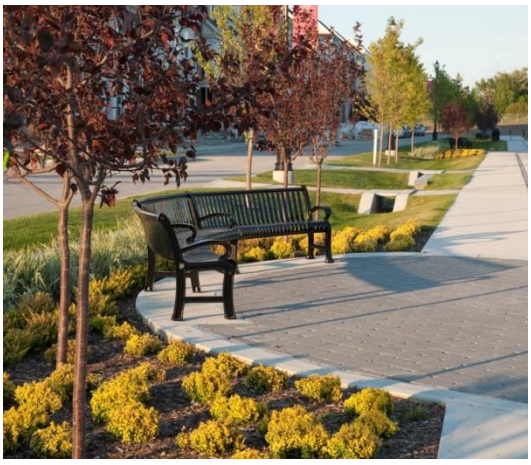
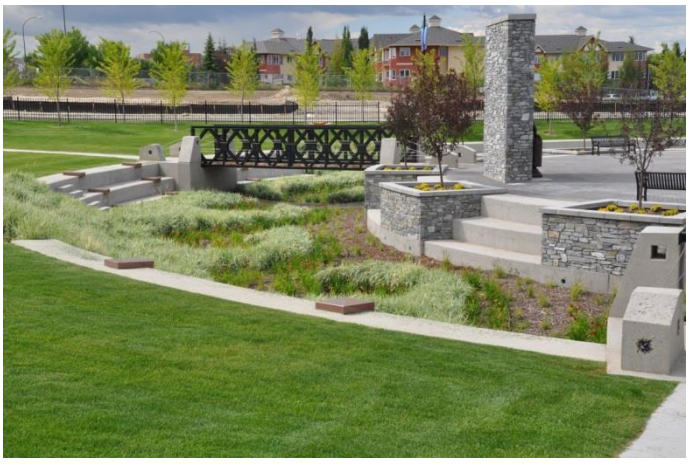
CURRIE BARRACKS
CUSTOMIZED DESIGN CRITERIA

Canada Lands Company Limited



b&a PLANNING GROUP

CANADA LANDS COMPANY
SOCIÉTÉ IMMOBILIÈRE DU CANADA

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Canada Lands Company Limited

CURRIE BARRACKS
CUSTOMIZED DESIGN CRITERIA

AS APPROVED BY COUNCIL ON NOVEMBER 20, 2006

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PREAMBLE

Calgary City Council has designated Currie Barracks to be an “Innovation Area” where all aspects of the public infrastructure will be subject to CUSTOMIZED DESIGN. This means that normal City of Calgary standards will not apply. Instead all aspects of infrastructure will be designed to meet the requirements of each specific situation and also to meet basic criteria that will ensure the safety and functionality of the proposed development.

The following document specifies two key aspects of the Customized Design process:

Part I outlines the design and review process for the detailed design of the public infrastructure. This customized design of the infrastructure will be shown on:

- The Detailed Engineering Drawings
- The Detailed Landscape Drawings
- The Tentative Plan of Subdivision

Part II outlines basic criteria to be met by the designs for the following aspects of the public infrastructure:

- Public Access
- Underground Utilities
- Landscaping and Public Parks
- Grading Controls (Public and Private Land)
- Stormwater Management

PART I

CUSTOMIZED DESIGN AND REVIEW PROCESS

PART 1 – CUSTOMIZED DESIGN AND REVIEW PROCESS

1. INTRODUCTION

1.1 Purpose

Garrison Woods, which has been developed on the east side of Crowchild Trail between 1998 and 2005, is one of the most successful developments in Canada. A key component of the success of Garrison Woods has been the use of customized design for many aspects of the infrastructure, the streetscapes, and public open spaces.

The purpose of this document is to set out the process and criteria to be utilized in carrying out customized design of infrastructure within the Currie Barracks component of CFB West.

Part I of this document provides the rationale for sing customized design in Currie Barracks. It describes the process to be followed for submission of tentative plans, engineering drawings and landscape drawings, and subsequent review and approval of these drawings by the City of Calgary.

The objective of Part II of this document is to outline the basic criteria that will be used for the customized designs for the infrastructure in the Currie Barracks area. These basic criteria will be used both by the design consultants and by the plan review personnel in the reviewing departments at the City. It is anticipated that engineering and legal plans will meet these criteria, and that once submitted to the city, the plans will be reviewed for conformance to these criteria. It is intended that the review process will not need to be any longer or more difficult than the review process needed to check designs against normal City Standards.

