	19	8	12	7	4	2
-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	60	47	39	27	21	16	10	8	1	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	44	42	41	27	35	16	17	7	3	3	1

*** Wednesday, October 20, 2010=1419 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
6	**2**	**4**	**1**	**2**	**12**	**54**	**153**	**204**	**128**	**134**	**185**	**206**	**161**	**157**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
3	0	0	1	0	2	9	14	**44**	39	25	36	36	47	41	13	-	-	-	-	-	-	-	-	-
2	1	0	0	1	3	16	31	**48**	32	37	42	54	42	38	-	-	-	-	-	-	-	-	-	-
0	1	0	0	0	2	7	32	**54**	30	34	50	47	46	48	-	-	-	-	-	-	-	-	-	-
1	0	4	0	1	5	22	**77**	58	27	38	57	69	26	30	-	-	-	-	-	-	-	-	-	-

AM Peak 0745 - 0845 (223), AM PHF=0.73

ME2 TRANSPORTATION DATA CORP.
Vehicle Counts

VehicleCount-31 -- English (ENU)

Datasets:

Site: **Yorkton - Broadway St site 9 EB**
Filter time: **20:58 Tuesday, October 19, 2010 => 13:50 Thursday, October 21, 2010**
Direction: East (bound)

* Tuesday, October 19, 2010 - Total=540 (Incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**269**	**175**	**96**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	78	33	19
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	73	32	26	10
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	94	35	21	16
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	52	30	16	9

* Wednesday, October 20, 2010 - Total=8281, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
54	**23**	**28**	**10**	**13**	**64**	**192**	**425**	**583**	**489**	**478**	**466**	**653**	**591**	**535**	**588**	**616**	**553**	**454**	**359**	**299**	**473**	**211**	**124**	
19	9	8	6	4	3	25	44	**124**	128	98	90	141	**161**	125	134	169	166	128	105	86	71	81	34	25
10	3	4	1	1	10	38	72	**144**	111	143	116	155	**162**	146	150	142	134	111	77	82	55	54	39	15
16	6	7	1	6	28	61	124	**155**	122	115	131	**148**	135	133	153	150	123	132	92	68	155	47	29	11
9	5	9	2	2	23	68	**185**	160	128	122	129	**209**	133	131	151	155	130	83	85	63	192	29	22	22

AM Peak 0745 - 0845 (608), AM PHF=0.82   PM Peak 1230 - 1330 (680), PM PHF=0.81

* Thursday, October 21, 2010 - Total=3874 (Incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
73	**25**	**28**	**14**	**18**	**54**	**179**	**401**	**577**	**461**	**455**	**502**	**616**	**471**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
25	12	13	4	7	2	30	55	111	**113**	118	136	140	170	-	-	-	-	-	-	-	-	-	-	-
15	2	5	3	4	8	30	68	**128**	120	115	119	129	161	-	-	-	-	-	-	-	-	-	-	-
11	5	7	1	6	26	58	113	**148**	121	107	131	149	120	-	-	-	-	-	-	-	-	-	-	-
22	6	3	6	1	18	61	165	**190**	107	115	116	198	20	-	-	-	-	-	-	-	-	-	-	-

AM Peak 0815 - 0915 (579), AM PHF=0.76

ME2 TRANSPORTATION DATA CORP.
Vehicle Counts

VehicleCount-32 -- English (ENU)

Datasets:

Site: **Yorkton - Broadway St site 9 WB**
Filter time: **21:01 Tuesday, October 19, 2010 => 13:43 Thursday, October 21, 2010**
Direction: West (bound)

* Tuesday, October 19, 2010 - Total=459 (Incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**200**	**173**	**86**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	57	29	13
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67	47	23	14
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74	34	21	13
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	35	13	3

* Wednesday, October 20, 2010 - Total=7779, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
43	**12**	**17**	**16**	**10**	**33**	**121**	**202**	**417**	**377**	**375**	**499**	**629**	**518**	**510**	**688**	**597**	**711**	**675**	**488**	**310**	**244**	**188**	**99**	
13	4	4	1	1	6	17	35	84	103	81	86	**204**	155	113	138	127	**198**	181	173	85	63	68	30	19
14	2	3	3	2	3	26	40	95	99	102	120	**126**	112	132	163	131	**175**	160	118	90	63	45	23	11
13	4	6	8	2	8	40	56	104	90	95	129	**148**	137	132	210	168	**196**	148	95	69	63	33	22	12
3	2	4	4	5	16	38	71	134	85	97	**164**	151	114	133	177	**171**	142	186	102	66	55	42	24	13

AM Peak 1145 - 1245 (642), AM PHF=0.79 PM Peak 1645 - 1745 (740), PM PHF=0.93

* Thursday, October 21, 2010 - Total=3057 (Incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
55	**17**	**11**	**10**	**12**	**33**	**90**	**202**	**400**	**374**	**380**	**495**	**639**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
19	6	3	2	1	4	13	34	94	101	93	119	**176**	122	-	-	-	-	-	-	-	-	-	-	-
11	6	4	5	4	7	23	40	84	91	90	129	**167**	123	-	-	-	-	-	-	-	-	-	-	-
12	4	4	0	3	5	24	67	100	99	83	112	**156**	94	-	-	-	-	-	-	-	-	-	-	-
13	1	0	3	4	17	30	61	122	83	114	**135**	140	-	-	-	-	-	-	-	-	-	-	-	-

AM Peak 1145 - 1245 (634), AM PHF=0.90

Appendix C

Existing Warrants

Canadian Traffic Signal Warrant Analysis

Main Street	**Broadway Street**	**Date:** **January 31, 2012**
Side Street	**7th Avenue**	**City:** **Yorkton, SK**

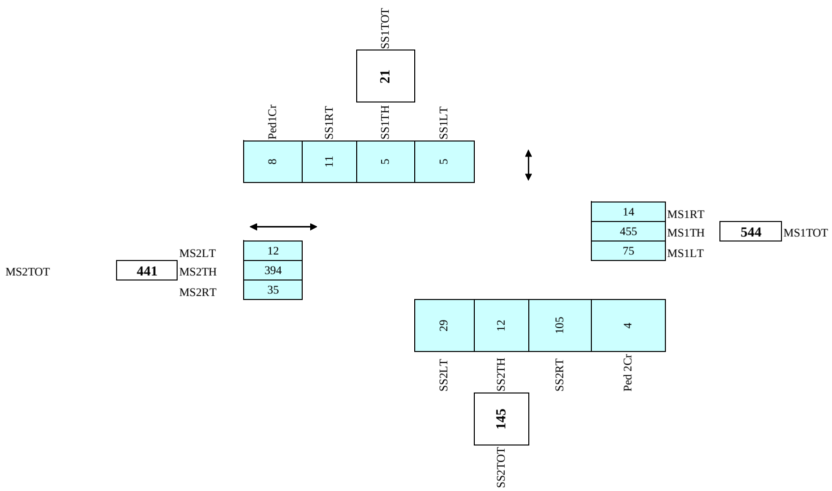
Input	Unit	Value	Input	Unit	Value
MainStreet1Lanes	(#)	2	Distance to next signal	(m)	220
MainStreet2Lanes	(#)	2	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	2	Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	1	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	2	Metro Area Population	(#)	18,000
MainStreetSpeedLimit	(km/h)	50	Side Street Bus Route	(y/n)	n
MainStreetTrucks/Buses	(%)	2.0%	Side Street Trucks	(%)	2.0%
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	n
			Central Business District	(y/n)	y

Vm =	**985**	(MainSt Vol Total)	Cs =	**1.000**	(Int SpacingFactor)
Vs =	**145**	(SideSt Vol Highest)	Cmt =	**1.000**	(MainStTruckFactor)
Pc =	**11**	Peds Crossing Main	Cv =	**1.000**	(SpeedFactor)
K1 =	**1,400**	veh/veh const	Cp =	**1.100**	(PopDemoFactor)
K2 =	**5,000**	veh/ped const	Csb =	**1.000**	(SideStBusFactor)
L =	**6.0**	TotalMainStLanes	Cst =	**1.000**	(SideStTruckFactor)
F =	**1.000**	(PedDemoFactor)	Vmx =	**544**	(MainStHighest)
Vm1 =	**985**	(MainStVeh-Veh#)	Vm2 =	**985**	(MainStVeh-Ped#)
Cvp =	**1.100**	(product of Cs,Cmt,Cv,Cp)	Cbt =	**1.000**	(maximum of Csb,Cst)
Ct1 =	**1.000**	T Int / one way Factor			

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00	51	220	18	12	215	25	1	3	6	11	10	42	0	3
8:00 - 9:00	46	292	10	6	255	30	5	0	3	22	5	70	0	3
11:00 - 12:00	85	496	13	7	405	44	7	8	17	48	9	118	1	6
12:00 - 13:00	111	624	19	25	516	37	3	2	13	33	11	133	10	2
16:00 - 17:00	66	546	15	6	514	41	7	8	14	32	19	126	10	7
17:00 - 18:00	88	553	9	14	461	32	8	10	11	27	17	139	24	2
Average	75	455	14	12	394	35	5	5	11	29	12	105	8	4

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**



W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = **127** **112** **15**

Warranted ***Veh*** ***Ped***

Roadway, Vehicle and Pedestrian Factors			**Range**			
			Min	**@**	**Max**	**@**
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street		**Broadway Street**				**Date:**	**January 31, 2012**		
Side Street		**Bradbrooke Avenue**				**City:**	**Yorkton, SK**		
MainStreet1Lanes	(#)	2	Distance to next signal	(m)	200	Vm =	**804** (MainSt Vol Total)	Cs =	**0.900** (Int SpacingFactor)
MainStreet2Lanes	(#)	2	Elementary School	(y/n)	n	Vs =	**72** (SideSt Vol Highest)	Cmt =	**1.000** (MainStTruckFactor)
MainStreet LT Lanes	(#)	2	Senior's Complex	(y/n)	n	Pc =	**12** Peds Crossing Main	Cv =	**1.000** (SpeedFactor)
SideStreet1Lanes	(#)	1	Pathway to School	(y/n)	n	K1 =	**1,400** veh/veh const	Cp =	**1.100** (PopDemoFactor)
SideStreet2Lanes	(#)	2	Metro Area Population	(#)	18,000	K2 =	**5,000** veh/ped const	Csb =	**1.000** (SideStBusFactor)
MainStreetSpeedLimit	(km/h)	50	Side Street Bus Route	(y/n)	n	L =	**6.0** TotalMainStLanes	Cst =	**1.000** (SideStTruckFactor)
MainStreetTrucks/Buses	(%)	5.0%	Side Street Trucks	(%)	3.0%	F =	**1.000** (PedDemoFactor)	Vmx =	**418** (MainStHighest)
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	n	Vm1 =	**804** (MainStVeh-Veh#)	Vm2 =	**804** (MainStVeh-Ped#)
			Central Business District	(y/n)	n	Cvp =	**0.990** (product of Cs,Cmt,Cv,Cp)	Cbt =	**1.000** (maximum of Csb,Cst)
						Ct1 =	**1.000** T Int / one way Factor		

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00	17	148	8	5	325	0	21	5	4	2	2	36	1	4
8:00 - 9:00	41	266	19	13	405	0	41	6	14	12	9	83	4	5
11:00 - 12:00	30	366	10	4	324	0	28	7	11	8	2	41	6	3
12:00 - 13:00	39	454	24	11	437	0	70	9	16	13	6	78	17	9
16:00 - 17:00	47	467	8	5	397	0	30	5	24	8	1	69	7	7
17:00 - 18:00	56	505	4	7	384	0	15	18	17	8	2	54	7	2
Average	38	368	12	8	379	0	34	8	14	9	4	60	7	5

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**

SS1TOT 57

Ped1Cr 7 | SS1RT 14 | SS1TH 8 | SS1LT 34

12 MS1RT
368 MS1TH
38 MS1LT
418 MS1TOT

MS2LT 8
MS2TOT 386 MS2TH 379
MS2RT 0

SS2LT 9 | SS2TH 4 | SS2RT 60 | Ped 2Cr 5

SS2TOT 72

W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 53   **41** *Veh*   **11** *Ped*

Not Warranted - Vs<75

Roadway, Vehicle and Pedestrian Factors			Range			
			Min	**@**	**Max**	**@**
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street	**Broadway Street**					**Date:**	**January 31, 2012**
Side Street	**Highway 10**					**City:**	**Yorkton, SK**

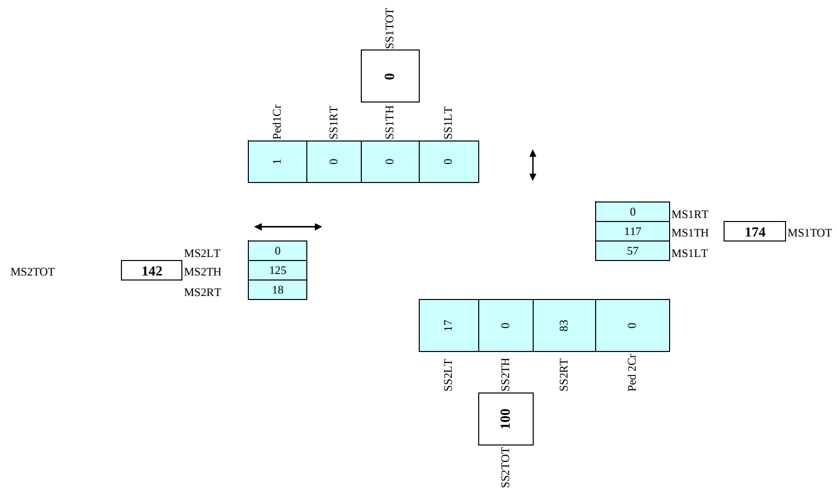
MainStreet1Lanes	(#)	2	Distance to next signal	(m)	370
MainStreet2Lanes	(#)	3	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	1	Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	0	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	2	Metro Area Population	(#)	18,000
MainStreetSpeedLimit	(km/h)	50	Side Street Bus Route	(y/n)	n
MainStreetTrucks/Buses	(%)	7.0%	Side Street Trucks	(%)	8.0%
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	y
			Central Business District	(y/n)	n

