

# Town of Carstairs

# **Transportation Master Plan**

Revised: March 2017

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This Statement of Qualifications and Limitations is attached to and forms part of the Report.

The attached report has been updated by the Town of Carstairs – March 2017



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403 270 9200 tel 403 270 9196 fax

October 14, 2010

Carl McDonnell Chief Administrative Officer Town of Carstairs Box 370 Carstairs, AB TOM 0N0

Dear Mr. McDonnell:

Project No: 60150078

#### Regarding: Town of Carstairs Transportation Master Plan

AECOM Canada Ltd. is pleased to provide 12 copies of the Town of Carstairs Transportation Master Plan Final Report for circulation to the Town of Carstairs Council.

We will look forward to receiving any questions or comments.

Please contact the undersigned at 403.270.9130 or heather.stevenson@aecom.com with any comments or questions.

Sincerely, AECOM Canada Ltd.

Heather Stevenson, EIT Civil Engineer-in-Training, Transportation heather.stevenson@aecom.com

HS Encl.

### **Revision Log**

Revision #	Revised By	Date	Issue / Revision Description
00	RR	July 6, 2010	DRAFT Report
01	RR	July 21, 2010	Revised DRAFT Report
02	DB	September 15, 2010	Issued for Council
03	DB	September 22, 2010	FINAL Report
04	HS	October 14, 2010	FINAL Report with Revisions
05	RM	March 13, 2017	Revised Draft Report
06	RM	March 27, 2017	Issued for Council
07	RM	March 30,2017	FINAL REVISED Report

## **AECOM Signatures**

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### 1. Introduction

The Town of Carstairs is located within Mountain View County approximately 60 kilometres north of Calgary, just off the Calgary-Edmonton Queen Elizabeth II corridor. Priding itself on being a small town, and following the town creed of "An Authentic Small Town", the town's proximity to Calgary has attracted many people looking to leave city life behind and settle in a small community.

The 2016 Federal Census indicated that Carstairs had a population of 4077 residents. The Town has seen population growth of approximately 4% per year since 1996, when the town had a population of 1,887 residents.<sup>1</sup> Carstairs has experience significant growth in the recent years. Growth is expected to continue in Carstairs as the Town has a strong economic foundation in oil and gas and agriculture, and is continuing to see expansion as a commuter community

The updated Transportation Master Plan will provide a policy level framework to guide development of a roadway network for the Town and also provide policy level guidance on its pathway network.

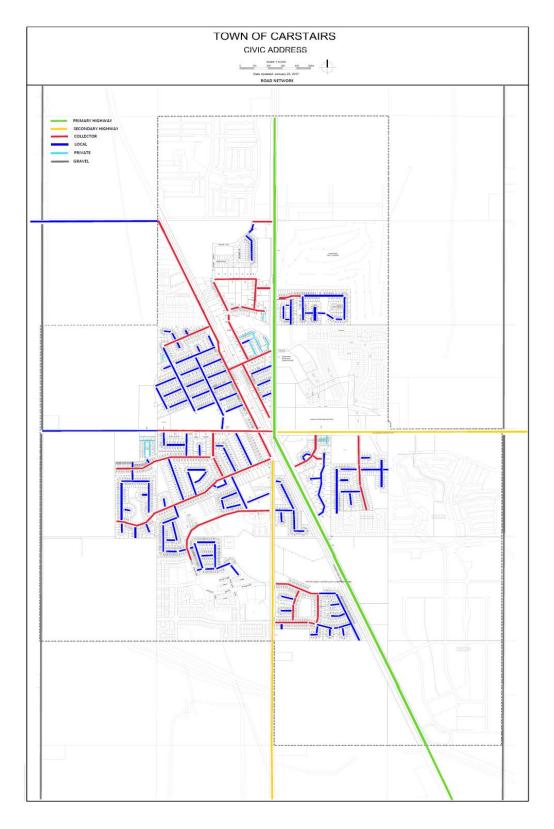
### 2. Background

The town of Carstairs is located at the intersection of three provincial highways. Highway 2A bisects the Town from the north to the south, Highway 581 connects Carstairs towards the east with the Queen Elizabeth II Highway and Highway 580 is south of the town, running west from Cremona to Highway 2A. Because of the town's location these highways have become an integral part of the local road network. Alberta Transportation has jurisdiction on these highways and Provincial standards for highway design apply. Carstairs Blind Line road (Township Road 303), a county minor collector roadway connects from the west to 10 Avenue North in Carstairs. Within the Town of Carstairs there is an existing roadway network based on a hierarchal system of local and collector type roadways. The town also has initiated a pathway system of on street sidewalks and park related pathways.