It is also intended that the design consultants will submit additional information (outlined in Section 4.0) in order to support, and provide a rationale for, the customized designs. The customized designs will not be different from “standard” designs just for the purpose of being different. The customized designs will be efficient and effective ways of meeting the criteria outlined in Part II of this document. An attractive, interesting and sustainable development will be created as a result of this “tailor made” approach to infrastructure design.

1.2 Status

It is intended that this document will be an addendum to the Currie Barracks Outline Plan. It will be part of the package submitted to council for approval with the Land Use Redesignation.

1.3 Policy

In approving the CFB West Master Plan in December 2000, Calgary City Council stipulated that **customized design** was an appropriate approach for CFB West including the remaining portions of CFB Calgary. This is partly in recognition of the success of customized design in Garrison Woods, and partly in recognition that CFB West is not a suburban development and special design procedures are needed in an inner-city “brownfield” redevelopment.

The approved CFB West Mast Plan includes several pages devoted to the concept of customized design. The Plan states:

"While it is anticipated that many of the City's existing public infrastructure design standard may be used within CFB West, a customized or tailor-made approach to infrastructure design should be considered where there is an opportunity to create special or unique features. The elements of customized design should include the public open space, the circulation system, transportation management, transportation, and utilities rights-of-way.

The rationale for the use of customized design is as follows:

- **to create a unique development, with interesting neighbourhoods;**
- **to reflect the location of the site on the edge of the inner city and a desire to create a non-suburban environment;**
- **to protect existing trees, buildings, and roads;**
- **to respect and celebrate the history of the area;**
- **to create a pedestrian/cyclist/transit friendly environment as well as to facilitate the use of the car; and**
- **to build on the success of customized design approach used within CFB East.**

The intent is to use functional/performance based design criteria (e.g., function, maintenance) within CFB West where appropriate, rather than relying only on existing standards which have been developed over the years to address sometimes very different "suburban" situations."

In June of 2005 Council endorsed this commitment to innovation and Customized Design by specifically designating Currie Barracks to be an "Innovation Area".

NOTE – In case of conflict, the requirements of Alberta Fire Code and Alberta Building Code will override the Customized Design Criteria.

2. CUSTOMIZED DESIGN OBJECTIVES

2.1 Customized Design - Concept

Most communities across Canada have design “standards” which are specified to be followed by developers operating in those communities. Generally the standards are geared towards suburban development because most new development occurs of the periphery of the communities (usually at locations where the residents commute to work).

The intent in Currie Barracks is to create a unique, pedestrian oriented development that provides an option to suburban development. The unique customized approach for Currie Barracks will be designed to eliminate negative consequences such as:

a) Bland, stereotypical development.

b) Over-design of roadways and other public infrastructure.

c) No incentive for innovation.

d) Inappropriate application of standards relative to the actual use.

e) Cumulatively expensive combinations of inappropriate standards.

f) Lack of attention to aesthetics.

g) Emphasis on engineering systems (as opposed to lifestyle issues).

h) Lack of variety.

i) Single issue solutions rather than creative solutions that include several considerations and produce a better overall result.

j) Reliance on superficial aspects (e.g. entrance treatments) to create the impression of variety.

k) Inability to react to context or specific situations.

l) Emphasis on accommodating motor vehicles.

An alternative approach to urban design is to customize the design of elements of the development to meet the requirements of each individual situation. This approach should be applied to all aspects of development and redevelopment, including planning, zoning, engineering design, and construction.

2.2 Customized Design in Garrison Woods

The need for customized design in Garrison Woods originated from the requirement to retain existing trees, and to re-use some infrastructure in what was basically a redevelopment area. However, the advantages of the customized design have now gone far beyond these initial objectives. Some specific examples of the benefits of the customization are as follows:

Traffic Calming – Many direct and indirect traffic calming features have been constructed, including narrower roads, a traffic circle, tighter curb radii, bump outs, conspicuous parks and play grounds, etc.

Customized Street Furniture – Non-standard street lights, signage, fencing, benches, garbage cans, bollards and other monumentation make Garrison Woods an interesting place to live in and to visit.

Pedestrian Friendly – The walkway system has been customized to include separate concrete walks with treed boulevards, monolithic concrete curbs and walks, asphalt walks in the parks, and ornamental block walks at special locations.