Vm =	**316**	(MainSt Vol Total)	Cs =	**0.967**	(Int SpacingFactor)
Vs =	**100**	(SideSt Vol Highest)	Cmt =	**1.020**	(MainStTruckFactor)
Pc =	**1**	Peds Crossing Main	Cv =	**1.000**	(SpeedFactor)
K1 =	**1,400**	veh/veh const	Cp =	**1.100**	(PopDemoFactor)
K2 =	**5,000**	veh/ped const	Csb =	**1.000**	(SideStBusFactor)
L =	**6.0**	TotalMainStLanes	Cst =	**1.000**	(SideStTruckFactor)
F =	**1.000**	(PedDemoFactor)	Vmx =	**174**	(MainStHighest)
Vm1 =	**316**	(MainStVeh-Veh#)	Vm2 =	**316**	(MainStVeh-Ped#)
Cvp =	**1.085**	(product of Cs,Cmt,Cv,Cp)	Cbt =	**1.000**	(maximum of Csb,Cst)
Ct1 =	**0.667**	T Int / one way Factor			

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00	30	78	0	0	133	19	0	0	0	19	0	111	1	1
8:00 - 9:00	41	98	0	0	128	17	0	0	0	17	0	96	0	0
11:00 - 12:00	54	101	0	0	90	17	0	0	0	10	0	71	1	0
12:00 - 13:00	62	123	0	0	151	9	0	0	0	14	0	65	0	0
16:00 - 17:00	90	156	0	0	120	19	0	0	0	20	0	76	1	0
17:00 - 18:00	65	143	0	0	127	24	0	0	0	22	0	76	1	0
Average	57	117	0	0	125	18	0	0	0	17	0	83	1	0

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**



W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 17 **16** **0**

NOT Warranted ***Veh*** ***Ped***

Roadway, Vehicle and Pedestrian Factors			Range			
			Min	**@**	**Max**	**@**
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street	**Darlington Street**	**Date:** January 31, 2012
Side Street	**Dracup Avenue**	**City:** Yorkton, SK

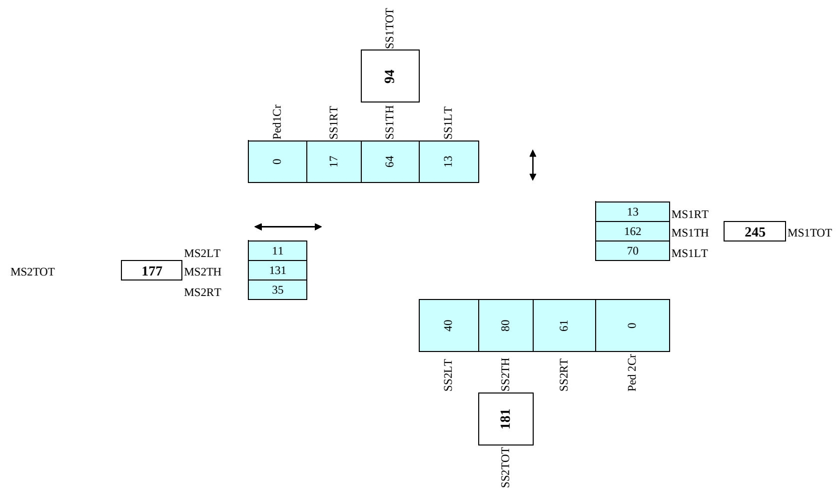
MainStreet1Lanes	(#)	2	Distance to next signal	(m)	660	
MainStreet2Lanes	(#)	2	Elementary School	(y/n)	n	
MainStreet LT Lanes	(#)	0	Senior's Complex	(y/n)	n	
SideStreet1Lanes	(#)	1	Pathway to School	(y/n)	n	
SideStreet2Lanes	(#)	2	Metro Area Population	(#)	18,000	
MainStreetSpeedLimit	(km/h)	50	Side Street Bus Route	(y/n)	y	
MainStreetTrucks/Buses	(%)	3.0%	Side Street Trucks	(%)	4.0%	
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	n	
			Central Business District	(y/n)	n	

Vm =	**422**	(MainSt Vol Total)	Cs =	**1.020**	(Int SpacingFactor)
Vs =	**181**	(SideSt Vol Highest)	Cmt =	**1.000**	(MainStTruckFactor)
Pc =	**0**	Peds Crossing Main	Cv =	**1.000**	(SpeedFactor)
K1 =	**1,400**	veh/veh const	Cp =	**1.100**	(PopDemoFactor)
K2 =	**5,000**	veh/ped const	Csb =	**1.050**	(SideStBusFactor)
L =	**4.0**	TotalMainStLanes	Cst =	**1.000**	(SideStTruckFactor)
F =	**1.000**	(PedDemoFactor)	Vmx =	**245**	(MainStHighest)
Vm1 =	**422**	(MainStVeh-Veh#)	Vm2 =	**422**	(MainStVeh-Ped#)
Cvp =	**1.121**	(product of Cs,Cmt,Cv,Cp)	Cbt =	**1.050**	(maximum of Csb,Cst)
Ct1 =	**1.000**	T Int / one way Factor			

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00	68	113	8	7	67	23	14	49	14	9	37	16	0	0
8:00 - 9:00	91	217	18	11	127	34	14	54	12	19	58	26	0	0
11:00 - 12:00	49	90	15	9	120	33	9	53	12	38	92	64	0	0
12:00 - 13:00	101	208	12	12	175	37	11	84	21	57	101	93	0	0
16:00 - 17:00	58	147	8	9	136	36	15	68	9	57	92	74	0	0
17:00 - 18:00	54	199	15	20	159	48	16	76	31	61	98	91	0	0
Average	70	162	13	11	131	35	13	64	17	40	80	61	0	0

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**



W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 64   **64** (*Veh*)   **0** (*Ped*)

NOT Warranted

Roadway, Vehicle and Pedestrian Factors			Range Min	@	Max	@
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street	**Darlington Street**
Side Street	**Gladstone Avenue**

Date: January 31, 2012
City: Yorkton, SK

MainStreet1Lanes	(#)	1
MainStreet2Lanes	(#)	0
MainStreet LT Lanes	(#)	0
SideStreet1Lanes	(#)	2
SideStreet2Lanes	(#)	2
MainStreetSpeedLimit	(km/h)	40
MainStreetTrucks/Buses	(%)	3.0%
Refuge Width on Median	(m)	0.0

Distance to next signal	(m)	260
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	y
Metro Area Population	(#)	18,000
Side Street Bus Route	(y/n)	y
Side Street Trucks	(%)	7.0%
T or 1-Way Intersection	(y/n)	y
Central Business District	(y/n)	n

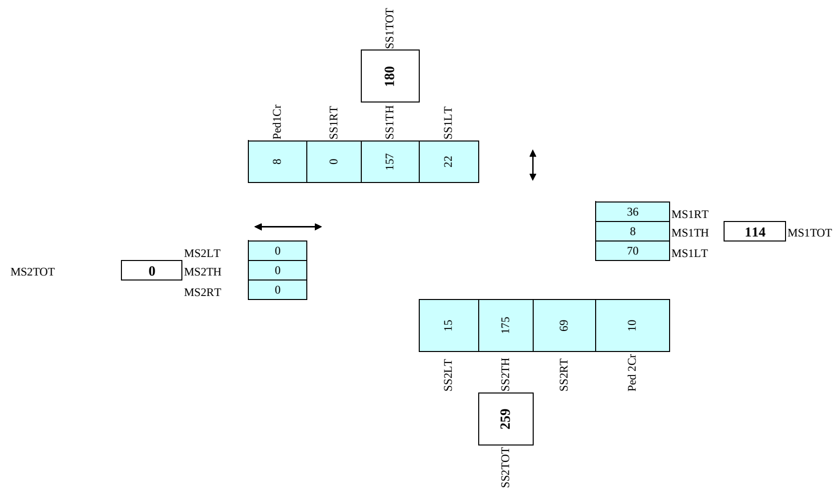
Vm =	**114**	(MainSt Vol Total)
Vs =	**259**	(SideSt Vol Highest)
Pc =	**17**	Peds Crossing Main
K1 =	**1,100**	veh/veh const
K2 =	**2,000**	veh/ped const
L =	**1.0**	TotalMainStLanes
F =	**1.100**	(PedDemoFactor)
Vm1 =	**114**	(MainStVeh-Veh#)
Cvp =	**1.021**	(product of Cs,Cmt,Cv,Cp)
Ct1 =	**0.667**	T Int / one way Factor

Cs =	**0.928**	(Int SpacingFactor)
Cmt =	**1.000**	(MainStTruckFactor)
Cv =	**1.000**	(SpeedFactor)
Cp =	**1.100**	(PopDemoFactor)
Csb =	**1.050**	(SideStBusFactor)
Cst =	**1.000**	(SideStTruckFactor)
Vmx =	**114**	(MainStHighest)
Vm2 =	**114**	(MainStVeh-Ped#)
Cbt =	**1.050**	(maximum of Csb,Cst)

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00	46	15	21	0	0	0	15	57	0	3	137	48	1	3
8:00 - 9:00	82	13	93	0	0	0	35	181	0	57	265	50	28	2
11:00 - 12:00	40	2	4	0	0	0	17	141	1	2	130	33	3	3
12:00 - 13:00	77	10	56	0	0	0	26	231	0	16	223	67	8	36
16:00 - 17:00	65	3	19	0	0	0	21	171	0	5	168	84	3	9
17:00 - 18:00	110	4	22	0	0	0	20	160	1	9	128	130	4	4
Average	70	8	36	0	0	0	22	157	0	15	175	69	8	10

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**



W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 20 **19** **1**

NOT Warranted ***Veh*** ***Ped***

Roadway, Vehicle and Pedestrian Factors			Range			
			Min	**@**	**Max**	**@**
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)
Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)
Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)
Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)
Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***
F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors
Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)
L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)
Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)
Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street	**Darlington Street**	**Date:**	**January 31, 2012**
Side Street	**Mayhew Avenue**	**City:**	**Yorkton, SK**

MainStreet1Lanes	(#)	1	Distance to next signal	(m)	620
MainStreet2Lanes	(#)	2	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	0	Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	1	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	1	Metro Area Population	(#)	18,000
MainStreetSpeedLimit	(km/h)	50	Side Street Bus Route	(y/n)	y
MainStreetTrucks/Buses	(%)	13.0%	Side Street Trucks	(%)	12.0%
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	n
			Central Business District	(y/n)	n

Vm =	**279**	(MainSt Vol Total)	Cs =	**1.015**	(Int SpacingFactor)
Vs =	**160**	(SideSt Vol Highest)	Cmt =	**1.080**	(MainStTruckFactor)
Pc =	**14**	Peds Crossing Main	Cv =	**1.000**	(SpeedFactor)
K1 =	**1,400**	veh/veh const	Cp =	**1.100**	(PopDemoFactor)
K2 =	**5,000**	veh/ped const	Csb =	**1.050**	(SideStBusFactor)
L =	**3.0**	TotalMainStLanes	Cst =	**1.050**	(SideStTruckFactor)
F =	**1.000**	(PedDemoFactor)	Vmx =	**143**	(MainStHighest)
Vm1 =	**279**	(MainStVeh-Veh#)	Vm2 =	**279**	(MainStVeh-Ped#)
Cvp =	**1.206**	(product of Cs,Cmt,Cv,Cp)	Cbt =	**1.050**	(maximum of Csb,Cst)
Ct1 =	**1.000**	T Int / one way Factor			

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00	37	75	9	10	26	44	2	62	12	25	21	15	3	5
8:00 - 9:00	54	161	22	19	76	52	27	60	24	39	51	45	1	16
11:00 - 12:00	15	31	10	21	55	39	12	62	17	48	70	24	2	5
12:00 - 13:00	43	108	7	27	103	60	18	60	29	85	73	37	0	14
16:00 - 17:00	29	69	5	27	88	45	11	49	25	55	85	53	8	6
17:00 - 18:00	41	89	7	30	94	44	18	53	18	80	93	58	8	18
Average	37	89	10	22	74	47	15	58	21	55	66	39	4	11

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**

SS1TOT **93**

Ped1Cr 4 | SS1RT 21 | SS1TH 58 | SS1LT 15

MS1RT 10
MS1TH 89 **135** MS1TOT
MS1LT 37

MS2TOT **143** MS2LT 22
MS2TH 74
MS2RT 47

SS2LT 55 | SS2TH 66 | SS2RT 39 | Ped 2Cr 11

160 SS2TOT

W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 43 **40** **3**

NOT Warranted ***Veh*** ***Ped***

Roadway, Vehicle and Pedestrian Factors			**Range**			
			Min	**@**	**Max**	**@**
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)
Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)
Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)
Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)
Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***
F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors
Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)
L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)
Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)
Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street	**King Street**	**Date:**	**January 31, 2012**
Side Street	**Hwy 9**	**City:**	**Yorkton, SK**

Parameter	Unit	Value	Parameter	Unit	Value
MainStreet1Lanes	(#)	0	Distance to next signal	(m)	410
MainStreet2Lanes	(#)	1	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	1	Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	3	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	2	Metro Area Population	(#)	18,000
MainStreetSpeedLimit	(km/h)	50	Side Street Bus Route	(y/n)	y
MainStreetTrucks/Buses	(%)	3.0%	Side Street Trucks	(%)	14.0%
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	y
			Central Business District	(y/n)	n

Vm =	**111**	(MainSt Vol Total)	Cs =	**0.978**	(Int SpacingFactor)
Vs =	**391**	(SideSt Vol Highest)	Cmt =	**1.000**	(MainStTruckFactor)
Pc =	**0**	Peds Crossing Main	Cv =	**1.000**	(SpeedFactor)
K1 =	**1,100**	veh/veh const	Cp =	**1.100**	(PopDemoFactor)
K2 =	**2,000**	veh/ped const	Csb =	**1.050**	(SideStBusFactor)
L =	**2.0**	TotalMainStLanes	Cst =	**1.050**	(SideStTruckFactor)
F =	**1.000**	(PedDemoFactor)	Vmx =	**111**	(MainStHighest)
Vm1 =	**111**	(MainStVeh-Veh#)	Vm2 =	**111**	(MainStVeh-Ped#)
Cvp =	**1.075**	(product of Cs,Cmt,Cv,Cp)	Cbt =	**1.050**	(maximum of Csb,Cst)
Ct1 =	**0.667**	T Int / one way Factor			

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00	0	0	0	62	0	9	0	198	87	21	259	0	0	0
8:00 - 9:00	0	0	0	90	0	10	0	236	111	38	318	0	0	0
11:00 - 12:00	0	0	0	83	0	16	0	218	105	7	222	0	1	1
12:00 - 13:00	0	0	0	100	0	19	0	334	130	17	300	0	0	0
16:00 - 17:00	0	0	0	111	0	19	0	339	117	23	268	0	0	0
17:00 - 18:00	0	0	0	94	0	55	0	343	129	64	373	0	0	0
Average	0	0	0	90	0	21	0	278	113	28	290	0	0	0