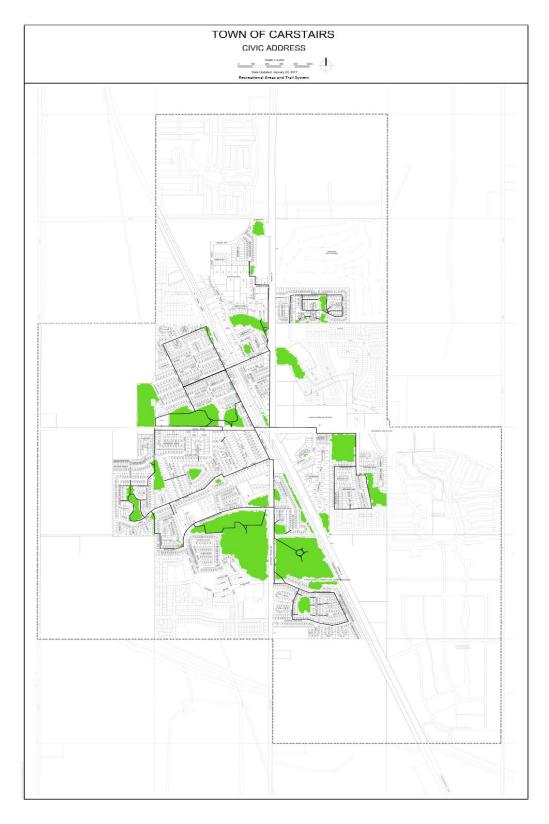
The existing road network for the Town of Carstairs is shown in **Figure 1**. The existing pathway network for Carstairs consists of a system of sidewalks (maintained year round) and trail system, and is shown in **Figure 2**.

<sup>&</sup>lt;sup>1</sup> http://www.town.carstairs.ab.ca/commprof.html; Accessed April 29, 2010.

#### Figure 1: Existing Roadway Network



#### Figure 2: Recreational Areas and Trail System



### 3. Previously Published Plans, Policies, and Standards

#### 3.1 The Municipal Development Plan, Bylaw 892, 2004

The Municipal Development Plan (MDP) guides the future growth and development of the town to ensure that it is sustainable, orderly, appropriate, complementary, efficient, and that it enhances the quality of life for the citizens of Carstairs. In addition to establishing guidance for future land use, the 2004 MDP outlines goals, objectives, and policies for various town services including transportation. The transportation goal, objectives, and policies from the 2004 MDP have been incorporated into this Transportation Master Plan.

#### 3.2 The Municipal Development Plan Update, AECOM, 2010

The 2010 Municipal Plan was prepared in conjunction with this Transportation Master Plan and the two documents are integrated. **Figure 3** shows the 2017 Land Use Map.

#### 3.3 Town of Carstairs Servicing Study, Stantec, 2005

The Town of Carstairs Servicing Study, conducted in 2005 by Stantec, provided a foundation for the existing road network and some guidance for further development. The recommendations set forth in that document are as follows:

- Intersection spacing shall be a minimum of 800 m along all secondary and primary highways running through and along the boundary of the Town
- Access to Highways 2A and 581 from collector, industrial, and residential roadways is to be limited
- In general, T-intersections shall be used for all intersecting collector roadways to limit potential congestion of traffic

This study also recommended future road closures and new arterial roadways.

#### 3.4 Community Sustainability Plan, AECOM, 2009

The Sustainability Plan establishes sustainability principles for the community's social, cultural, environmental, economic and governance aspects. The Plan recommends sustainable actions on various transportation issues including special needs infrastructure, safety, recreation, and efficiency of the town transportation system.

#### 3.5 Area Structure Plans and Current Development Applications

The Town of Carstairs has a number of approved and potential Area Structure Plans and development plans. The following sections provide an overview of these studies and their relevance to the Transportation Master Plan. **Figure 4** displays the names and locations of the developments.

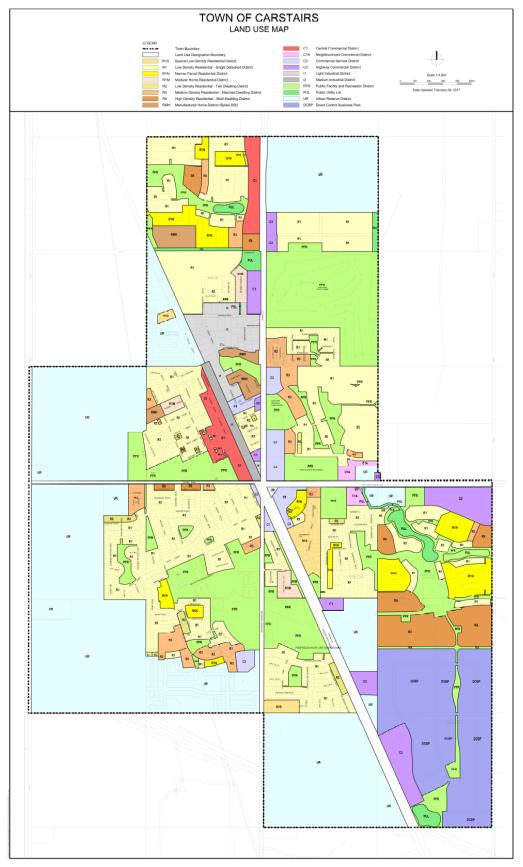
#### 3.5.1 Carlinton Area Structure Plan

The lands included in the Carlinton Area Structure Plan are located on the eastern edge of the Town of Carstairs and are bounded by Highway 2A on the west and Highway 581 on the south. It is expected that there will be one access to the site from Highway 2A and one access from Highway 581. All other accesses to the area will be from the north and east, through other lands.