Customized Parks – Each of the parks in Garrison Woods is designed to fulfill a specific purpose, or combination of purposes.

Retention of Existing Trees – The original objective of retaining as many trees as possible has been achieved by custom designing the new infrastructure to pass around the existing trees.

Residential Architecture – The DC zoning in Garrison Woods has permitted a wide variety of architectural styles, within a coordinated approach to the overall redevelopment.

Efficient/Effective Design – All of the engineering systems – roads, lanes, walks, water and sewer lines, drainage and shallow utilities – are functioning satisfactorily, despite the fact that they do not conform to normal suburban standards.

Integration With the Surrounding Area – Use of customized design has permitted Garrison Woods to be effectively integrated with the surrounding residential areas, and with the Marda Loop business area to the north.

Grid Road Systems/Back Lanes – The modified grid pattern road system represents an obvious departure from the usual road hierarchy found in standardized developments. By avoiding a clear-cut road hierarchy and providing a choice of routes an efficient road system has been created, which also works for pedestrians and bicycles.

Character and Uniqueness – Garrison Woods is perceived as being somewhere “special”, where there is a different streetscape around every corner. Customized design of all aspects of the development is an important part of creating this feeling of uniqueness.

It is now recognized that all of these benefits have been achieved in garrison Woods, and that this innovative approach has produced a community that is functional, liveable and sustainable.

3. CUSTOMIZED DESIGN IN CURRIE BARRACKS

3.1 Character Areas

The objective of customized design is to allow the designer flexibility such that the end product is not predictable and does not meet pre-ordained objectives. It is therefore not appropriate to specify in advance the particular items that will be custom designed within specific areas of the Currie Barracks.

However, given that the general planning intent and context of each of the **“four neighbourhood areas”** within Currie Barracks is specified in the Outline Plan and the associated zoning by-law, it is possible to

note in advance some of the opportunities for customization that may well be found in the various **"neighbourhood areas"**. The following section is intended to predict some of the key elements of special design that will likely be incorporated throughout the Currie Barracks.

The "heart" of the community is known as Flanders Point Centre, which includes a higher-density southeast neighbourhood and a shadow plan for the DND lands. The Flanders Point Centre is further supported by the following community areas:

- Parade Square Business Park & Currie Market;
- Northwest Neighbourhood; and
- Northeast Neighbourhood including a shadow plan for the City Roads Depot lands.

The Currie Barracks community also includes the existing Rutland Wood neighbourhood developed in Phases 1 & 2.

3.1.1 Flanders Point Centre

The Flanders Point Plaza (the "Point") and Main Street is a mixed-use "heart" for Currie Barracks. Located central to the community with access from Flanders Avenue SW, Richardson Way SW and Dieppe Drive SW. This commercial and residential centre will serve the residents of Currie Barracks, while also serve students and faculty of Mount Royal University, office employees from the Parade Square, Westmount, and the ATCO site business park areas along with residents from surrounding Garrison Woods, Rutland Park and Knob Hill/Bankview neighbourhoods.

The design of Flanders Point Plaza will maximize sun exposure on outdoor dining and congregating areas. The Point will be anchored by a high-quality grocery store that is complemented by a drug store, banking services, local food and beverage hot spots, health and wellness facilities, and other uses and services that are convenient for guests and residents alike.

Located above the street-oriented retail there will be a mix of residential built-forms and office spaces that take advantage of a grocery store where people can live without getting in their car to run errands or get to work. The site has been designed to connect residents, visitors and employees via walkable public and private streets, pedestrian prioritized mews and public spaces. Special attention to lowering the regional commute by the automobile is being addressed by providing a robust transit service with a high-quality user experience.

The centre will feature a range of townhouses, medium-density apartment buildings, and residential towers. It is envisioned that the Officer's Mess and Formal Garden area will support an assisted living residential use that is nicely well connected into the urban residential and retail structure of this centre. The southeast area of Flanders Point Centre will feature a range of medium to high-density apartment buildings, and residential towers. It is envisioned that this area will provide a variety of residential buildings to create a vibrant residential neighbourhood contributes to the vitality of the retail and community amenities throughout Flanders Point Centre. This area is within easy access of the open space system by including a continuous greenway with a multi-use pathway open space system along Richard Road SW. This system will provide a naturalized landscape to manage storm water runoff and create a new front door for the community along Crowchild Trail.