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**

SS1TOT 391

Ped1Cr 0 | SS1RT 113 | SS1TH 278 | SS1LT 0

MS1RT 0
MS1TH 0 | MS1TOT 0
MS1LT 0

MS2LT 90
MS2TOT 111 | MS2TH 0
MS2RT 21

SS2LT 28 | SS2TH 290 | SS2RT 0 | Ped 2Cr 0

SS2TOT 318

W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 30 | **30** *Veh* | **0** *Ped*

NOT Warranted

Roadway, Vehicle and Pedestrian Factors			**Range** Min	@	Max	@
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street		**King Street**				**Date:**	**January 31, 2012**
Side Street		**Melville Avenue/Gladstone Avenue**				**City:**	**Yorkton, SK**

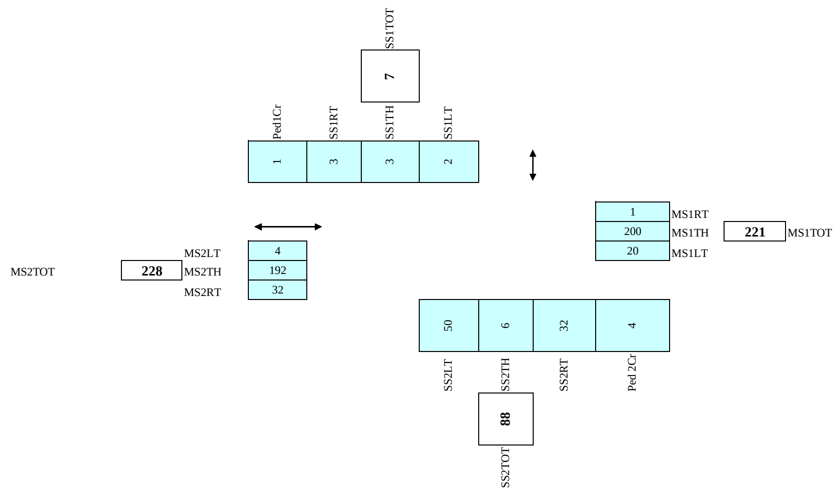
MainStreet1Lanes	(#)	1	Distance to next signal	(m)	800
MainStreet2Lanes	(#)	1	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	0	Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	1	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	1	Metro Area Population	(#)	18,000
MainStreetSpeedLimit	(km/h)	50	Side Street Bus Route	(y/n)	n
MainStreetTrucks/Buses	(%)	2.0%	Side Street Trucks	(%)	5.0%
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	n
			Central Business District	(y/n)	n

Vm =	**449**	(MainSt Vol Total)	Cs =	**1.031**	(Int SpacingFactor)
Vs =	**88**	(SideSt Vol Highest)	Cmt =	**1.000**	(MainStTruckFactor)
Pc =	**4**	Peds Crossing Main	Cv =	**1.000**	(SpeedFactor)
K1 =	**1,100**	veh/veh const	Cp =	**1.100**	(PopDemoFactor)
K2 =	**2,000**	veh/ped const	Csb =	**1.000**	(SideStBusFactor)
L =	**2.0**	TotalMainStLanes	Cst =	**1.000**	(SideStTruckFactor)
F =	**1.000**	(PedDemoFactor)	Vmx =	**228**	(MainStHighest)
Vm1 =	**449**	(MainStVeh-Veh#)	Vm2 =	**449**	(MainStVeh-Ped#)
Cvp =	**1.134**	(product of Cs,Cmt,Cv,Cp)	Cbt =	**1.000**	(maximum of Csb,Cst)
Ct1 =	**1.000**	T Int / one way Factor			

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00	7	131	3	1	138	10	3	2	0	57	4	27	2	0
8:00 - 9:00	30	189	0	4	185	58	1	4	3	124	12	68	1	8
11:00 - 12:00	10	150	1	2	142	17	1	2	3	20	5	11	0	1
12:00 - 13:00	21	233	1	9	243	35	2	2	5	36	7	28	0	3
16:00 - 17:00	29	260	0	6	251	34	0	1	2	43	5	27	0	6
17:00 - 18:00	21	239	2	2	191	38	2	6	4	22	3	28	0	5
Average	20	200	1	4	192	32	2	3	3	50	6	32	1	4

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**



W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 43 **41** **2**

NOT Warranted ***Veh*** ***Ped***

Roadway, Vehicle and Pedestrian Factors			Range			
			Min	**@**	**Max**	**@**
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street	**Queen Street (Hwy 10)**
Side Street	**Allanbrooke Drive**

Date: **January 31, 2012**
City: **Yorkton, SK**

			Distance/Factor		
MainStreet1Lanes	(#)	2	Distance to next signal	(m)	1,600
MainStreet2Lanes	(#)	2	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	0	Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	1	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	0	Metro Area Population	(#)	18,000
MainStreetSpeedLimit	(km/h)	90	Side Street Bus Route	(y/n)	y
MainStreetTrucks/Buses	(%)	11.0%	Side Street Trucks	(%)	4.0%
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	y
			Central Business District	(y/n)	n

Vm =	**309**	(MainSt Vol Total)
Vs =	**59**	(SideSt Vol Highest)
Pc =	**1**	Peds Crossing Main
K1 =	**1,400**	veh/veh const
K2 =	**5,000**	veh/ped const
L =	**4.0**	TotalMainStLanes
F =	**1.000**	(PedDemoFactor)
Vm1 =	**309**	(MainStVeh-Veh#)
Cvp =	**1.345**	(product of Cs,Cmt,Cv,Cp)
Ct1 =	**0.667**	T Int / one way Factor

Cs =	**1.049**	(Int SpacingFactor)
Cmt =	**1.060**	(MainStTruckFactor)
Cv =	**1.100**	(SpeedFactor)
Cp =	**1.100**	(PopDemoFactor)
Csb =	**1.050**	(SideStBusFactor)
Cst =	**1.000**	(SideStTruckFactor)
Vmx =	**180**	(MainStHighest)
Vm2 =	**309**	(MainStVeh-Ped#)
Cbt =	**1.050**	(maximum of Csb,Cst)

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00	0	77	31	30	119	0	36	0	15	0	0	0	1	0
8:00 - 9:00	0	92	47	25	122	0	41	0	13	0	0	0	0	0
11:00 - 12:00	0	95	28	8	86	0	37	0	12	0	0	0	0	0
12:00 - 13:00	0	142	58	13	103	0	33	0	17	0	0	0	0	1
16:00 - 17:00	0	184	55	19	126	0	50	0	34	0	0	0	0	2
17:00 - 18:00	0	211	59	16	106	0	41	0	22	0	0	0	0	4
Average	0	134	46	19	110	0	40	0	19	0	0	0	0	1

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**

SS1TOT **59**
Ped1Cr 0 | SS1RT 19 | SS1TH 0 | SS1LT 40
MS1RT 46
MS1TH 134 | **180** MS1TOT
MS1LT 0
MS2LT 19
MS2TOT **129** | MS2TH 110
MS2RT 0
SS2LT 0 | SS2TH 0 | SS2RT 0 | Ped 2Cr 1
SS2TOT **0**

W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 13 — **12** *Veh* — **0** *Ped*

Not Warranted - Vs<75

Roadway, Vehicle and Pedestrian Factors			Range			
			Min	**@**	**Max**	**@**
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)
Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)
Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)
Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)
Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***
F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors
Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)
L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)
Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)
Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street	**Queen Street (Hwy 10)/Highway 16**	**Date:** January 31, 2012
Side Street	**Hwy 9**	**City:** Yorkton, SK

MainStreet1Lanes	(#)	2	Distance to next signal	(m)	1,200
MainStreet2Lanes	(#)	1	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	0	Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	2	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	2	Metro Area Population	(#)	18,000
MainStreetSpeedLimit	(km/h)	90	Side Street Bus Route	(y/n)	n
MainStreetTrucks/Buses	(%)	12.0%	Side Street Trucks	(%)	18.0%
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	n
			Central Business District	(y/n)	n

Vm =	**299**	(MainSt Vol Total)
Vs =	**356**	(SideSt Vol Highest)
Pc =	**1**	Peds Crossing Main
K1 =	**1,400**	veh/veh const
K2 =	**5,000**	veh/ped const
L =	**3.0**	TotalMainStLanes
F =	**1.000**	(PedDemoFactor)
Vm1 =	**299**	(MainStVeh-Veh#)
Cvp =	**1.353**	(product of Cs,Cmt,Cv,Cp)
Ct1 =	**1.000**	T Int / one way Factor

Cs =	**1.045**	(Int SpacingFactor)
Cmt =	**1.070**	(MainStTruckFactor)
Cv =	**1.100**	(SpeedFactor)
Cp =	**1.100**	(PopDemoFactor)
Csb =	**1.000**	(SideStBusFactor)
Cst =	**1.050**	(SideStTruckFactor)
Vmx =	**161**	(MainStHighest)
Vm2 =	**299**	(MainStVeh-Ped#)
Cbt =	**1.050**	(maximum of Csb,Cst)

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00	1	35	119	133	24	10	56	40	81	20	78	1	0	0
8:00 - 9:00	0	29	102	136	9	8	75	63	112	25	94	3	1	1
11:00 - 12:00	6	11	96	102	10	8	93	57	129	11	87	9	0	0
12:00 - 13:00	2	23	113	133	20	14	129	75	194	7	86	5	0	1
16:00 - 17:00	2	19	131	144	28	16	168	109	230	13	95	2	0	0
17:00 - 18:00	3	20	120	120	27	21	158	101	266	7	78	3	0	0
Average	2	23	114	128	20	13	113	74	169	14	86	4	0	0

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**

W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 108 — **108** *Veh* — **0** *Ped*

Warranted

SS1TOT **356**

Ped1Cr	SS1RT	SS1TH	SS1LT
0	169	74	113

114	MS1RT	
23	MS1TH	**139** MS1TOT
2	MS1LT	

	MS2LT	128
MS2TOT **161**	MS2TH	20
	MS2RT	13

SS2LT	SS2TH	SS2RT	Ped 2Cr
14	86	4	0

SS2TOT **104**

Roadway, Vehicle and Pedestrian Factors			Range			
			Min	**@**	**Max**	**@**
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street	**Smith Street**	**Date:** **January 31, 2012**
Side Street	**Dracup Avenue**	**City:** **Yorkton, SK**

Input	Unit	Value	Input	Unit	Value
MainStreet1Lanes	(#)	2	Distance to next signal	(m)	220
MainStreet2Lanes	(#)	2	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	0	Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	1	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	2	Metro Area Population	(#)	18,000
MainStreetSpeedLimit	(km/h)	50	Side Street Bus Route	(y/n)	n
MainStreetTrucks/Buses	(%)	4.0%	Side Street Trucks	(%)	3.0%
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	n
			Central Business District	(y/n)	y

Vm =	**202** (MainSt Vol Total)		Cs =	**1.000** (Int SpacingFactor)
Vs =	**193** (SideSt Vol Highest)		Cmt =	**1.000** (MainStTruckFactor)
Pc =	**4** Peds Crossing Main		Cv =	**1.000** (SpeedFactor)
K1 =	**1,400** veh/veh const		Cp =	**1.100** (PopDemoFactor)
K2 =	**5,000** veh/ped const		Csb =	**1.000** (SideStBusFactor)
L =	**4.0** TotalMainStLanes		Cst =	**1.000** (SideStTruckFactor)
F =	**1.000** (PedDemoFactor)		Vmx =	**174** (MainStHighest)
Vm1 =	**202** (MainStVeh-Veh#)		Vm2 =	**202** (MainStVeh-Ped#)
Cvp =	**1.100** (product of Cs,Cmt,Cv,Cp)		Cbt =	**1.000** (maximum of Csb,Cst)
Ct1 =	**1.000** T Int / one way Factor			

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00	2	28	0	22	46	0	7	90	40	23	45	2	2	0
8:00 - 9:00	7	33	0	46	76	0	6	107	53	58	54	3	1	1
11:00 - 12:00	6	19	0	75	114	0	10	91	33	70	114	6	7	0
12:00 - 13:00	10	21	1	109	152	0	14	147	61	102	160	7	1	1
16:00 - 17:00	4	14	1	85	125	0	21	93	26	94	122	6	2	0
17:00 - 18:00	9	11	1	91	105	0	10	127	20	112	174	4	8	1
Average	6	21	1	71	103	0	11	109	39	77	112	5	4	1

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**

SS1TOT **159**

Ped1Cr 4 | SS1RT 39 | SS1TH 109 | SS1LT 11

1 MS1RT
21 MS1TH **28** MS1TOT
6 MS1LT

MS2LT 71
MS2TOT **174** MS2TH 103
MS2RT 0

SS2LT 77 | SS2TH 112 | SS2RT 5 | Ped 2Cr 1

193 SS2TOT

W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 31   **31** **1**

NOT Warranted   ***Veh*** ***Ped***

Roadway, Vehicle and Pedestrian Factors			Range			
			Min	**@**	**Max**	**@**
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street	**Smith Street**
Side Street	**Myrtle Avenue**

Date: **January 31, 2012**
City: **Yorkton, SK**

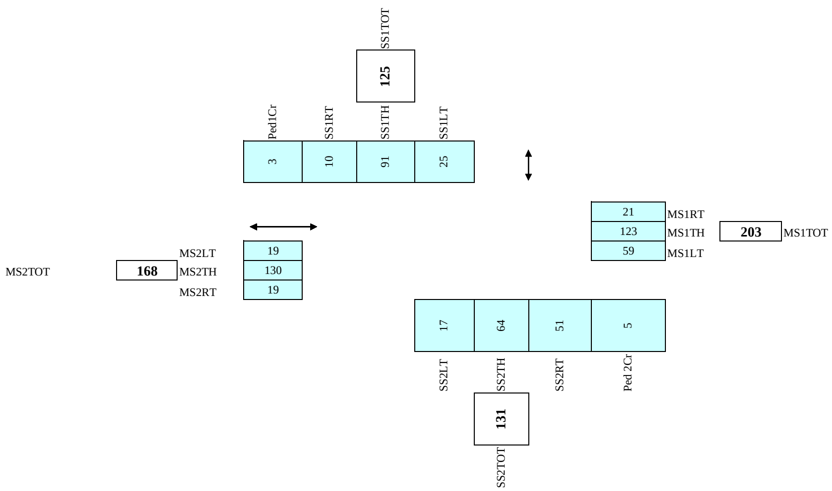
MainStreet1Lanes	(#)	2	Distance to next signal	(m)	190
MainStreet2Lanes	(#)	2	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	0	Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	1	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	1	Metro Area Population	(#)	18,000
MainStreetSpeedLimit	(km/h)	50	Side Street Bus Route	(y/n)	n
MainStreetTrucks/Buses	(%)	3.0%	Side Street Trucks	(%)	4.0%
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	n
			Central Business District	(y/n)	y