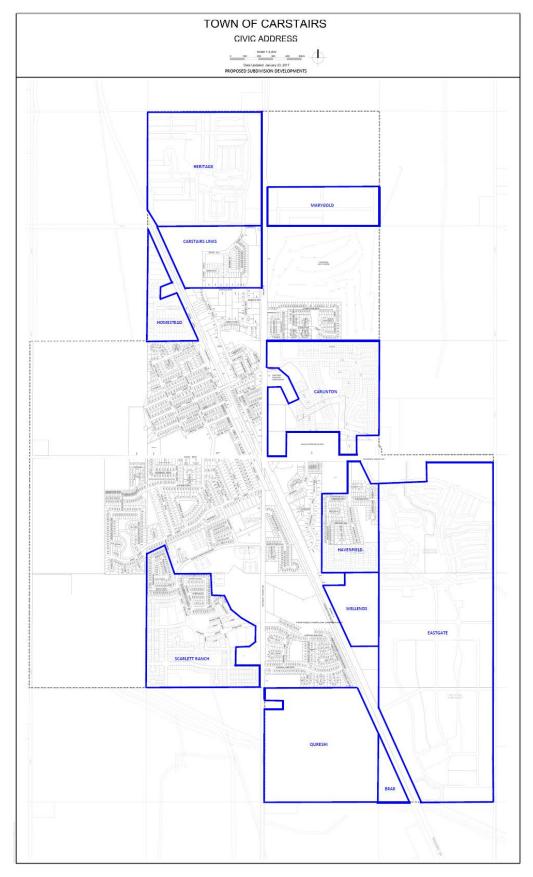
#### 3.5.2 Eastgate Area Structure Plan

The lands included in the Eastgate Area Structure Plan are located to the east of the Town of Carstairs and are bounded by Highway 581 on the north, Range Road 13 on the east, Highway 2A on the southwest, and Township Road 300 on the south. It is expected that the lands will develop over the next 20 years and will consist of a mix of

#### Figure 3: 2017 Land Use Map



#### Figure 4: Proposed Subdivision Developments



residential, industrial and highway commercial land uses. The development is proposed to have 6 access points to the external road network: 1 on Highway 581, one on Highway 2A, and four on Range Road 13.

#### 3.5.3 Carlinton Residential Development

The Carlinton development is located within the Carling ASP area, and is comprised primarily of residential lots with some commercial land use. The development will be bounded on the west by Highway 2A and will be accessed via one access on Highway 581, which is located south of the development.

3.5.4 Havenfield Subdivision

The Havenfield subdivision is located to the east of Highway 2A and south of Highway 581, on the eastern edge of the town. The development will consist of primarily single-family residential lots, with a small number of duplex lots. Full build-out of all four phases is expected by 2012. There will be two accesses into the development; one is located in the northern part of the development and provides access to Highway 581, the other provides access to Highway 2A in the south-western quadrant of the development.

#### 3.5.5 Scarlett Ranch Development

The Scarlett Ranch development is a proposed residential subdivision located at the south end of the town. It is bounded by Highway 580 (10 Avenue) on the east side and will be accessed from two points along this roadway. All 3 phases of the development are expected to be completed by 2013.

#### 3.5.6 Stone Garden Development

The Stone Garden Development is located north along Highway 2A. The development consists of a 44 unit adult only community.

#### 3.5.7 Lackner Estates Development

Lackner Estates is located in the south end of town. It consists of 39 single family residential lots. Construction of this subdivision is currently under way – March 2017.