The public realm in the Point consists of a number of outdoor "rooms" that are simultaneously populated and programmed to create a dynamic and active public space used throughout the day and year. In addition to Flanders Point Plaza, this centre boasts unique and special open spaces such as Currie Green, a lower-scaled residential urban garden, south and west of Flanders Point Plaza and the Richardson Way/Quesnay Wood Drive Entrance Park. The historical Formal Garden associated with the Officer's Mess building are historic resources and will therefore, enhance the diversity of public spaces for residents and guests to enjoy.

The residential, retail and memorable public spaces will be connected via a network of mews. These private lanes will serve as secondary residential addresses and break down the super block structure. The Flanders Point Centre will be an exciting place that becomes home to both daily routines and new, special traditions.

DND

The lone active military remnant of Currie Barracks' former use is the Department of National Defense (DND) site just south of Flanders Avenue SW at the entry of the site. Canada Lands Corporation is in active discussions with the DND to find both interim and full relocation solutions that allow the balance of the Currie Barracks site to be built out in the short-term and anticipate a future acquisition of the DND lands in the longer term.

The Plan for Currie Barracks is designed to easily integrate the DND parcel into the overall framework. The development program envisioned for the DND site consists of a wide array of residential building types with the potential for extending the retail core along Flanders Avenue should the market for additional retail justify it. Office and hospitality uses would also be appropriate should the demand for such uses expand south across Flanders Avenue from Parade Square.

Flanders Point Centre Programming:

- Dining terraces that can be enclosed in pavilions that anchor the public space
- Flexible lawn that can host events, ice skating, and casual uses
- Winter gardens and glazed ground-floor bays engaged into buildings to animate the edge of the public space year-round
- Shared surface, privately-maintained streets that can be opened to pedestrians for larger events
- Small, high-quality, locally-derived food/beverage, daily service, and family entertainment uses

3.1.2 Parade Square Business Park and Currie Market

Immediately adjacent to the northeast of Flanders Point Plaza is the historic Parade Square where a dynamic mix of learning institutions, including Clearwater Academy, and corporate office spaces share an address on this re-purposed multi-functional public space. Accessed from Quesnay Wood Drive SW and Richard Road SW, students, employees and the community at large will be able to use the civic space for passive and organized recreation; festivals and shows; and as staging for community events.

Parade Square is the historic core of Currie Barracks and its redevelopment will be done so in such a way to properly commemorate its past and celebrate its new future. Currently, Parade Square is largely an institutional address around the parade grounds. Over time, a range of new and re-purposed office space

will complement the institutional uses in the historic buildings. The parade grounds will be rebuilt as a multi-functional public space that can host festivals, recreational sporting events, and cultural events. The scale of buildings and their location will be consistent with the existing buildings to maintain the proportion of the open space. The only exception will be the inclusion of new buildings that screen Crowchild Trail from the Square and make it a more manageable and comfortable size. However, visual access will be maintained through this new screen of buildings to maintain the historic axis to the Clearwater Academy building on the west end of the square. The Parade Square will be rebuilt as an innovative storm water mitigation measure while maintaining its historic character and unique setting.

As a part of this historic core, Currie Market, just east of Flanders Point Plaza and southwest of the Parade Square will re-purpose existing buildings to create an active market district and brewery. Currie Market will be an early-phase realization of the type of dynamic interactions envisioned for future phases of the project. Currie Market will bring together a cultivated group of vendors, farmers, and operators to create an active market space throughout the week and year. The market will repurpose the existing stables and garage bays. The stables will be the new location of a brewery and be programmed to offer indoor and outdoor spaces for entertainment, food, and beverage. It will anchor the south side of the market. The garage bays and Dieppe Drive SW will be home to permanent and “pop-up” vendors and operators. Ultimately, a covered facility will be constructed to ensure that the market can operate year-round. Another anchor of the market will be the community envisioning and marketing centre that can be phased out as the neighbourhood matures. The structure will transition into an intermodal transit hub that connects residents and employees to the rest of the city. For instance, bicyclists will be able to store their bikes and hop on express buses that bring them downtown and elsewhere.