Vm =	**371**	(MainSt Vol Total)	Cs =	**1.000**	(Int SpacingFactor)
Vs =	**131**	(SideSt Vol Highest)	Cmt =	**1.000**	(MainStTruckFactor)
Pc =	**8**	Peds Crossing Main	Cv =	**1.000**	(SpeedFactor)
K1 =	**1,400**	veh/veh const	Cp =	**1.100**	(PopDemoFactor)
K2 =	**5,000**	veh/ped const	Csb =	**1.000**	(SideStBusFactor)
L =	**4.0**	TotalMainStLanes	Cst =	**1.000**	(SideStTruckFactor)
F =	**1.000**	(PedDemoFactor)	Vmx =	**203**	(MainStHighest)
Vm1 =	**371**	(MainStVeh-Veh#)	Vm2 =	**371**	(MainStVeh-Ped#)
Cvp =	**1.100**	(product of Cs,Cmt,Cv,Cp)	Cbt =	**1.000**	(maximum of Csb,Cst)
Ct1 =	**1.000**	T Int / one way Factor			

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00	34	50	9	11	93	9	14	66	4	11	42	19	1	0
8:00 - 9:00	50	107	19	19	148	16	21	90	18	18	55	38	2	3
11:00 - 12:00	49	100	29	14	115	20	22	75	8	17	60	67	6	4
12:00 - 13:00	76	156	23	20	158	24	36	111	12	16	63	72	6	7
16:00 - 17:00	74	167	22	23	147	26	33	98	11	14	85	58	3	8
17:00 - 18:00	73	157	24	25	120	19	22	103	8	23	78	51	2	6
Average	59	123	21	19	130	19	25	91	10	17	64	51	3	5

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**



W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 41   **38**   **3**

NOT Warranted   ***Veh***   ***Ped***

Roadway, Vehicle and Pedestrian Factors			Range			
			Min	**@**	**Max**	**@**
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)
Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)
Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)
Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)
Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***
F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors
Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)
L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)
Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)
Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

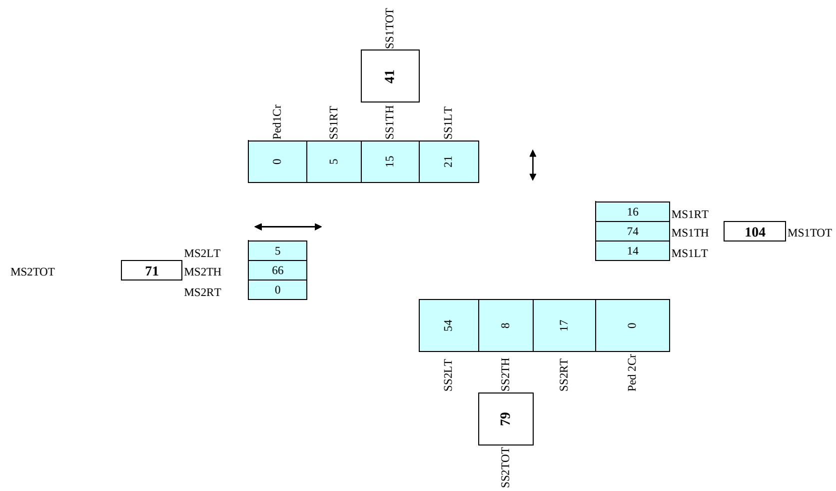
Main Street	**York Road (Hwy 16)**		**Date:**	**January 31, 2012**	
Side Street	**Crescent Avenue**		**City:**	**Yorkton, SK**	

MainStreet1Lanes	(#)	2	Distance to next signal	(m)	3,450	Vm =	**175** (MainSt Vol Total)	Cs =	**1.050** (Int SpacingFactor)
MainStreet2Lanes	(#)	1	Elementary School	(y/n)	n	Vs =	**79** (SideSt Vol Highest)	Cmt =	**1.150** (MainStTruckFactor)
MainStreet LT Lanes	(#)	0	Senior's Complex	(y/n)	n	Pc =	**0** Peds Crossing Main	Cv =	**1.100** (SpeedFactor)
SideStreet1Lanes	(#)	1	Pathway to School	(y/n)	n	K1 =	**1,400** veh/veh const	Cp =	**1.100** (PopDemoFactor)
SideStreet2Lanes	(#)	2	Metro Area Population	(#)	18,000	K2 =	**5,000** veh/ped const	Csb =	**1.000** (SideStBusFactor)
MainStreetSpeedLimit	(km/h)	80	Side Street Bus Route	(y/n)	n	L =	**3.0** TotalMainStLanes	Cst =	**1.050** (SideStTruckFactor)
MainStreetTrucks/Buses	(%)	31.0%	Side Street Trucks	(%)	20.0%	F =	**1.000** (PedDemoFactor)	Vmx =	**104** (MainStHighest)
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	n	Vm1 =	**175** (MainStVeh-Veh#)	Vm2 =	**175** (MainStVeh-Ped#)
			Central Business District	(y/n)	n	Cvp =	**1.461** (product of Cs,Cmt,Cv,Cp)	Cbt =	**1.050** (maximum of Csb,Cst)
						Ct1 =	**1.000** T Int / one way Factor		

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00	10	49	24	7	62	0	16	10	6	50	10	17	0	0
8:00 - 9:00	9	65	19	5	84	0	22	1	5	35	9	19	0	0
11:00 - 12:00	9	71	10	4	62	0	17	12	3	51	5	16	0	0
12:00 - 13:00	21	66	20	0	69	0	17	7	0	48	14	20	0	0
16:00 - 17:00	19	89	16	7	51	0	26	20	7	65	6	14	0	0
17:00 - 18:00	14	106	5	9	67	0	29	38	9	75	6	16	0	0
Average	14	74	16	5	66	0	21	15	5	54	8	17	0	0

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**



W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 15   **15** (*Veh*)   **0** (*Ped*)

NOT Warranted

Roadway, Vehicle and Pedestrian Factors			**Range** Min	@	Max	@
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street	**York Road (Hwy 16)**	**Date: January 31, 2012**
Side Street	**Dracup Avenue**	**City: Yorkton, SK**

MainStreet1Lanes	(#)	2	Distance to next signal	(m)	210
MainStreet2Lanes	(#)	2	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	0	Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	0	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	1	Metro Area Population	(#)	18,000
MainStreetSpeedLimit	(km/h)	50	Side Street Bus Route	(y/n)	y
MainStreetTrucks/Buses	(%)	20.0%	Side Street Trucks	(%)	7.0%
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	y
			Central Business District	(y/n)	n

Vm =	**506**	(MainSt Vol Total)	Cs =	**0.905**	(Int SpacingFactor)
Vs =	**78**	(SideSt Vol Highest)	Cmt =	**1.150**	(MainStTruckFactor)
Pc =	**1**	Peds Crossing Main	Cv =	**1.000**	(SpeedFactor)
K1 =	**1,400**	veh/veh const	Cp =	**1.100**	(PopDemoFactor)
K2 =	**5,000**	veh/ped const	Csb =	**1.050**	(SideStBusFactor)
L =	**4.0**	TotalMainStLanes	Cst =	**1.000**	(SideStTruckFactor)
F =	**1.000**	(PedDemoFactor)	Vmx =	**254**	(MainStHighest)
Vm1 =	**506**	(MainStVeh-Veh#)	Vm2 =	**506**	(MainStVeh-Ped#)
Cvp =	**1.145**	(product of Cs,Cmt,Cv,Cp)	Cbt =	**1.050**	(maximum of Csb,Cst)
Ct1 =	**0.667**	T Int / one way Factor			

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00	16	199	0	0	146	24	0	0	0	20	0	20	0	0
8:00 - 9:00	18	259	0	0	201	19	0	0	0	32	0	27	0	3
11:00 - 12:00	17	226	0	0	219	39	0	0	0	73	0	41	0	0
12:00 - 13:00	27	250	0	0	228	47	0	0	0	61	0	29	1	1
16:00 - 17:00	21	223	0	0	235	53	0	0	0	54	0	36	0	0
17:00 - 18:00	32	234	0	0	254	47	0	0	0	32	0	45	0	2
Average	22	232	0	0	214	38	0	0	0	45	0	33	0	1

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**

W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 23 | **23** | **1**

NOT Warranted | ***Veh*** | ***Ped***

SS1TOT 0

Ped1Cr 0 | SS1RT 0 | SS1TH 0 | SS1LT 0

MS1RT 0
MS1TH 232 | 254 MS1TOT
MS1LT 22

MS2LT 0
MS2TOT 252 | MS2TH 214
MS2RT 38

SS2LT 45 | SS2TH 0 | SS2RT 33 | Ped 2Cr 1

SS2TOT 78

Roadway, Vehicle and Pedestrian Factors			Range Min	@	Max	@
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)
Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)
Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)
Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)
Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***
F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors
Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)
L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)
Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)
Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street		**York Road (Hwy 16)**				**Date:**	**January 31, 2012**		
Side Street		**Gladstone Avenue**				**City:**	**Yorkton, SK**		

MainStreet1Lanes	(#)	2	Distance to next signal	(m)	1,860	Vm = **333** (MainSt Vol Total)	Cs =	**1.050** (Int SpacingFactor)
MainStreet2Lanes	(#)	1	Elementary School	(y/n)	n	Vs = **111** (SideSt Vol Highest)	Cmt =	**1.150** (MainStTruckFactor)
MainStreet LT Lanes	(#)	0	Senior's Complex	(y/n)	n	Pc = **1** Peds Crossing Main	Cv =	**1.000** (SpeedFactor)
SideStreet1Lanes	(#)	1	Pathway to School	(y/n)	n	K1 = **1,400** veh/veh const	Cp =	**1.100** (PopDemoFactor)
SideStreet2Lanes	(#)	2	Metro Area Population	(#)	18,000	K2 = **5,000** veh/ped const	Csb =	**1.050** (SideStBusFactor)
MainStreetSpeedLimit	(km/h)	50	Side Street Bus Route	(y/n)	y	L = **3.0** TotalMainStLanes	Cst =	**1.050** (SideStTruckFactor)
MainStreetTrucks/Buses	(%)	22.0%	Side Street Trucks	(%)	12.0%	F = **1.000** (PedDemoFactor)	Vmx =	**197** (MainStHighest)
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	n	Vm1 = **333** (MainStVeh-Veh#)	Vm2 =	**333** (MainStVeh-Ped#)
			Central Business District	(y/n)	n	Cvp = **1.328** (product of Cs,Cmt,Cv,Cp)	Cbt =	**1.050** (maximum of Csb,Cst)
						Ct1 = **1.000** T Int / one way Factor		

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00	37	83	16	31	75	9	14	19	16	21	31	48	2	0
8:00 - 9:00	132	97	17	13	109	24	14	22	11	12	27	39	0	0
11:00 - 12:00	44	85	11	11	102	8	27	55	12	20	36	44	0	0
12:00 - 13:00	106	112	12	8	110	18	23	55	11	28	40	89	1	0
16:00 - 17:00	86	118	14	14	107	13	18	50	10	24	39	69	1	0
17:00 - 18:00	92	108	13	12	127	24	19	49	12	18	22	56	1	0
Average	83	101	14	15	105	16	19	42	12	21	33	58	1	0

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**

SS1TOT **73**

Ped1Cr	SS1RT	SS1TH	SS1LT
1	12	42	19

14	MS1RT	
101	MS1TH	**197** MS1TOT
83	MS1LT	

	MS2LT	15
MS2TOT **136**	MS2TH	105
	MS2RT	16

SS2LT	SS2TH	SS2RT	Ped 2Cr
21	33	58	0

SS2TOT **111**

W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 37 | **37** *Veh* | **0** *Ped*

NOT Warranted

Roadway, Vehicle and Pedestrian Factors			Range			
			Min	**@**	**Max**	**@**
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Phase 1 Warrants

Canadian Traffic Signal Warrant Analysis

Main Street	**Darlington Street**		**Date:**	**January 31, 2012**
Side Street	**Dracup Avenue**		**City:**	**Yorkton, SK**

MainStreet1Lanes	(#)	2	Distance to next signal	(m)	660	
MainStreet2Lanes	(#)	2	Elementary School	(y/n)	n	
MainStreet LT Lanes	(#)	0	Senior's Complex	(y/n)	n	
SideStreet1Lanes	(#)	1	Pathway to School	(y/n)	n	
SideStreet2Lanes	(#)	2	Metro Area Population	(#)	30,000	
MainStreetSpeedLimit	(km/h)	50	Side Street Bus Route	(y/n)	y	
MainStreetTrucks/Buses	(%)	3.0%	Side Street Trucks	(%)	4.0%	
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	n	
			Central Business District	(y/n)	n	

Vm =	**480**	(MainSt Vol Total)	Cs =	**1.020**	(Int SpacingFactor)
Vs =	**279**	(SideSt Vol Highest)	Cmt =	**1.000**	(MainStTruckFactor)
Pc =	**0**	Peds Crossing Main	Cv =	**1.000**	(SpeedFactor)
K1 =	**1,400**	veh/veh const	Cp =	**1.100**	(PopDemoFactor)
K2 =	**5,000**	veh/ped const	Csb =	**1.050**	(SideStBusFactor)
L =	**4.0**	TotalMainStLanes	Cst =	**1.000**	(SideStTruckFactor)
F =	**1.000**	(PedDemoFactor)	Vmx =	**245**	(MainStHighest)
Vm1 =	**480**	(MainStVeh-Veh#)	Vm2 =	**480**	(MainStVeh-Ped#)
Cvp =	**1.121**	(product of Cs,Cmt,Cv,Cp)	Cbt =	**1.050**	(maximum of Csb,Cst)
Ct1 =	**1.000**	T Int / one way Factor			

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00														
8:00 - 9:00														
11:00 - 12:00														
12:00 - 13:00														
16:00 - 17:00														
17:00 - 18:00	27	196	12	21	169	55	17	192	30	59	131	89	0	0
Average	27	196	12	21	169	55	17	192	30	59	131	89	0	0

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**

W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 113   **113** *Veh*   **0** *Ped*

Warranted

SS1TOT **239**

Ped1Cr	SS1RT	SS1TH	SS1LT
0	30	192	17

MS1RT	12
MS1TH	196
MS1LT	27

MS1TOT **235**

MS2LT	21
MS2TH	169
MS2RT	55

MS2TOT **245**

SS2LT	SS2TH	SS2RT	Ped 2Cr
59	131	89	0

SS2TOT **279**

Roadway, Vehicle and Pedestrian Factors			Range Min	@	Max	@
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street		**Darlington Street**			**Date:**	**January 31, 2012**		
Side Street		**Mayhew Avenue**			**City:**	**Yorkton, SK**		