#### 3.6 Roadway Policies & Standards

#### 3.6.1 Town of Carstairs Standard Development Agreement

The current Standard Development Agreement used by the Town of Carstairs stipulates the standards for design and construction which must be followed. The Construction and Infrastructure Design Standards stipulates the following with respect to transportation:

- The Engineering Design Guidelines to be followed are:
  - The City of Calgary "Design Guidelines for Subdivision Servicing"
  - Transportation Association of Canada "Geometric Design Guide for Canadian Roads" or alternatively Alberta Transportation and Utilities "Highway Geometric Design Guide"
  - Transportation Association of Canada "Urban Supplement to the Geometric Design Guide for Canadian Roads"
- The Construction Standards to be followed are:
  - The City of Calgary "Standard Specifications Roads Construction"

• Special Considerations for Roads:

Classification	Finished Surface Width	Rights-of-Way
Walkway	2.5 m to 3.0 m	6.0 m (unless required to accommodate utilities)
Lane	6.0 m	6.0 m (10.0 m where lane serviced with any form of servicing)
Residential Local	11.0 m	15.0 m
Residential Collector Undivided	12.5 m	21.0 m
Major Collector Divided	With Parking 19.0 m W/O Parking 15.0 m Median 3.5 m	With Parking 32.0 m W/O Parking 27.0 m
Cul-de-sac Bulb	25.0 m	30.0 m

- Special Considerations for Sidewalks:
  - In residential areas sidewalks shall be low profile rolled monolithic sidewalks with a sidewalk width of 1.2 m. Where standard faced curbs are required, the sidewalk width shall be increased to 1.31 m. Adjacent to school sites or commercial areas, the sidewalk width shall be increased by 0.4 m to 1.6 m and 1.71 m accordingly.
  - For major collector roadways, the sidewalk shall be separate and shall be 1.6 m wide.
  - Industrial developments do not require sidewalks unless the type of development, or the need to connect a pathway to other areas, dictates the need for sidewalk
- Special Considerations for Pedestrian Walkways:
  - Pedestrian walkways where required shall be asphalt, 2.5 m to 3.0 m in width, in accordance with the Town of Carstairs specifications.
  - 3.6.2 Standard Roadway Cross-Sections

The Town of Carstairs developed a set of roadway cross-sections to provide standardization for all new roadway construction within the Town, shown in **Appendix 'A'**. These cross-sections were approved by Council in 2009. Implementation of these cross-sections into the development agreement is on-going. The cross-sections will be incorporated into the policies developed for this Transportation Master Plan.

### 4. Transportation Goals and Objectives

The main components of the Carstairs transportation system are its roadways and trail system. Transit service between Carstairs and Calgary is provided by a private bus company. Another private bus company also provides some service to and from Calgary.

As outlined in the Municipal Development Plan (Bylaw 892, 2004), the Transportation goal for Carstairs is:

To provide and maintain a transportation system that supports the safe and efficient movement of persons and goods using as broad a range of transportation modes as possible.

The MDP also outlines the following objectives for Transportation:

- To use a system of transportation planning and management that establishes a safe and efficient transportation system with a clear hierarchy to the road network.
- To encourage and facilitate multi-modal transportation (automobile, pedestrian, bicycle) where feasible.
- To coordinate transportation planning with Alberta Transportation and Mountain View County.
- To integrate transportation and land use considerations in all transportation decision making.

The Town of Carstairs Community Sustainability Plan (2009) describes a successful transportation system as one that is efficient, integrated with Regional transportation systems, and meets the Town's needs.

### 5. Transportation Policies

The transportation goal and objectives are supported by the following policies. Some of the policies presented have been adapted from the 2004 MDP.

- The future major road system shall be in accordance with the future land use concepts contained in the Municipal Development Plan. More precise alignment of new arterial and collector roads shall be determined through the preparation of area structure plans, outline plans and plans of subdivision.
- The Town shall maintain a Transportation Plan to guide development of the roadway and trail networks.
- The Town shall ensure that the construction, rehabilitation and maintenance of roads are co-ordinated with other projects related to municipal services.
- The Town shall establish suitable truck and dangerous goods routes in co-operation with Mountain View County.
- The Town shall use a hierarchy of roads in the design of new residential and non-residential areas based on the following:

ROADWAY TYPE	MAIN FUNCTION	ACCESS	PARKING	CONNECTS TO	SIDEWALKS & PATHWAYS
Arterial	Movement of traffic.	<ul> <li>Limited</li> <li>400m intersection spacing desirable (300m minimum where determined to be necessary)</li> </ul>	No Parking	<ul><li>Highways</li><li>Arterials</li><li>Collectors</li></ul>	<ul> <li>1.6m separate sidewalk on one side of roadway,</li> <li>3.0m separate pathway on other side.</li> </ul>
Collector	To distribute traffic from arterials to local roadways.	<ul> <li>Direct access to abutting properties</li> <li>Minimum 120m intersection spacing adjacent to arterials</li> <li>Minimum 60 m intersection spacing for other conditions</li> </ul>	<ul> <li>On-Street Parking Allowed</li> <li>Limited Near Intersections</li> </ul>	<ul> <li>Highways</li> <li>Arterials</li> <li>Collectors</li> <li>Locals</li> <li>Lanes</li> </ul>	• 1.5m sidewalk on each side
Local	To provide direct access to properties and distribute traffic from residential properties to collector roadways.	Minimum 60 m intersection spacing	On-Street Parking Allowed	<ul> <li>Collector Road</li> <li>Local Road</li> <li>Lane</li> </ul>	<ul> <li>1.2m sidewalk on one side</li> <li>Adjacent to school site 1.6m sidewalk on both sides</li> </ul>
Lane	Access to Properties		<ul> <li>No Parking</li> </ul>	<ul><li>Collector Road</li><li>Local Road</li><li>Lane</li></ul>	