Parade Square Business Park Programming:

- Active sports and multi-purpose fields
- Large temporary stage and event space
- Flexible paved terrace for markets/festivals
- Grand steps (spectator area/informal seating)
- Currie Market in and adjacent to the Stables Building: Brewery, locally - derived food vendors, small value-added offerings and crafts
- Community marketing centre and intermodal transit hub

3.1.3 Northwest Neighbourhood

Accessed from Quesnay Wood Drive SW and Dieppe Drive SW, the Northwest Neighbourhood will largely keep the scale and mix of the earlier phases of Currie Barracks. The centerpiece of the neighbourhood will be Ridge and Currie Parks that contain heritage buildings and the historic Trasimeno Crescent pathway system. A mix of single-dwelling detached, semi-detached, duplex, townhouses, and carriage houses will be oriented to or close to this park system.

The heart of the neighbourhood, the parks, will be activated by recreational uses including play areas for children, trails, and repurposed heritage structures. The heritage buildings, Ramshead and Brad houses, have the potential to be adapted for a unique hospitality use such as a restaurant, community club house,

parks management or some combination of the three. The parks will provide an incredible setting for this neighbourhood and the surrounding higher-density residential neighbourhoods.

3.1.4 Northeast Neighbourhood

The future of the Northeastern Neighbourhood, east of the extended Quesney Wood Drive SW, is driven largely by the future acquisition of the City's Roads Depot. In any case, however, it will be a more urban range of building types and residential accommodations. The scale of the development will be larger closer to Crowchild Trail and the Richmond Green Golf Course and incrementally step down to the scales of the northwestern neighbourhoods and Parade Square.

The Northeast Neighbourhood will get its value from views to downtown Calgary, an intimate central green space, and immediate access to Flanders Point through Parade Square. Parade Square's adjacency; in particular, gives this neighbourhood tremendous opportunity to link into employment and educational programming as well as the events that will take place in Parade Square itself.

Roads Depot

The City of Calgary's Office of Land Servicing and Housing (OLSH) has expressed interest in selling the piece of land between Richmond Green Golf Course and the northern boundary of Currie Barracks. This will create an opportunity to front onto the green space provided by the golf course as well as create important view access toward downtown. Should the Roads Depot become part of the community, the master plan is easily extended and street framework amended to connect the additional sites back into the community. It will also allow the density in Flanders Point and the Southeast Neighbourhood to be distributed on a larger land area.

The development envisioned for the Roads Depot is a mix of residential towers and lower-scaled apartment and townhouse buildings. The lands will also be responsible for providing additional Municipal Reserve area, proportionate to the new area being developed. The additional open space will connect back to the broader open space network established on the core Currie Barracks site.

Subject Site
Bus Routes
Primary Access Routes

Currie Barracks
Primary Access Routes

4. CUSTOMIZED DESIGN – IMPLEMENTATION

It must be recognized from the outset that the intent of this document is to implement a design and review process for all aspects of the Currie Barracks area that is different from the processes used in other development areas of the City. The designs utilized in the Currie Barracks redevelopment will not be governed by the normal City Standards used in those areas.

While it is anticipated that the customized designs will sometimes utilize dimensions and alignments which are similar to those used in developments that are governed by the normal City Standards, it is not intended that the normal City Standards will be the fall-back design criteria for the Currie Barracks. In reviewing the customized designs the City design review personnel should not compare the designs to the normal City Standards and shall not reject the customized designs simply because they do not confirm to the normal City Standards.

Where minimum dimensions are specified in Section 4 of this document, it is recognized that these minimum dimensions will not necessarily be appropriate for all situations. The purpose of customized design is to propose actual dimensions which are appropriate for each specific situation having consideration for operational, safety, aesthetic, and maintenance issues. The dimensions proposed in the specific designs will not be less than the minimum dimensions specified in this document.

With a customized design approach, the emphasis is placed on the developer and, more importantly, on the developer's consultants producing a design that works. This is in contrast to the normal situation where the consultants are required to produce a design which meets, or exceeds, prescribed standards. Customized design places more severe obligations on the designing consultants. It also gives the consultants the opportunity to come up with innovative, efficient and effective solutions.

Some **basic criteria**, such as fi**re hydrant spacing, separations between utility lines**, etc. **must be met in order to ensure the safety of the public. Some safety issues are met by performance criteria rather than minimum dimensions.** For example a reasonable criterion is that there shall be access to all buildings for firefighting equipment. The key is that these performance criteria can be met by a variety of different solutions rather than a single prescribed minimum dimensions (which may, or may not, be the most effective solution).