MainStreet1Lanes	(#)	1	Distance to next signal	(m)	620	Vm =	**401** (MainSt Vol Total)		Cs =	**1.015** (Int SpacingFactor)	
MainStreet2Lanes	(#)	2	Elementary School	(y/n)	n	Vs =	**314** (SideSt Vol Highest)		Cmt =	**1.080** (MainStTruckFactor)	
MainStreet LT Lanes	(#)	0	Senior's Complex	(y/n)	n	Pc =	**14** Peds Crossing Main		Cv =	**1.000** (SpeedFactor)	
SideStreet1Lanes	(#)	1	Pathway to School	(y/n)	n	K1 =	**1,400** veh/veh const		Cp =	**1.100** (PopDemoFactor)	
SideStreet2Lanes	(#)	1	Metro Area Population	(#)	20,000	K2 =	**5,000** veh/ped const		Csb =	**1.050** (SideStBusFactor)	
MainStreetSpeedLimit	(km/h)	50	Side Street Bus Route	(y/n)	y	L =	**3.0** TotalMainStLanes		Cst =	**1.050** (SideStTruckFactor)	
MainStreetTrucks/Buses	(%)	13.0%	Side Street Trucks	(%)	12.0%	F =	**1.000** (PedDemoFactor)		Vmx =	**222** (MainStHighest)	
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	n	Vm1 =	**401** (MainStVeh-Veh#)		Vm2 =	**401** (MainStVeh-Ped#)	
			Central Business District	(y/n)	n	Cvp =	**1.206** (product of Cs,Cmt,Cv,Cp)		Cbt =	**1.050** (maximum of Csb,Cst)	
						Ct1 =	**1.000** T Int / one way Factor				

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00													3	5
8:00 - 9:00													1	16
11:00 - 12:00													2	5
12:00 - 13:00													0	14
16:00 - 17:00													8	6
17:00 - 18:00	61	110	8	48	127	47	17	83	33	74	133	107	8	18
Average	61	110	8	48	127	47	17	83	33	74	133	107	4	11

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**

SS1TOT 133

Ped1Cr 4 | SS1RT 33 | SS1TH 83 | SS1LT 17

MS1RT 8
MS1TH 110 — 179 MS1TOT
MS1LT 61

MS2LT 48
MS2TOT 222 — MS2TH 127
MS2RT 47

SS2LT 74 | SS2TH 133 | SS2RT 107 | Ped 2Cr 11

SS2TOT 314

W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 118 | **114** *Veh* | **4** *Ped*

Warranted

Roadway, Vehicle and Pedestrian Factors			Range			
			Min	**@**	**Max**	**@**
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street	**York Road (Hwy 16)**
Side Street	**Gladstone Avenue**

Date: **January 31, 2012**
City: **Yorkton, SK**

MainStreet1Lanes	(#)	2	Distance to next signal	(m)	1,860
MainStreet2Lanes	(#)	1	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	0	Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	1	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	2	Metro Area Population	(#)	25,000
MainStreetSpeedLimit	(km/h)	50	Side Street Bus Route	(y/n)	y
MainStreetTrucks/Buses	(%)	22.0%	Side Street Trucks	(%)	12.0%
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	n
			Central Business District	(y/n)	n

Vm =	**585** (MainSt Vol Total)	Cs =	**1.050** (Int SpacingFactor)
Vs =	**174** (SideSt Vol Highest)	Cmt =	**1.150** (MainStTruckFactor)
Pc =	**0** Peds Crossing Main	Cv =	**1.000** (SpeedFactor)
K1 =	**1,400** veh/veh const	Cp =	**1.100** (PopDemoFactor)
K2 =	**5,000** veh/ped const	Csb =	**1.050** (SideStBusFactor)
L =	**3.0** TotalMainStLanes	Cst =	**1.050** (SideStTruckFactor)
F =	**1.000** (PedDemoFactor)	Vmx =	**363** (MainStHighest)
Vm1 =	**585** (MainStVeh-Veh#)	Vm2 =	**585** (MainStVeh-Ped#)
Cvp =	**1.328** (product of Cs,Cmt,Cv,Cp)	Cbt =	**1.050** (maximum of Csb,Cst)
Ct1 =	**1.000** T Int / one way Factor		

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00														
8:00 - 9:00														
11:00 - 12:00														
12:00 - 13:00														
16:00 - 17:00														
17:00 - 18:00	112	226	25	20	164	38	33	78	63	56	35	72	0	0
Average	112	226	25	20	164	38	33	78	63	56	35	72	0	0

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**

W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 101 | **101** *Veh* | **0** *Ped*

Warranted

SS1TOT **174**

Ped1Cr	SS1RT	SS1TH	SS1LT
0	63	78	33

MS1RT	25
MS1TH	226
MS1LT	112

MS1TOT **363**

MS2LT	20
MS2TH	164
MS2RT	38

MS2TOT **222**

SS2LT	SS2TH	SS2RT	Ped 2Cr
56	35	72	0

SS2TOT **163**

Roadway, Vehicle and Pedestrian Factors			Range: Min	@	Max	@
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Phase 2 Warrants

Canadian Traffic Signal Warrant Analysis

Main Street	**Queen Street (Hwy 10)**			**Date:**	**January 31, 2012**	
Side Street	**Allanbrooke Drive**			**City:**	**Yorkton, SK**	

MainStreet1Lanes	(#)	2	Distance to next signal	(m)	1,600
MainStreet2Lanes	(#)	2	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	0	Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	1	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	0	Metro Area Population	(#)	29,000
MainStreetSpeedLimit	(km/h)	90	Side Street Bus Route	(y/n)	y
MainStreetTrucks/Buses	(%)	11.0%	Side Street Trucks	(%)	4.0%
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	n
			Central Business District	(y/n)	n

Vm =	**899**	(MainSt Vol Total)	Cs =	**1.049**	(Int SpacingFactor)
Vs =	**113**	(SideSt Vol Highest)	Cmt =	**1.060**	(MainStTruckFactor)
Pc =	**0**	Peds Crossing Main	Cv =	**1.100**	(SpeedFactor)
K1 =	**1,400**	veh/veh const	Cp =	**1.100**	(PopDemoFactor)
K2 =	**5,000**	veh/ped const	Csb =	**1.050**	(SideStBusFactor)
L =	**4.0**	TotalMainStLanes	Cst =	**1.000**	(SideStTruckFactor)
F =	**1.000**	(PedDemoFactor)	Vmx =	**631**	(MainStHighest)
Vm1 =	**899**	(MainStVeh-Veh#)	Vm2 =	**899**	(MainStVeh-Ped#)
Cvp =	**1.345**	(product of Cs,Cmt,Cv,Cp)	Cbt =	**1.050**	(maximum of Csb,Cst)
Ct1 =	**1.000**	T Int / one way Factor			

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00														
8:00 - 9:00														
11:00 - 12:00														
12:00 - 13:00														
16:00 - 17:00														
17:00 - 18:00	175	397	59	32	214	22	48	22	41	11	11	91	0	0
Average	175	397	59	32	214	22	48	22	41	11	11	91	0	0

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**

W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 102 | **102** | **0**

Warranted | ***Veh*** | ***Ped***

SS1TOT **111**

Ped1Cr	SS1RT	SS1TH	SS1LT
0	41	22	48

59	MS1RT	
397	MS1TH	**631** MS1TOT
175	MS1LT	

	MS2LT	32	
MS2TOT **268**	MS2TH	214	
	MS2RT	22	

SS2LT	SS2TH	SS2RT	Ped 2Cr
11	11	91	0

SS2TOT **113**

Roadway, Vehicle and Pedestrian Factors			Range			
			Min	**@**	**Max**	**@**
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street	**Smith Street**	**Date:** **January 31, 2012**
Side Street	**Myrtle Avenue**	**City:** **Yorkton, SK**

MainStreet1Lanes	(#)	2	Distance to next signal	(m)	190
MainStreet2Lanes	(#)	2	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	0	Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	1	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	1	Metro Area Population	(#)	30,000
MainStreetSpeedLimit	(km/h)	50	Side Street Bus Route	(y/n)	n
MainStreetTrucks/Buses	(%)	3.0%	Side Street Trucks	(%)	4.0%
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	n
			Central Business District	(y/n)	y

Vm =	**671** (MainSt Vol Total)	Cs =	**1.000** (Int SpacingFactor)
Vs =	**154** (SideSt Vol Highest)	Cmt =	**1.000** (MainStTruckFactor)
Pc =	**8** Peds Crossing Main	Cv =	**1.000** (SpeedFactor)
K1 =	**1,400** veh/veh const	Cp =	**1.100** (PopDemoFactor)
K2 =	**5,000** veh/ped const	Csb =	**1.000** (SideStBusFactor)
L =	**4.0** TotalMainStLanes	Cst =	**1.000** (SideStTruckFactor)
F =	**1.000** (PedDemoFactor)	Vmx =	**376** (MainStHighest)
Vm1 =	**671** (MainStVeh-Veh#)	Vm2 =	**671** (MainStVeh-Ped#)
Cvp =	**1.100** (product of Cs,Cmt,Cv,Cp)	Cbt =	**1.000** (maximum of Csb,Cst)
Ct1 =	**1.000** T Int / one way Factor		

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00													1	0
8:00 - 9:00													2	3
11:00 - 12:00													6	4
12:00 - 13:00													6	7
16:00 - 17:00													3	8
17:00 - 18:00	94	260	22	24	245	26	34	96	10	20	83	51	2	6
Average	94	260	22	24	245	26	34	96	10	20	83	51	3	5

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**

W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 86   **81** *Veh*   **5** *Ped*

NOT Warranted

SS1TOT **140**

Ped1Cr	SS1RT	SS1TH	SS1LT
3	10	96	34

22	MS1RT	
260	MS1TH	**376** MS1TOT
94	MS1LT	

	MS2LT	24
MS2TOT **295**	MS2TH	245
	MS2RT	26

SS2LT	SS2TH	SS2RT	Ped 2Cr
20	83	51	5

SS2TOT **154**

Roadway, Vehicle and Pedestrian Factors			**Range** Min	@	Max	@
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street	**York Road (Hwy 16)**		**Date:**	**January 31, 2012**
Side Street	**Sully Avenue**		**City:**	**Yorkton, SK**

Input	Unit	Value	Input	Unit	Value
MainStreet1Lanes	(#)	2	Distance to next signal	(m)	3,450
MainStreet2Lanes	(#)	1	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	0	Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	1	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	2	Metro Area Population	(#)	29,000
MainStreetSpeedLimit	(km/h)	80	Side Street Bus Route	(y/n)	n
MainStreetTrucks/Buses	(%)	31.0%	Side Street Trucks	(%)	20.0%
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	n
			Central Business District	(y/n)	n

Vm =	**521**	(MainSt Vol Total)	Cs =	**1.050**	(Int SpacingFactor)
Vs =	**369**	(SideSt Vol Highest)	Cmt =	**1.150**	(MainStTruckFactor)
Pc =	**0**	Peds Crossing Main	Cv =	**1.100**	(SpeedFactor)
K1 =	**1,400**	veh/veh const	Cp =	**1.100**	(PopDemoFactor)
K2 =	**5,000**	veh/ped const	Csb =	**1.000**	(SideStBusFactor)
L =	**3.0**	TotalMainStLanes	Cst =	**1.050**	(SideStTruckFactor)
F =	**1.000**	(PedDemoFactor)	Vmx =	**316**	(MainStHighest)
Vm1 =	**521**	(MainStVeh-Veh#)	Vm2 =	**521**	(MainStVeh-Ped#)
Cvp =	**1.461**	(product of Cs,Cmt,Cv,Cp)	Cbt =	**1.050**	(maximum of Csb,Cst)
Ct1 =	**1.000**	T Int / one way Factor			

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00													0	0
8:00 - 9:00													0	0
11:00 - 12:00													0	0
12:00 - 13:00													0	0
16:00 - 17:00													0	0
17:00 - 18:00	14	256	46	37	167	1	75	33	54	184	142	43	0	0
Average	14	256	46	37	167	1	75	33	54	184	142	43	0	0

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**

W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 211 — **211** (*Veh*) **0** (*Ped*)

Warranted

SS1TOT **162**

Ped1Cr 0 | SS1RT 54 | SS1TH 33 | SS1LT 75

MS1RT 46 | MS1TH 256 | MS1LT 14 — MS1TOT **316**

MS2TOT **205** — MS2LT 37 | MS2TH 167 | MS2RT 1

SS2LT 184 | SS2TH 142 | SS2RT 43 | Ped 2Cr 0

SS2TOT **369**

Roadway, Vehicle and Pedestrian Factors			Range			
			Min	@	Max	@
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Phase 3 Warrants

Canadian Traffic Signal Warrant Analysis

Main Street	**Broadway Street**	**Date:** January 31, 2012
Side Street	**Bradbrooke Avenue**	**City:** Yorkton, SK

MainStreet1Lanes	(#)	2	Distance to next signal	(m)	200	Vm =	**1,262** (MainSt Vol Total)	Cs =	**0.900** (Int SpacingFactor)
MainStreet2Lanes	(#)	2	Elementary School	(y/n)	n	Vs =	**80** (SideSt Vol Highest)	Cmt =	**1.000** (MainStTruckFactor)
MainStreet LT Lanes	(#)	2	Senior's Complex	(y/n)	n	Pc =	**9** Peds Crossing Main	Cv =	**1.000** (SpeedFactor)
SideStreet1Lanes	(#)	1	Pathway to School	(y/n)	n	K1 =	**1,400** veh/veh const	Cp =	**1.100** (PopDemoFactor)
SideStreet2Lanes	(#)	2	Metro Area Population	(#)	18,000	K2 =	**5,000** veh/ped const	Csb =	**1.000** (SideStBusFactor)
MainStreetSpeedLimit	(km/h)	50	Side Street Bus Route	(y/n)	n	L =	**6.0** TotalMainStLanes	Cst =	**1.000** (SideStTruckFactor)
MainStreetTrucks/Buses	(%)	5.0%	Side Street Trucks	(%)	3.0%	F =	**1.000** (PedDemoFactor)	Vmx =	**667** (MainStHighest)
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	n	Vm1 =	**1,262** (MainStVeh-Veh#)	Vm2 =	**1,262** (MainStVeh-Ped#)
			Central Business District	(y/n)	n	Cvp =	**0.990** (product of Cs,Cmt,Cv,Cp)	Cbt =	**1.000** (maximum of Csb,Cst)
						Ct1 =	**1.000** T Int / one way Factor		