- Typical cross-sections for roadways are provided in **Appendix A**.
- Traffic Impact Assessments (TIA) shall be requested for development applications for developments generating more than 100 new peak hour trips. The TIA shall review both existing and future conditions, and should consider both vehicle and active mode transportation. The TIA will provide decision makers a basis for evaluation of the implications of the development, help identify future localized transportation system deficiencies, establish required roadway improvements and provide a basis for determining funding participation in conjunction with the development applications. The scope of the TIA will vary depending on the complexity and type of development and should be determined in conjunction with the Town Engineer.
- For the design of roadway intersections the Town shall strive for a maximum Volume to Capacity (V/C) ratios of 0.80 for through movements and shared through/turning movements and a maximum V/C ratio of 0.90 for exclusive turning movements. An overall Level of Service (LOS) 'D' or better, as defined by the Highway Capacity Manual (HCM) produced by the Federal Highway Administration (FHWA), with individual movement levels of service not exceeding 'E' is desired. Furthermore, 95<sup>th</sup> percentile queue should not exceed the available lane storage.

- The Town shall work with Alberta Transportation to protect Highway 2A, Secondary Highway 580 and Secondary Highway 581 from land uses and development that may be detrimental to the flow and safety of highway traffic. This includes efforts to reduce the number of existing accesses/driveways onto the highways to improve traffic safety.
- In co-operation with Alberta Transportation, the Town shall investigate and undertake opportunities to enhance the general appearance and landscaping along the portion of Highway 2A and Secondary Highways 580 and 581 running through Carstairs to create visually appealing entryways into Carstairs.
- The Town shall encourage the establishment of bicycle and pedestrian routes as integral components of the transportation, recreation and open space systems. Key routes will primarily focus on linking parks, recreation, community and education facilities.
- The Town shall work with Canadian Pacific Railway to ensure the safe interaction of train, vehicular, and pedestrian/bicycle traffic within Carstairs. The Town supports the limiting of train speeds within the town to 30 mph (50 km/h) in order to minimize noise, vibration and safety concerns.
- Noise attenuation devices and visual screens, other land uses, special development regulations (e.g. increased lot depth), or landscaped buffer strips should be required to be installed by developers between new residential development and highways, railways and arterial roads.
- The Town will work with Mountain View County to coordinate the provision and development of transportation corridors.
- The Town shall work to develop a Primary Trail Network to link activity centres that are recognized as attractors to potential pathway users. The primary pathway system, where feasible, should be lit and maintained year round to encourage active mode travel in all seasons. Future primary trail network connections should be minimum 3.00 m wide asphalt pathway for use by all active mode users. Local trail networks in subdivisions, parks and commercial areas, shall provide access to and supplement the primary trail network.

### 6. Roadway Network Plan

The Roadway Network Plan, shown in **Figure 5**, anticipates the future development of Carstairs outlined in the Draft MDP (2010), and reflects the transportation goal, objectives and policies. The Roadway Network Plan recognises the existing Provincial, County, and Town roadway patterns and approved development plans, and outlines how future development of Carstairs could be served with a network of arterial level roadways connected to the community primarily through a collector roadway system. The Plan proposes a new at grade crossing of the Canadian Pacific Railway at Township Road 303. This Roadway Network Plan can be used as a framework for fitting individual development proposals into an overall cohesive roadway system.

#### 6.1 Provincial Roadways

As noted earlier Carstairs is located at the intersection of three provincial roadways, as such these highways have become an integral part of the local road network. Alberta Transportation has jurisdiction on these highways and Provincial standards for highway design apply. Alberta Transportation has been contacted and sent proposed future plans for the roadways for review and comment. Comments received will be reviewed and considered in finalizing the Transportation Master Plan.

#### 6.2 Canadian Pacific Railway

Canadian Pacific Railway (CPR) has a track which runs through the Town, paralleling Highway 2A north to Highway 581 (Gough Road), after which it parallels 10 Avenue N (Range Road 14A). The CPR right-of-way is to be preserved. CPR has been contacted and sent proposed future plans for the roadways for review and comment. Comments received will be reviewed and considered in finalizing the Transportation Master Plan.