Utility alignments and construction materials should not create unreasonably high future maintenance expenses. This will be achieved by other means than just standardizing all alignments and materials. The designer must produce a design which functions, and which can be maintained in reasonable circumstances. The best design is the simplest, most attractive, one that works, rather than the one that meets prescribed (suburban) standards. The designer will be permitted to specify the use of materials that differ from those normally used in standardized developments.

Customized design places additional obligations on the design consultants. It also means that a different approach will be required from the approving municipality. In a standardized development the review of developers' submissions consists primarily of checking designs for conformance with normal standards. Under customized design the **municipality has to check that the proposed design meets performance criteria.** The municipality will need to conduct a "first principles" review of the design, and the developer's design consultants should provide rationales for all contentious design decisions.

The municipality's review process must be carried out in a fashion which is open to innovative ideas, and which looks at the underlying performance requirements. The review should be carried out by

professionals who have a mandate to encourage innovative solutions, and have the authority to look beyond normal standards.

The submissions that will be based on the design criteria outlined in this document will be mainly the submissions which over infrastructure design. These will include plans of subdivision (both “tentative” plans and final “linen” plans), engineering drawings, landscape design drawings, drainage and site servicing plans. A customized design approach will also be followed in the architectural design of private parcels. However, the basic criteria for Development Permit and building Permit applications will be given in the relevant zoning by-laws and in the Outline Plan document.

The following section outlines the implementation of the customized design and review processes for the various infrastructure submissions.

4.1 Tentative Plans

Tentative Plan submissions shall be accompanied by the following documentation:

4.1.1 A TREE INVENTORY PLAN

This document showing all existing major vegetation will be similar to plans that have been submitted with previous subdivisions in Garrison Woods and Garrison Green. It will outline the **developer’s intention to retain, relocate or remove each of the significant trees in the area covered by the tentative plan.**

4.1.2 STAGING PLAN

Every tentative plan shall be accompanied by a staging plan showing the access routes to the **tentative plan area.** The Staging Plan should:

- Outline the **proposed sequence of staging** within the Tentative Plan area.
- Illustrate **emergency access routes** to the Tentative Plan area, such that adequate emergency access is provided in all situations of interim servicing.
- In cases where an emergency access routes crosses un-subdivided land, the legal means of securing this route on the lands.

4.1.3 RESERVE ANALYSIS

The **Reserve Analysis** should identify:

- The amount of creditable reserve owing on the developer’s lands within the community.
- The amount of creditable reserve dedicated to date through the subdivision approval process, and
- The general location and amount of creditable reserve to be dedicated on lands that have not received subdivision approval.

4.1.4 **DENSITY ANALYSIS**

The Density Analysis should identify:

- A **plan for the entire community showing the proposed phases or neighbourhood areas.**
- The **existing and projected density for the community within the approved phases** and the **future phases or character areas,**
- The **proposed density of lands within the Tentative Plan area.**

4.1.5 AN **ACCESS ROUTE FUNCTION PLAN**

The major functions of each of the public rights-of-way in the tentative plan area will be documented on this plan. It will be drawn to the same scale as the Tentative Plan. It will show such items as:

- Primary Access Routes
- Transit routes (including probable bus stop locations)
- Garbage truck routes
- Fire access routes (noting if fire access is to buildings higher than 3 storeys)
- Pedestrian and bicycle circulation routes
- Any **specially designated No Parking zones**
- Details of the proposed land use of parcels within, and adjacent to, the tentative plan area
- The proposed land use within private parcels and adjacent to the Tentative Plan area
- The proposed housing and commercial development distinguishing between single family and semidetached housing; multi-family up to four stories; multi-family over four stories; and commercial / mixed use development.
- Any **unusual setbacks in the adjacent parcels that may affect roadway design**
- Any designated on-street bicycle circulation routes
- Any other special access considerations
- Where there is a significant departure on the proposed tentative plan from an approved standard, a written rationale for the innovation shall be provided including the following:
    - The reasons for the departure.
    - The benefits of the departure.

- Where appropriate, the mitigation measures to be introduced to address the negative impacts relating to the innovation.

4.1.6 RIGHT-OF-WAY CROSS –SECTIONS

These **may be "typical" cross sections where the same cross section is used at more than one location.** Where appropriate the detailed engineering drawings may be used to give this information. Information that will be included with the Tentative Plan will be:

- Minimum ROW width
- Sidewalks, walkways and pathways within the ROW
- Carriageway widths, including widths of driving lanes and parking lanes, boulevard and median widths
- Utility alignments for deep and shallow utilities
- Lip of gutter alignments
- Surface feature locations (e.g. hydrants, street lights, trees, fences, etc.)