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00														
8:00 - 9:00														
11:00 - 12:00														
12:00 - 13:00														
16:00 - 17:00														
17:00 - 18:00	55	610	2	5	573	17	19	10	20	7	3	70	7	2
Average	55	610	2	5	573	17	19	10	20	7	3	70	7	2

****** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day***

****** Enter the peak pedestrian volume crossing the main street averaged over the same hours***

W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 85 — **71** *Veh* — **13** *Ped*

NOT Warranted

SS1TOT **49**

Ped1Cr 7 | SS1RT 20 | SS1TH 10 | SS1LT 19

MS1RT 2 | MS1TH 610 | MS1LT 55 | MS1TOT **667**

MS2TOT **595** | MS2LT 5 | MS2TH 573 | MS2RT 17

SS2LT 7 | SS2TH 3 | SS2RT 70 | Ped 2Cr 2

SS2TOT **80**

Roadway, Vehicle and Pedestrian Factors			Range			
			Min	**@**	**Max**	**@**
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street	**Broadway Street**	**Date:** **January 31, 2012**
Side Street	**Highway 10**	**City:** **Yorkton, SK**

MainStreet1Lanes	(#)	2	Distance to next signal	(m)	370
MainStreet2Lanes	(#)	3	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	1	Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	0	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	2	Metro Area Population	(#)	30,000
MainStreetSpeedLimit	(km/h)	50	Side Street Bus Route	(y/n)	n
MainStreetTrucks/Buses	(%)	7.0%	Side Street Trucks	(%)	8.0%
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	y
			Central Business District	(y/n)	n

Vm =	**646**	(MainSt Vol Total)	Cs =	**0.967**	(Int SpacingFactor)
Vs =	**174**	(SideSt Vol Highest)	Cmt =	**1.020**	(MainStTruckFactor)
Pc =	**1**	Peds Crossing Main	Cv =	**1.000**	(SpeedFactor)
K1 =	**1,400**	veh/veh const	Cp =	**1.100**	(PopDemoFactor)
K2 =	**5,000**	veh/ped const	Csb =	**1.000**	(SideStBusFactor)
L =	**6.0**	TotalMainStLanes	Cst =	**1.000**	(SideStTruckFactor)
F =	**1.000**	(PedDemoFactor)	Vmx =	**420**	(MainStHighest)
Vm1 =	**646**	(MainStVeh-Veh#)	Vm2 =	**646**	(MainStVeh-Ped#)
Cvp =	**1.085**	(product of Cs,Cmt,Cv,Cp)	Cbt =	**1.000**	(maximum of Csb,Cst)
Ct1 =	**0.667**	T Int / one way Factor			

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00														
8:00 - 9:00														
11:00 - 12:00														
12:00 - 13:00														
16:00 - 17:00														
17:00 - 18:00	184	236	0	0	135	91	0	0	0	59	1	114	1	0
Average	184	236	0	0	135	91	0	0	0	59	1	114	1	0

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**

SS1TOT: **0**

Ped1Cr	SS1RT	SS1TH	SS1LT
1	0	0	0

0	MS1RT	
236	MS1TH	**420** MS1TOT
184	MS1LT	

	MS2LT	0
MS2TOT **226**	MS2TH	135
	MS2RT	91

SS2LT	SS2TH	SS2RT	Ped 2Cr
59	1	114	0

SS2TOT: **174**

W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 59   **58** *Veh*   **1** *Ped*

NOT Warranted

Roadway, Vehicle and Pedestrian Factors			Range			
			Min	**@**	**Max**	**@**
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street		**Darlington Street**				**Date:**	**January 31, 2012**
Side Street		**Gladstone Avenue**				**City:**	**Yorkton, SK**

MainStreet1Lanes	(#)	1	←	Distance to next signal	(m)	260
MainStreet2Lanes	(#)	0	→	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	0		Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	2	↓	Pathway to School	(y/n)	y
SideStreet2Lanes	(#)	2	↑	Metro Area Population	(#)	30
MainStreetSpeedLimit	(km/h)	40		Side Street Bus Route	(y/n)	y
MainStreetTrucks/Buses	(%)	3.0%		Side Street Trucks	(%)	7.0%
Refuge Width on Median	(m)	0.0		T or 1-Way Intersection	(y/n)	y
				Central Business District	(y/n)	n

Vm =	**103** (MainSt Vol Total)	Cs =	**0.928** (Int SpacingFactor)
Vs =	**270** (SideSt Vol Highest)	Cmt =	**1.000** (MainStTruckFactor)
Pc =	**17** Peds Crossing Main	Cv =	**1.000** (SpeedFactor)
K1 =	**1,100** veh/veh const	Cp =	**1.200** (PopDemoFactor)
K2 =	**2,000** veh/ped const	Csb =	**1.050** (SideStBusFactor)
L =	**1.0** TotalMainStLanes	Cst =	**1.000** (SideStTruckFactor)
F =	**1.100** (PedDemoFactor)	Vmx =	**103** (MainStHighest)
Vm1 =	**103** (MainStVeh-Veh#)	Vm2 =	**103** (MainStVeh-Ped#)
Cvp =	**1.114** (product of Cs,Cmt,Cv,Cp)	Cbt =	**1.050** (maximum of Csb,Cst)
Ct1 =	**0.667** T Int / one way Factor		

	← MS1LT	MS1TH	MS1RT	→ MS2LT	MS2TH	MS2RT	↓ SS1LT	SS1TH	SS1RT	↑ SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00													1	3
8:00 - 9:00													28	2
11:00 - 12:00													3	3
12:00 - 13:00													8	36
16:00 - 17:00													3	9
17:00 - 18:00	86	3	14	0	0	0	23	190	0	6	154	110	4	4
Average	86	3	14	0	0	0	23	190	0	6	154	110	8	10

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**

SS1TOT **213**

Ped1Cr	SS1RT	SS1TH	SS1LT
8	0	190	23

MS1RT	14
MS1TH	3
MS1LT	86

MS1TOT **103**

MS2LT	0
MS2TH	0
MS2RT	0

MS2TOT **0**

SS2LT	SS2TH	SS2RT	Ped 2Cr
6	154	110	10

SS2TOT **270**

W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 21   **20** *Veh*   **1** *Ped*

NOT Warranted

Roadway, Vehicle and Pedestrian Factors			Range Min	@	Max	@
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street		**King Street**				**Date:**	**January 31, 2012**
Side Street		**Hwy 9**				**City:**	**Yorkton, SK**

MainStreet1Lanes	(#)	0	←	Distance to next signal	(m)	410
MainStreet2Lanes	(#)	1	→	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	1		Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	3	↓	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	2	↑	Metro Area Population	(#)	35,000
MainStreetSpeedLimit	(km/h)	50		Side Street Bus Route	(y/n)	y
MainStreetTrucks/Buses	(%)	3.0%		Side Street Trucks	(%)	14.0%
Refuge Width on Median	(m)	0.0		T or 1-Way Intersection	(y/n)	n
				Central Business District	(y/n)	n

Vm =	**1,197**	(MainSt Vol Total)	Cs =	**0.978**	(Int SpacingFactor)
Vs =	**149**	(SideSt Vol Highest)	Cmt =	**1.000**	(MainStTruckFactor)
Pc =	**0**	Peds Crossing Main	Cv =	**1.000**	(SpeedFactor)
K1 =	**1,100**	veh/veh const	Cp =	**1.100**	(PopDemoFactor)
K2 =	**2,000**	veh/ped const	Csb =	**1.050**	(SideStBusFactor)
L =	**2.0**	TotalMainStLanes	Cst =	**1.050**	(SideStTruckFactor)
F =	**1.000**	(PedDemoFactor)	Vmx =	**632**	(MainStHighest)
Vm1 =	**1,197**	(MainStVeh-Veh#)	Vm2 =	**1,197**	(MainStVeh-Ped#)
Cvp =	**1.075**	(product of Cs,Cmt,Cv,Cp)	Cbt =	**1.050**	(maximum of Csb,Cst)
Ct1 =	**1.000**	T Int / one way Factor			

	← MS1LT	MS1TH	MS1RT	→ MS2LT	MS2TH	MS2RT	↓ SS1LT	SS1TH	SS1RT	↑ SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00														
8:00 - 9:00														
11:00 - 12:00														
12:00 - 13:00														
16:00 - 17:00														
17:00 - 18:00	64	556	12	5	425	135	94	0	55	43	0	40	0	0
Average	64	556	12	5	425	135	94	0	55	43	0	40	0	0

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**

W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 183 | **183** | **0**

Warranted | ***Veh*** | ***Ped***

SS1TOT **149**

Ped1Cr	SS1RT	SS1TH	SS1LT
0	55	0	94

12	MS1RT
556	MS1TH
64	MS1LT

632 MS1TOT

MS2LT	5
MS2TH	425
MS2RT	135

MS2TOT **565**

SS2LT	SS2TH	SS2RT	Ped 2Cr
43	0	40	0

83 SS2TOT

Roadway, Vehicle and Pedestrian Factors			**Range Min**	**@**	**Max**	**@**
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street	**Queen Street**
Side Street	**800m E of Gladstone Avenue**

Date: **January 31, 2012**
City: **Yorkton, SK**

Input	Unit	Value
MainStreet1Lanes	(#)	1
MainStreet2Lanes	(#)	0
MainStreet LT Lanes	(#)	0
SideStreet1Lanes	(#)	1
SideStreet2Lanes	(#)	1
MainStreetSpeedLimit	(km/h)	40
MainStreetTrucks/Buses	(%)	3.0%
Refuge Width on Median	(m)	0.0

Input	Unit	Value
Distance to next signal	(m)	800
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	y
Metro Area Population	(#)	30,000
Side Street Bus Route	(y/n)	y
Side Street Trucks	(%)	7.0%
T or 1-Way Intersection	(y/n)	y
Central Business District	(y/n)	n

Vm =	**1,153**	(MainSt Vol Total)
Vs =	**123**	(SideSt Vol Highest)
Pc =	**17**	Peds Crossing Main
K1 =	**1,100**	veh/veh const
K2 =	**2,000**	veh/ped const
L =	**1.0**	TotalMainStLanes
F =	**1.100**	(PedDemoFactor)
Vm1 =	**1,153**	(MainStVeh-Veh#)
Cvp =	**1.134**	(product of Cs,Cmt,Cv,Cp)
Ct1 =	**0.667**	T Int / one way Factor

Cs =	**1.031**	(Int SpacingFactor)
Cmt =	**1.000**	(MainStTruckFactor)
Cv =	**1.000**	(SpeedFactor)
Cp =	**1.100**	(PopDemoFactor)
Csb =	**1.050**	(SideStBusFactor)
Cst =	**1.000**	(SideStTruckFactor)
Vmx =	**842**	(MainStHighest)
Vm2 =	**1,153**	(MainStVeh-Ped#)
Cbt =	**1.050**	(maximum of Csb,Cst)

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00													1	3
8:00 - 9:00													28	2
11:00 - 12:00													3	3
12:00 - 13:00													8	36
16:00 - 17:00													3	9
17:00 - 18:00	239	603	0	0	311	0	0	0	0	0	0	123	4	4
Average	239	603	0	0	311	0	0	0	0	0	0	123	8	10

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**

W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W =	**115**	**102**	**12**
	Warranted	***Veh***	***Ped***

SS1TOT	0
Ped1Cr	8
SS1RT	0
SS1TH	0
SS1LT	0
MS1RT	0
MS1TH	603
MS1LT	239
MS1TOT	842
MS2LT	0
MS2TH	311
MS2RT	0
MS2TOT	311
SS2LT	0
SS2TH	0
SS2RT	123
Ped 2Cr	10
SS2TOT	123

Roadway, Vehicle and Pedestrian Factors			Range			
			Min	**@**	**Max**	**@**
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street	**Queen Street**			**Date:**	**January 31, 2012**		
Side Street	**Gladstone Avenue**			**City:**	**Yorkton, SK**		

MainStreet1Lanes	(#)	1	Distance to next signal	(m)	400
MainStreet2Lanes	(#)	1	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	0	Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	1	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	1	Metro Area Population	(#)	30,000
MainStreetSpeedLimit	(km/h)	60	Side Street Bus Route	(y/n)	n
MainStreetTrucks/Buses	(%)	4.0%	Side Street Trucks	(%)	3.0%
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	n
			Central Business District	(y/n)	n

Vm =	**718** (MainSt Vol Total)		Cs =	**0.975** (Int SpacingFactor)
Vs =	**111** (SideSt Vol Highest)		Cmt =	**1.000** (MainStTruckFactor)
Pc =	**4** Peds Crossing Main		Cv =	**1.000** (SpeedFactor)
K1 =	**1,100** veh/veh const		Cp =	**1.100** (PopDemoFactor)
K2 =	**2,000** veh/ped const		Csb =	**1.000** (SideStBusFactor)
L =	**2.0** TotalMainStLanes		Cst =	**1.000** (SideStTruckFactor)
F =	**1.000** (PedDemoFactor)		Vmx =	**507** (MainStHighest)
Vm1 =	**718** (MainStVeh-Veh#)		Vm2 =	**718** (MainStVeh-Ped#)
Cvp =	**1.073** (product of Cs,Cmt,Cv,Cp)		Cbt =	**1.000** (maximum of Csb,Cst)
Ct1 =	**1.000** T Int / one way Factor			

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00													2	0
8:00 - 9:00													1	1
11:00 - 12:00													7	0
12:00 - 13:00													1	1
16:00 - 17:00													2	0
17:00 - 18:00	13	174	24	171	336	0	12	12	87	0	24	7	8	1
Average	13	174	24	171	336	0	12	12	87	0	24	7	4	1

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**

SS1TOT **111**

Ped1Cr 4 | SS1RT 87 | SS1TH 12 | SS1LT 12

MS1RT 24
MS1TH 174 | **211** MS1TOT
MS1LT 13

MS2LT 171
MS2TOT **507** | MS2TH 336
MS2RT 0

SS2LT 0 | SS2TH 24 | SS2RT 7 | Ped 2Cr 1

31 SS2TOT

W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 81   **78**   **3**

NOT Warranted   ***Veh***   ***Ped***

Roadway, Vehicle and Pedestrian Factors			Range			
			Min	**@**	**Max**	**@**
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street		**Queen Street**				**Date:**	**January 31, 2012**
Side Street		**Rosefield Drive**				**City:**	**Yorkton, SK**