#### 6.2.1 High Speed Rail

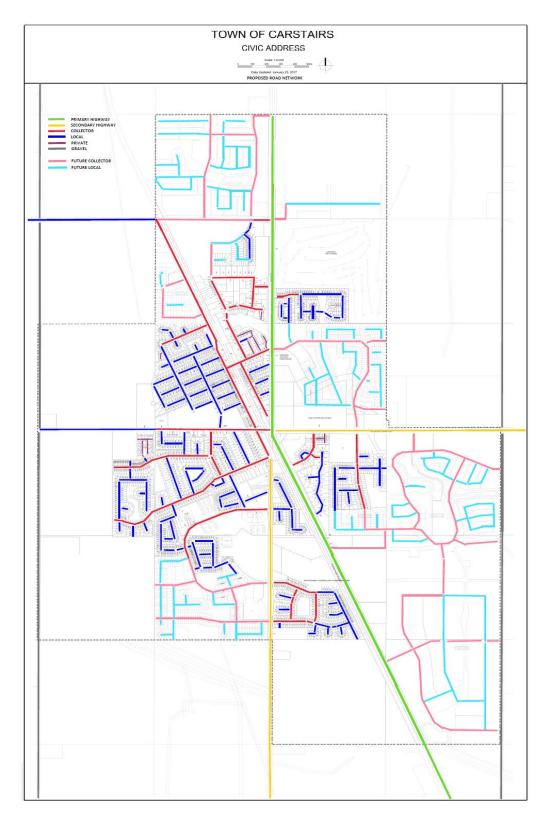
A study was conducted in 2004 by the Van Horne Institute to determine the feasibility of a high speed rail line between Calgary and Edmonton and a recent Market Analysis study was conducted by TEMS, Inc./Oliver Wyman in 2008. Both studies indicated that two potential routes would provide the required travel time reductions necessary for making a high speed rail route viable. The final route is as yet undetermined, however, no at-grade crossings of the high speed rail line would be allowed.

### 7. Primary Trail Plan

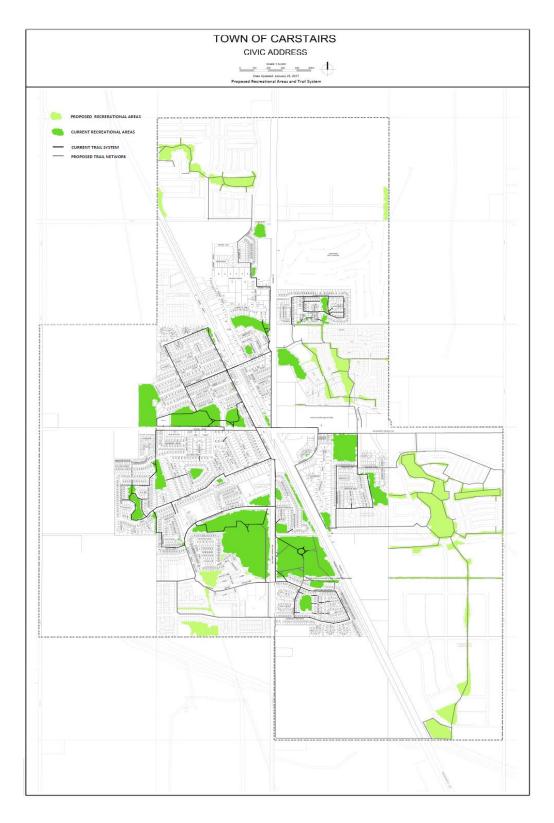
The proposed Primary Trail Plan, shown in **Figure 6**, shows how the various areas of the town could be connected by a system of Primary Trails. The Primary Trail system can be supported by local trails as required to serve local needs. The pathway system includes roadway sidewalks, separate pathways along roadways, and pathways within parks or other open spaces.

The Primary Trail Plan has been developed with the intention of linking various activity centres such as schools, recreational areas, downtown, etc, that are recognized as attractors to potential trail users. Trail users are expected to be a mixture of pedestrians, skaters, cyclists and other non-motorized modes. Conflict can occur between this range of users. Imposing a speed limit of 20 km/h on trails and prohibiting cyclists on sidewalks are recommended solutions to such problems.

#### Figure 5: Proposed Roadway Network Plan



#### Figure 6: Proposed Recreational Areas and Trail System



### 8. Public Consultation Process

#### 8.1 Stakeholder Workshop

A stakeholder workshop was held for the Municipal Development Plan Update (2010) on May 17, 2010. At this workshop preliminary plans for the Transportation Master Plan and Master Servicing Study were also discussed. The workshop attendees included staff from the Town of Carstairs as well as representatives from the community. Comments received at the workshop included concerns with the intersections of Highway 2A with Gough Road and Center Street, as well as the access off of Highway 581 to the Hugh Sutherland School and Carstairs High School.

#### 8.2 Public Open House

A public open house was held for the Draft Municipal Development Plan and Draft Transportation Master Plan. The open house was held the evening of Tuesday June 15, 2010 at the Carstairs Gold Course Club House. Advertising of the open house was placed in local newspapers. Information on the Draft MDP and Transportation Plan was presented and staff from the town and AECOM attended to answer questions. Approximately 10 people visited the open house.



Municipal Development Plan and Transportation Master Plan Open House, June 15, 2010

### 9. Summary

The Town of Carstairs Transportation Master Plan (TMP) will guide development of the Town's roadway and trail systems in the coming years. The Transportation Master Plan complements the Municipal Development Plan in guiding growth of the Town.

The Transportation goal for Carstairs is:

To provide and maintain a transportation system that supports the safe and efficient movement of persons and goods using as broad a range of transportation modes as possible.

The TMP also outlines the following objectives for Transportation:

- To use a system of transportation planning and management that establishes a safe and efficient transportation system with a clear hierarchy to the road network.
- To encourage and facilitate multi-modal transportation (automobile, pedestrian, bicycle) where feasible.
- To coordinate transportation planning with Alberta Transportation and Mountain View County.
- To integrate transportation and land use considerations in all transportation decision making.

This TMP contains a list of policies that support achievement of the Transportation Goals and Objectives and provides plans for arterial level roadways and primary pathway networks that will be the framework for future development of these systems.

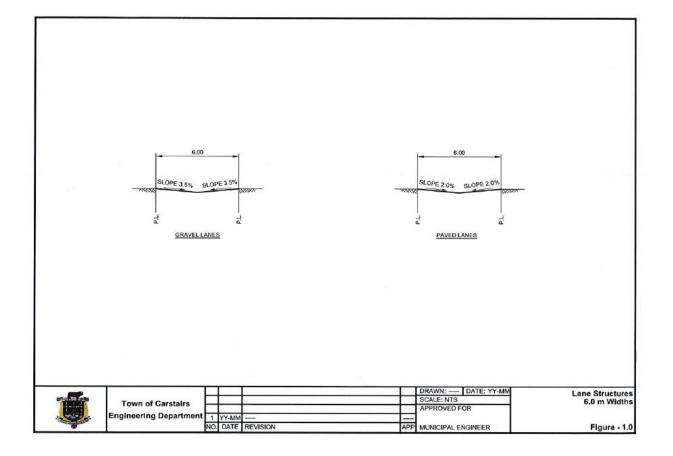
It is recommended that the Town of Carstairs adopt this Transportation Master Plan, 2017 as a basis for developing its arterial roadway and primary trail networks.