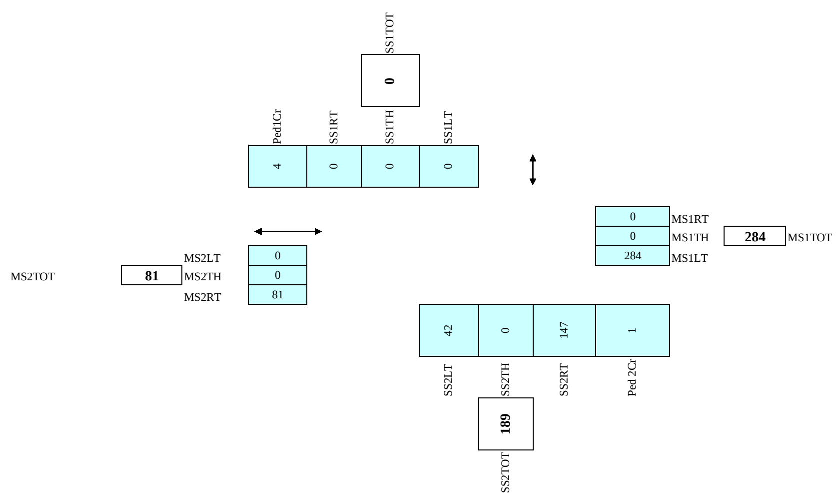
MainStreet1Lanes	(#)	1	←	Distance to next signal	(m)	400
MainStreet2Lanes	(#)	1	→	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	0		Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	1	↓	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	1	↑	Metro Area Population	(#)	30,000
MainStreetSpeedLimit	(km/h)	60		Side Street Bus Route	(y/n)	n
MainStreetTrucks/Buses	(%)	4.0%		Side Street Trucks	(%)	3.0%
Refuge Width on Median	(m)	0.0		T or 1-Way Intersection	(y/n)	n
				Central Business District	(y/n)	n

Vm =	**365** (MainSt Vol Total)		Cs =	**0.975** (Int SpacingFactor)
Vs =	**189** (SideSt Vol Highest)		Cmt =	**1.000** (MainStTruckFactor)
Pc =	**4** Peds Crossing Main		Cv =	**1.000** (SpeedFactor)
K1 =	**1,100** veh/veh const		Cp =	**1.100** (PopDemoFactor)
K2 =	**2,000** veh/ped const		Csb =	**1.000** (SideStBusFactor)
L =	**2.0** TotalMainStLanes		Cst =	**1.000** (SideStTruckFactor)
F =	**1.000** (PedDemoFactor)		Vmx =	**284** (MainStHighest)
Vm1 =	**365** (MainStVeh-Veh#)		Vm2 =	**365** (MainStVeh-Ped#)
Cvp =	**1.073** (product of Cs,Cmt,Cv,Cp)		Cbt =	**1.000** (maximum of Csb,Cst)
Ct1 =	**1.000** T Int / one way Factor			

	MS1LT ←	MS1TH	MS1RT	MS2LT →	MS2TH	MS2RT	SS1LT ↓	SS1TH	SS1RT	SS2LT ↑	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00													2	0
8:00 - 9:00													1	1
11:00 - 12:00													7	0
12:00 - 13:00													1	1
16:00 - 17:00													2	0
17:00 - 18:00	284	0	0	0	0	81	0	0	0	42	0	147	8	1
Average	284	0	0	0	0	81	0	0	0	42	0	147	4	1

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**



W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W =	**69**	**67**	**2**
NOT Warranted		***Veh***	***Ped***

Roadway, Vehicle and Pedestrian Factors			Range			
			Min	@	Max	@
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street		**Smith Street**			**Date:**	**January 31, 2012**
Side Street		**Dracup Avenue**			**City:**	**Yorkton, SK**

MainStreet1Lanes	(#)	2	←	Distance to next signal	(m)	220
MainStreet2Lanes	(#)	2	→	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	0		Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	1	↓	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	2	↑	Metro Area Population	(#)	30,000
MainStreetSpeedLimit	(km/h)	50		Side Street Bus Route	(y/n)	n
MainStreetTrucks/Buses	(%)	4.0%		Side Street Trucks	(%)	3.0%
Refuge Width on Median	(m)	0.0		T or 1-Way Intersection	(y/n)	n
				Central Business District	(y/n)	y

Vm =	**254** (MainSt Vol Total)		Cs =	**1.000** (Int SpacingFactor)
Vs =	**287** (SideSt Vol Highest)		Cmt =	**1.000** (MainStTruckFactor)
Pc =	**4** Peds Crossing Main		Cv =	**1.000** (SpeedFactor)
K1 =	**1,400** veh/veh const		Cp =	**1.100** (PopDemoFactor)
K2 =	**5,000** veh/ped const		Csb =	**1.000** (SideStBusFactor)
L =	**4.0** TotalMainStLanes		Cst =	**1.000** (SideStTruckFactor)
F =	**1.000** (PedDemoFactor)		Vmx =	**232** (MainStHighest)
Vm1 =	**254** (MainStVeh-Veh#)		Vm2 =	**254** (MainStVeh-Ped#)
Cvp =	**1.100** (product of Cs,Cmt,Cv,Cp)		Cbt =	**1.000** (maximum of Csb,Cst)
Ct1 =	**1.000** T Int / one way Factor			

	MS1LT	← MS1TH	MS1RT	MS2LT	→ MS2TH	MS2RT	SS1LT	↓ SS1TH	SS1RT	SS2LT	↑ SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00													2	0
8:00 - 9:00													1	1
11:00 - 12:00													7	0
12:00 - 13:00													1	1
16:00 - 17:00													2	0
17:00 - 18:00	5	15	2	1	121	110	14	153	28	115	167	5	8	1
Average	5	15	2	1	121	110	14	153	28	115	167	5	4	1

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**

SS1TOT **195**

Ped1Cr 4 | SS1RT 28 | SS1TH 153 | SS1LT 14

MS1RT 2
MS1TH 15 **22** MS1TOT
MS1LT 5

MS2LT 1
MS2TOT **232** MS2TH 121
MS2RT 110

SS2LT 115 | SS2TH 167 | SS2RT 5 | Ped 2Cr 1

SS2TOT **287**

W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 58 **57** **1**

NOT Warranted ***Veh*** ***Ped***

Roadway, Vehicle and Pedestrian Factors			Range Min	@	Max	@
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street	**Smith Street**	**Date:**	**January 31, 2012**
Side Street	**Myrtle Avenue**	**City:**	**Yorkton, SK**

MainStreet1Lanes	(#)	2	←	Distance to next signal	(m)	190
MainStreet2Lanes	(#)	2	→	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	0		Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	1	↓	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	1	↑	Metro Area Population	(#)	30,000
MainStreetSpeedLimit	(km/h)	50		Side Street Bus Route	(y/n)	n
MainStreetTrucks/Buses	(%)	3.0%		Side Street Trucks	(%)	4.0%
Refuge Width on Median	(m)	0.0		T or 1-Way Intersection	(y/n)	n
				Central Business District	(y/n)	y

Vm =	**782** (MainSt Vol Total)		Cs =	**1.000** (Int SpacingFactor)
Vs =	**154** (SideSt Vol Highest)		Cmt =	**1.000** (MainStTruckFactor)
Pc =	**8** Peds Crossing Main		Cv =	**1.000** (SpeedFactor)
K1 =	**1,400** veh/veh const		Cp =	**1.100** (PopDemoFactor)
K2 =	**5,000** veh/ped const		Csb =	**1.000** (SideStBusFactor)
L =	**4.0** TotalMainStLanes		Cst =	**1.000** (SideStTruckFactor)
F =	**1.000** (PedDemoFactor)		Vmx =	**433** (MainStHighest)
Vm1 =	**782** (MainStVeh-Veh#)		Vm2 =	**782** (MainStVeh-Ped#)
Cvp =	**1.100** (product of Cs,Cmt,Cv,Cp)		Cbt =	**1.000** (maximum of Csb,Cst)
Ct1 =	**1.000** T Int / one way Factor			

	←			→			↓			↑				
	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00													1	0
8:00 - 9:00													2	3
11:00 - 12:00													6	4
12:00 - 13:00													6	7
16:00 - 17:00													3	8
17:00 - 18:00	94	317	22	24	299	26	34	96	10	20	83	51	2	6
Average	94	317	22	24	299	26	34	96	10	20	83	51	3	5

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**

W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 100 — **95** *Veh* — **6** *Ped*

Warranted

SS1TOT **140**

Ped1Cr 3 | SS1RT 10 | SS1TH 96 | SS1LT 34

MS1RT 22 | MS1TH 317 | MS1LT 94 — MS1TOT **433**

MS2TOT **349** — MS2LT 24 | MS2TH 299 | MS2RT 26

SS2LT 20 | SS2TH 83 | SS2RT 51 | Ped 2Cr 5

SS2TOT **154**

Roadway, Vehicle and Pedestrian Factors			Range			
			Min	**@**	**Max**	**@**
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
		Path to School	1.10			

Explanation of Factors:

Cbt = 1.05 if the side street either is a bus route, or has more than 10% trucks, otherwise = 1.00.
(it is assumed that these two factors only affect the side street vehicles trying to cross the main street, not the pedestrians)

Ci = the product of the other 4 geographic factors
(Cs = intersection spacing, Cmt = main street truck, Cv = Speed, Cp = Population)

Vm1 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Canadian Traffic Signal Warrant Analysis

Main Street	**York Road (Hwy 16)**	**Date:** **January 31, 2012**
Side Street	**Dracup Avenue**	**City:** **Yorkton, SK**

MainStreet1Lanes	(#)	2	Distance to next signal	(m)	210
MainStreet2Lanes	(#)	2	Elementary School	(y/n)	n
MainStreet LT Lanes	(#)	0	Senior's Complex	(y/n)	n
SideStreet1Lanes	(#)	0	Pathway to School	(y/n)	n
SideStreet2Lanes	(#)	1	Metro Area Population	(#)	30,000
MainStreetSpeedLimit	(km/h)	50	Side Street Bus Route	(y/n)	y
MainStreetTrucks/Buses	(%)	20.0%	Side Street Trucks	(%)	7.0%
Refuge Width on Median	(m)	0.0	T or 1-Way Intersection	(y/n)	y
			Central Business District	(y/n)	n

Vm =	**840** (MainSt Vol Total)	Cs =	**0.905** (Int SpacingFactor)
Vs =	**128** (SideSt Vol Highest)	Cmt =	**1.150** (MainStTruckFactor)
Pc =	**1** Peds Crossing Main	Cv =	**1.000** (SpeedFactor)
K1 =	**1,400** veh/veh const	Cp =	**1.100** (PopDemoFactor)
K2 =	**5,000** veh/ped const	Csb =	**1.050** (SideStBusFactor)
L =	**4.0** TotalMainStLanes	Cst =	**1.000** (SideStTruckFactor)
F =	**1.000** (PedDemoFactor)	Vmx =	**506** (MainStHighest)
Vm1 =	**840** (MainStVeh-Veh#)	Vm2 =	**840** (MainStVeh-Ped#)
Cvp =	**1.145** (product of Cs,Cmt,Cv,Cp)	Cbt =	**1.050** (maximum of Csb,Cst)
Ct1 =	**0.667** T Int / one way Factor		

	MS1LT	MS1TH	MS1RT	MS2LT	MS2TH	MS2RT	SS1LT	SS1TH	SS1RT	SS2LT	SS2TH	SS2RT	PedC1	PedC2
7:00 - 8:00													0	0
8:00 - 9:00													0	3
11:00 - 12:00													0	0
12:00 - 13:00													1	1
16:00 - 17:00													0	0
17:00 - 18:00	33	301	0	0	421	85	0	0	0	52	0	76	0	2
Average	33	301	0	0	421	85	0	0	0	52	0	76	0	1

***** Enter the hourly turning movement counts averaged over the peak six hours of a typical week day**

***** Enter the peak pedestrian volume crossing the main street averaged over the same hours**

W = [Ct1xCbt(Vm1 x Vs)/K1 + (F(Vm2 x Pc)L)/K2] x Cvp

W = 62 | **62** **1**

NOT Warranted | ***Veh*** ***Ped***

SS1TOT: **0**

Ped1Cr	SS1RT	SS1TH	SS1LT
0	0	0	0

0	MS1RT	
301	MS1TH	**334** MS1TOT
33	MS1LT	

	MS2LT	0
MS2TOT **506**	MS2TH	421
	MS2RT	85

SS2LT	SS2TH	SS2RT	Ped 2Cr
52	0	76	1

SS2TOT: **128**

Roadway, Vehicle and Pedestrian Factors			Range Min	@	Max	@
Cs =	(Int SpacingFactor)		0.90	<200 m	1.10	isolated
Cmt =	(MainStTruckFactor)		1.00	<5%	1.15	>20%
Cv =	(SpeedFactor)		1.00	<60 km/h	1.10	>80 km/h
Cp =	(PopDemoFactor)		1.00	>250,000	1.20	<10,000
Csb =	(SideStBusFactor)		1.00	no	1.05	yes
Cst =	(SideStTruckFactor)		1.00	<10%	1.05	>10%
F =	(Ped DemoFactor)					
	(max of)	Elementary School	1.20			
		Seniors Complex	1.10			
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(if the median is >=10.0 metres) (averaged over 6 peak hours)

Vm2 = the main street volume - either the total of the two approaches or the highest single approach
(if the median is >=6.0 metres) (averaged over 6 peak hours)

Vs = the highest side street approach volume (averaged over 6 peak hours)
*** note: it has been determined that Vs must be > 75 for signals to be considered ***

F = Pedestrian demographic factor - the maximum of the 3 individual pedestrian demographic factors

Pc = the total pedestrian volume crossing the mainstreet
(averaged over 6 peak hours)

L = number of lanes that the pedestrians have to cross
(only half the street if the median is >=5.0 metres)

Kv = Vehicle - Vehicle denominator constant
(Kv = 1,100 if L<=3, Kv = 1,400 if L >3)

Kp = Vehicle - Pedestrian denominator constant
(Kp = 2,000 if L<=3, Kp = 5,000 if L >3)

Appendix D

THE CITY OF YORKTON
FUTURE GROWTH NEEDS ANALYSIS

PREPARED FOR:

THE CITY OF YORKTON

PREPARED BY:

CROSBY HANNA & ASSOCIATES
LANDSCAPE ARCHITECTURE AND PLANNING
SASKATOON, SK

SEPTEMBER 2009

TABLE OF CONTENTS

1. INTRODUCTION

The purpose of this study is to review the need for additional land for the City of Yorkton. This study examines future land needs for residential, commercial and industrial development, based on the City's economic climate, population trends, land inventory and long term future growth plans.

2. POPULATION

2.1 Historical Population Trends

Population trends for the City of Yorkton for the period of 1998 – 2008 are presented in Table 2-1. Between 1998 and 2008, the City population grew at an average annual rate of 0.48%. Between 2003 to 2008, this trend continued at a slightly higher rate, with an average annual growth rate of 0.80%. During the past two years, the City has seen accelerated growth. During 2006 – 2008, the population grew at an average annual rate of 1.73% and within the last year the population grew by 1.97%.