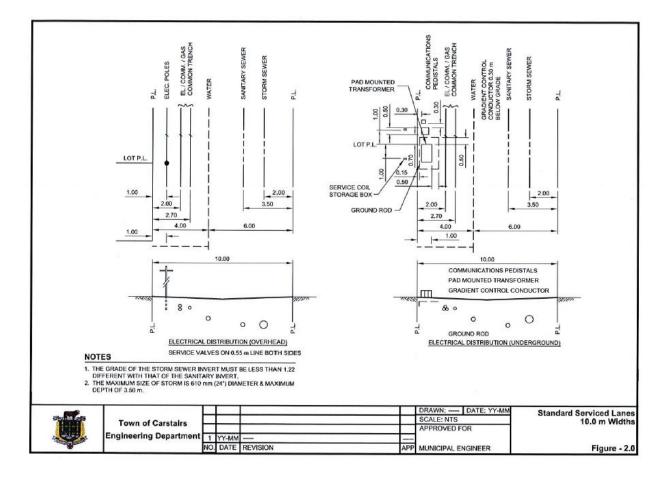


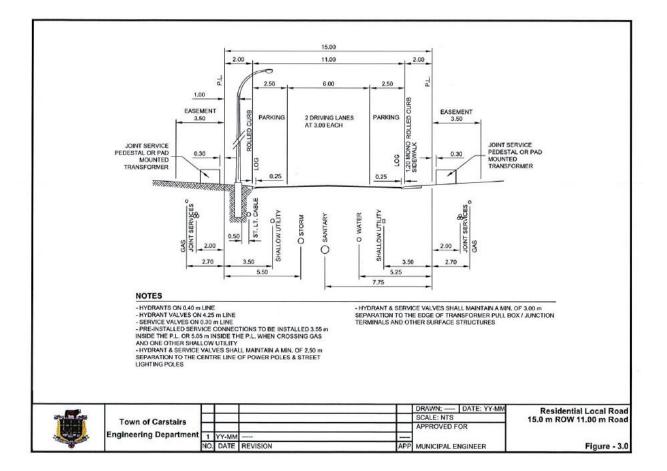
# **Appendix A**

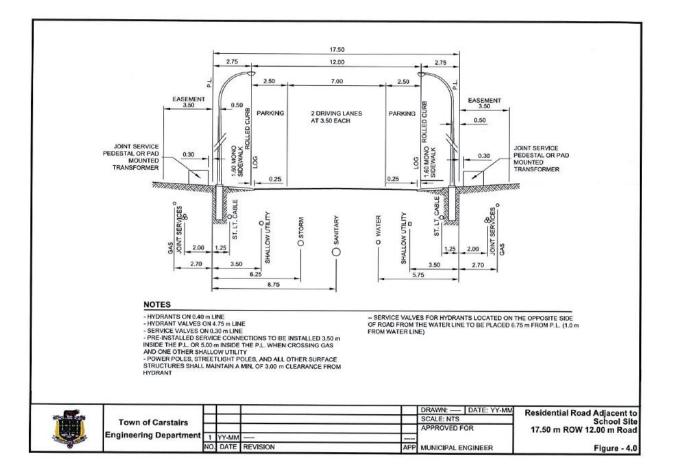
Town of Carstairs Transportation Master Plan

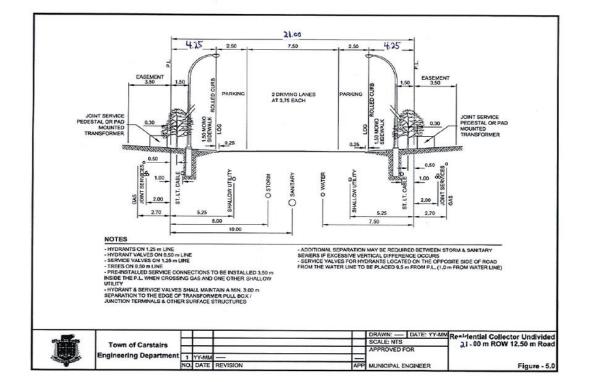
Typical Roadway Cross-Sections

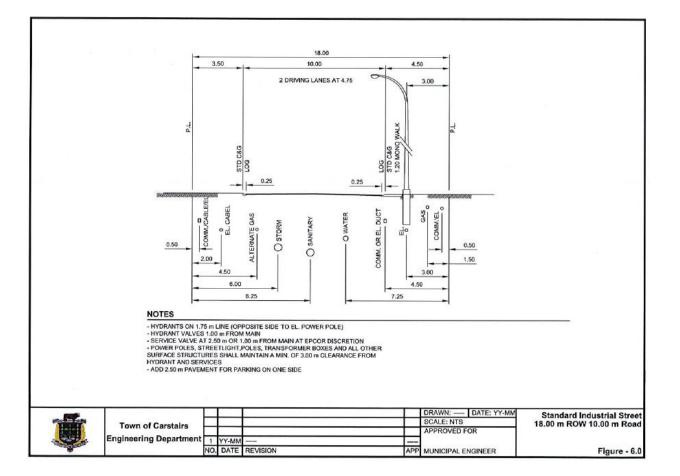


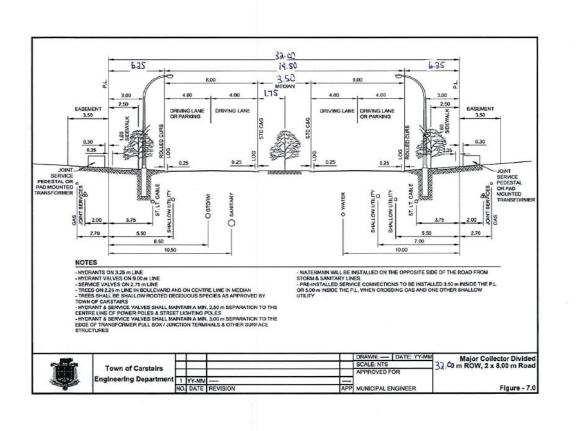


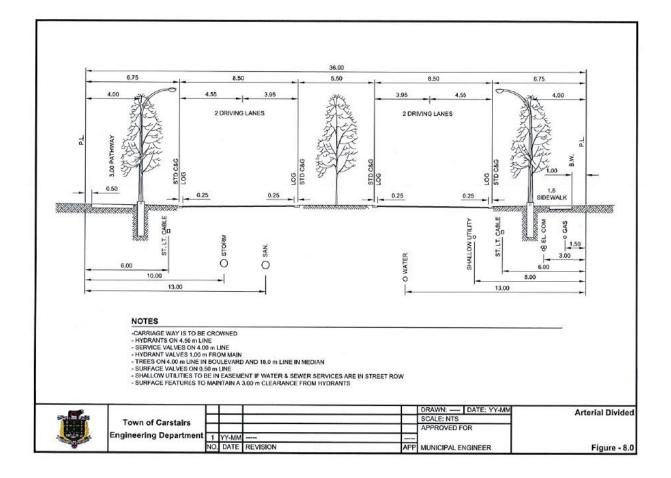












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Project Number: 60150078

Date: October 2010

**Revisions:** 

Town of Carstairs Rob Mckay March 2017