TABLE 2-1: HISTORICAL POPULATION

CITY OF YORKTON (1998 – 2008)

Year	Population	% Change
1998	16,783	--
1999	17,113	1.97
2000	16,747	-2.14
2001	16,898	0.90
2002	17,032	0.79
2003	16,916	-0.68
2004	17,186	1.60
2005	17,261	0.44
2006	17,006	-1.48
2007	17,260	1.49
2008	17,603	1.99
Net Change 2006 - 2008	597	
Average Annual Change 2006 – 2008	--	1.73%
Net Change 2007 - 2008	343	
Average Annual Change 2007 - 2008		1.97%

SOURCE: Saskatchewan Ministry of Health Covered Population 1998 – 2008

2.2 Population Projections

On the basis of past trends and present population size and structure, it was possible to develop two projections for population change in the City of Yorkton for the 25 year planning time frame (i.e. 2033) (See Table 2-2). The first projection contains a geometric extrapolation of observed rates of change over the last year, using the average annual growth rate of 1.97%.

TABLE 2-2: CITY OF YORKTON POPULATION PROJECTIONS 2008 - 2033						
	Year					
Projection	**2008**	**2013**	**2018**	**2023**	**2028**	**2033**
One-year trend 1.97% only	17,603	19,404	21,390	23,579	25,992	28,652
Net Population Increase 1.97% only	--	1,801	1,986	2,189	2,413	2,660
Average Annual Population Increase 1.97% only	360 ppl/year	397 ppl/year	438 ppl/year	483 ppl/year	532 ppl/year	--
One-year trend (plus extra 274 ppl. per year 2009-2013)	17,603	20,829	22,961	25,311	27,901	30,756
Net Population Increase	--	3,226	2,132	2,350	2,590	2,855
Average Annual Population Increase	645 ppl/year	426 ppl/year	470 ppl/year	518 ppl/year	571 ppl/year	--

The second projection was made using the assumption that migration rates will increase in the next five years (over rates seen between 2006 – 2008). This assumption is made to account for the following factors: a potential Agrium potash mine which will create 450 new jobs (assuming 50% of the workers filling those positions will live in Yorkton); Louis Dreyfus & James Richardson International Canola Processing Plants adding 150 new jobs (assuming 100% of the workers filling those positions will live in Yorkton); and American Railcar adding up to 40 new jobs (assuming 100% of the workers filling those positions will live in Yorkton). In addition to these primary industry jobs, a number of induced and indirect jobs will be created.

The U.S. Bureau of Economic Analysis lists employment multipliers by industry aggregation, showing a range of mining multipliers from 2.0 to 2.1 with agricultural services listed in the 1.3 range. For these projections, an employment multiplier of 1.5 has been used to calculate potential net employment gain, meaning for each new job in a primary industry, 0.5 induced or indirect jobs will be created as well. An employment multiplier of 1.5 is a relatively conservative number to use based on the fact that export or basic industries (i.e. potash and canola) which produce and sell goods that bring in new income from outside the area (i.e. product is exported) create a larger multiplier effect than industries that produce goods and services consumed locally. This is evidenced by research done by Stabler and Olfert in 1992 (Restructuring Rural Saskatchewan: The Challenge of the 1990's), in which they state, "Development of a major mine in the vicinity of a community can produce a local boom in housing and commercial development. Several dramatic examples of this phenomenon were apparent in Saskatchewan during and after the 1960s when potash mines were developed at several locations in the central and southeastern parts of the province". It is also pointed out in their research that in addition to population and commercial development growth, relative gains in business were also apparent. Using an employment multiplier of 1.5 equates to a net increase of 623 new jobs (415 new jobs multiplied by 1.5 to account for spin-off effects).

Yorkton's average household size, based on the Federal Census in 2006, is based on the City's population from 2006 (15,038) diveded by the number of private dwellings located in the city during the same time (6,903), yielding an average household size of 2.2 persons per household.

It has also been assumed that a total of 623 new jobs will actually bring in a total of 1,371 new people, given Yorkton's average household size of 2.2 persons per household (i.e. 623 multiplied by 2.2).

3. RESIDENTIAL

3.1 Land Forecast and Methodology

Assuming that average household size in Yorkton remains in the current level of 2.2 persons per household, it is possible to use a methodology to estimate the number of dwelling units that will be required to accommodate projected growth.

Table 3-1 sets out the estimated number of dwelling units that will be required to accommodate growth using the average annual growth rate of 1.97% (plus an extra 274 people per year during 2009 – 2013). This recommended projection for the City of Yorkton (as highlighted in Table 2-2) assumes similar migration as observed between 2007 – 2008, plus additional in-migration (i.e. an additional 274 people per year) resulting from potential employment growth (i.e. potash mine, canola processing, etc.). After 2013, it is assumed that population growth will then return to 1.97% growth per year. Given this scenario, the City of Yorkton will reach a population of 30,756 people by 2033. Additional dwelling units needed over the twenty-five year time frame are presented in Table 3-1 (i.e. total population divided by 2.2 – average household size in Yorkton).

Over the past several years, the observed average residential build out density for new subdivisions in Yorkton has been 3.7 lots per gross acre. Given increased house prices, and corresponding increases in residential densities (i.e. smaller lots, or multi-family housing have become more popular), we have projected the amount of residential land required based on an average residential build-out density of 4.0 lots per gross acre. Additional dwelling units and land required (shown as cumulative) are shown in Table 3-1.

**TABLE 3-1: CITY OF YORKTON
ADDITIONAL DWELLING UNITS / ACRES REQUIRED**

	Year					
	2008	**2013**	**2018**	**2023**	**2028**	**2033**
Recommended Projection	17,603	20,829	22,961	25,311	27,901	30,756
Additional Dwelling Units	--	1,467	2,435	3,504	4,681	5,979
Additional Acres	--	367	609	876	1,170	1,495

The City of Yorkton currently has 236 acres within its current boundary available for residential development. Given this, 1,259 acres (i.e. 1,495 – 236 = 1,259) are needed to accommodate short to medium term residential growth.

4. INDUSTRIAL AND COMMERCIAL

4.1 Land Forecast and Methodology

A baseline projection for industrial land needed over the planning time frame (25 years) was performed based on forecasting scenarios recommended by Philip Berke, David R Godschalk and Edward John Kaiser in their book entitled "Urban Land Use Planning". According to research done for the Lincoln Institute of Land Policy by Gerrit Knapp and Terry Moore (Land Supply and Infrastructure Capacity: Monitoring for Smart Urban Growth, 2000), forecasting the demand for commercial and industrial land uses is typically done in two ways. The first way involves applying a ratio of commercial or industrial lands to population to project future land needs. The second way involves an estimation of floor area requirements based on existing floor areas and expected rate of population growth.

In order to forecast industrial and commercial land need using a ratio of land to population, Kaiser et al recommended the following steps:

a) determine the number of employees to be accommodated;
b) develop future employment density standards (i.e. employees per gross acre);
c) divide the future number of employees by density standards to estimate the number of acres that will be required; and,
d) add a safety factor.

For the City of Yorkton, the number of employees to be accommodated (step a) was calculated using the recommended population projection, which indicates that the City of Yorkton could potentially reach a population of 30,756 people by 2033. Given this, there will be an additional 13,153 residents within the City in the planning period.

To determine a future employment density standard (step b), Federal Census Data (2006) was used to calculate the percentage of residents working on either industrial or commercial (and community service) zoned land. The number of employees working within the Yorkton Census Agglomeration was used as the baseline to determine this. A Census Agglomeration (C.A.) is formed by one or more adjacent municipalities centered on a large urban area (known as the urban core). To be included in the C.A., other adjacent municipalities must have a high degree of integration with the central urban area, as measured by commuting flows derived from census place of work data. Table 4-1, breaks down the Yorkton C.A. labour force according to industry and generally which class of zoning the industry will fall into, commercial or industrial. Community service labour (e.g. civil service, education, healthcare) has been classified as a commercial use.

TABLE 4-1: CITY OF YORKTON INDUSTRY BREAKDOWN, STATISTICS CANADA 2006		
Industry	**Total**	**Zoning Classification**
Agriculture and other resource-based industries	670	Industrial
Construction	470	Industrial
Manufacturing	585	Industrial
Wholesale trade	375	Industrial
Retail trade	1,355	Commercial
Finance and real estate	430	Commercial
Health care and social services	1,300	Commercial
Educational services	625	Commercial
Business services	1,300	Commercial
Other services	1,960	50% Industrial, 50% Commercial
Total Experienced Labour Force*	**9,070**	**--**
Total Industrial Sector Workers in CA	**3,080**	**--**
Total Commercial Sector Workers in CA	**6,970**	**--**
Source: Statistics Canada 2006 Federal Census *Refers to persons 15 years and over, excluding institutional residents, who were employed or unemployed during the week (Sunday to Saturday) prior to Census Day, and who had worked for pay or in self-employment.		

According to city land use data provided by the City of Yorkton, there are currently 868 acres of land being used for industrial activity within city boundaries. For commercial, 1,106 acres are being used. These are gross numbers and include roads, lane, and public spaces (e.g. utilities, buffers, etc.).

4.2 Industrial Land Forecast

Federal Census data (2006) has been used to calculate the percentage of the total population within the C.A. (17,438) working within the industrial sector. The total experienced labour force 15 years and older working in the industrial sector within the C.A. equates to 17.7% (3,080 divided by the population of the CA – 17,438). To translate this to the City of Yorkton's most current population data (Sask Ministry of Health 2008), the ratio of 17.7% has been applied to the total population of the City of Yorkton (17,630), yielding 3,121 residents working within the industrial sector.

Based on the ratio calculated from Federal Census employment data, the employment density for industrial land in the City of Yorkton is 3.6 persons per acre (3,121 residents currently working within the industrial sector divided by total acres currently being used for industrial, 868 acres). By applying this ratio to the recommended projected population (13,153 additional people by 2033) and then by dividing this by the employment density (3.6), it is possible to estimate the number of acres required over the indicated time frame. Table 4-2 shows the results.

It is important to note that generous safety factors, recommended by Kaiser et al, 1995, are often added to determine the number of required acres, as employment density patterns vary widely with even standard industrial classifications, and are unlikely to remain constant over time. "Add a safety factor to accommodate the possibility that employment growth is greater than expected, or at a lower density than planned, and to create an industrial reserve." Suggested by Knapp and Moore (2000) in their work for the Lincoln Institute of Land Policy, considerable judgment must be exercised when using such standards to determine the number of required acres in part because the cost of an underestimate is generally viewed as greater than the cost of an overestimate. Given this, we have considered the types of industry and occupations which dominate the Yorkton landscape, based on historical data provided by the Federal Census. During the 2006 Census year Yorkton was strong, relative to the province as a whole in the following sectors: retail trade, health care and social services, business services, wholesale trade, and manufacturing. There was less employment relative to the provincial average in agricultural and other resource based industries, educational services, construction, and finance and real estate. Accordingly, industries differ by sector, with areas dominated by warehousing and primary industries having much lower employment densities than those that are more labour intensive.

Table 4-2 presents the required industrial acreage for the recommended population projections over the 25 year time frame (step c) using the observed employment density for industrial land (3.6 persons per acre). Industrial employment density standards may be different depending on the sub-sector (i.e. warehousing and primary industries typically require larger tracts of land than wholesale trade or manufacturing). In a study by the City of Regina regarding the Ross Industrial Park, it was found that the overall employment density was 5 persons per acre. Given this, it is assumed that a safety factor need not be considered in the projection for the City of Yorkton (step d) because it is unlikely that employment density would ever be much lower than 3.6 persons per acre.

The City of Yorkton currently has 667 acres within its current boundary available for industrial development. Given the existence of these 667 acres of developable land within the City boundaries, no acres are needed to accommodate short to medium term industrial growth.

TABLE 4-2: CITY OF YORKTON ADDITIONAL INDUSTRIAL LAND REQUIRED						
	Year					
	2008	**2013**	**2018**	**2023**	**2028**	**2033**
Recommended Population Projection	17,603	20,829	22,961	25,311	27,901	30,756
Additional Industrial Acres Required (cumulative) 3.6 persons / acre	--	158	263	378	505	645

4.3 Commercial Land Forecast

Federal Census data (2006) has been used to calculate the percentage of the total population within the C.A. (17,438) working within the commercial sector. The total experienced labour force 15 years and older working in the commercial sector within the C.A. equates to 34.4% (5,990 divided by the population of the C.A. – 17,438). To translate this to the City of Yorkton's most current population data (Sask. Ministry of Health 2008), the ratio of 34.4% has been applied to the total population of the City of Yorkton (17,630), yielding 6,065 residents working in the commercial sector.

Based on the ratio calculated from Federal Census employment data, the employment density for commercial land in the City of Yorkton is 5.5 persons per acre (6,065 residents working within the commercial sector divided by total acres currently being used for commercial, 1,106 acres). By applying this ratio to the recommended projected population (13,153 additional people by 2033) and then by dividing this by the employment density (5.5), it is possible to estimate the number of acres required over the indicated time frame (step c). Table 4-3 shows the results.

Table 4-3 presents the required commercial acreage for the recommended population projections over the planning time frame using the density standard of 5.5 persons per acre for commercial land. Similarly to the industrial land forecast, no safety factor has been added to the commercial land forecast (step d) as the current commercial employment density is relatively low.

The City of Yorkton currently has 327 acres within its current boundary available for commercial development. Given the existence of these 327 acres of developable land within the City boundaries, 496 acres (823-327 = 496) are needed to accommodate short to medium term commercial growth.

TABLE 4-3: CITY OF YORKTON ADDITIONAL COMMERCIAL LAND REQUIRED						
	YEAR					
	2008	**2013**	**2018**	**2023**	**2028**	**2033**
Recommended Population Projection	17,603	20,829	22,961	25,311	27,901	30,756
Additional Commercial Acres Required (cumulative) 5.5 persons / acre	**--**	202	335	482	644	823

5. CONCLUSION

The City of Yorkton requires additional land to accommodate future development. Potential employment growth in the City and broader region are expected to drive accelerated growth in the City both in terms of population and employment. The City has identified future short and medium term residential and commercial land within its boundary alteration application.

The cost and planning process associated with designing and servicing new urban areas (e.g. layout, servicing, construction) is such that a city must have adequate land within its boundaries to respond to rapidly changing economies and migration patterns. A 25 year planning horizon is reasonable and has precedent in Saskatchewan (e.g. Saskatoon 40 years).