4.1.7 **VEHICLE SWEPT PATH ANALYSIS PLAN**

Plans **indicating vehicle pathway sweep for critical intersections, cul-de-sacs and rear lanes will be included with the Tentative Plan.** The vehicle pathway sweep design shall be site specific and take into account various criteria such as the appropriate vehicle type and geometry, building setbacks, pedestrian visibility, sight distances, possible location of parked vehicles, driveway access, etc. where applicable. Typical vehicle pathway sweeps may be provided where the same right-of-way geometry occurs at more than one location.

Typical examples of vehicle pathway sweep plans for cul-de-sacs, intersections for one-way and two-way streets, and rear lane access are shown in Appendix B.

The Vehicle Swept Path Analysis plans should illustrate:

- 1:500 scale, showing dimensions of road design elements.
- Surface features within 2.0m of the curb face or edge of pavement.
- Locations of Parking and No Parking areas.
- Pathway sweep of outside wheels and overhang portions of the design vehicles.
- Location of centerline of the design vehicle.
- Right-of-Way width.

4.1.8 **LANDSCAPE CONCEPT PLAN**

- The general grading for the reserve land.
- The proposed conceptual landscaping of the reserve.
- Significant facilities and amenities to be developed within the reserve.

4.1.9 TENTATIVE PLAN REVIEW PROCESS

It should be recognized that, while the **Tentative Plan stipulates preliminary dimensions** for the lots and ROW's, it **does not set the final legal dimensions of the subdivision.** There will still be the opportunity to revise lot and right-of-way dimensions prior to registration of the legal plan. For this reason the **right-of-way dimensions on the Tentative Plan should be taken as minimums which will not be reduced on the linen plan,** but which can possibly be increased if this is required to accommodate additional utilities or other features.

The review process for the **Tentative Plan** should check that issues raised by the **Tree Inventory Plan and the Access Route Function Plan** have been addressed. The review will also require some reference to the detailed criteria given in Part II of this document. However, the **detailed alignments of the utilities and other infrastructure will be shown on the engineering drawings** and those drawings will be reviewed in detail by the relevant engineering departments. There will be **no requirement for the exact dimensions of the infrastructure to be checked as part of the review of the Tentative Plan submission,** except to confirm that the proposed ROW widths are sufficient to accommodate all the various elements of infrastructure.

4.2 Subdivision Construction Drawings

The level of detail on the subdivision construction drawings will be the same as that required for a typical City of Calgary subdivision, except where different requirements are outlined in Part II of this manual. In a customized design situation the subdivision construction drawings will be accompanied by the additional documentation noted in 4.1 above for the Tentative Plan except for Items 4.1.3 and 4.1.4. The Subdivision Construction Drawings shall include a Traffic Control Plan showing all No Parking sings, line markings, pedestrian crossings, signalization, and any special time of day

In addition, where there is a major innovation, either in design configuration or in materials used, the consultant shall provide a written rationale for this major innovation. The rationale shall provide an outline of the reasons for this aspect of the design, its benefits, and measures to mitigate possible negative side effects (such as significantly increased maintenance costs). This written rationale will only be required where a similar major innovation has not been utilized in previous designs. Where there is a dispute regarding the acceptability of a particular innovation, the issue shall first be referred to the Senior Review Team described in Section 4.7 below. Unresolved disputes shall be subject to the Issue Resolution process noted in Section 4.7.1.

It is at this stage where each of the relevant City departments and the shallow utility companies will review the detailed alignments and sizing of each element of the infrastructure. The design will be reviewed for conformance to the criteria noted in Part II of this document, bearing in mind the information also shown on the Outline Plan, the Zoning Plans, the Tree Inventory Plan and the Access Route Function Plan.

The developer's consultants will meet with each of the relevant City departments to confirm that the criteria of that department noted in Sections 4 through 8 have been followed. The consultants will also meet with the shallow utility companies, either individually or in a combined meeting, to ensure that adequate shallow utility routing has been provided.

The acceptance of the customized designs shown on the subdivision construction drawings by the relevant City departments shall be communicated back to the consultants through the City's Urban Development Division.

Where a major departure from normal design "standards" is proposed, it is recognized that prior discussions with the relevant City departments will expedite the subsequent review process. After submission of the engineering drawings, a meeting will be convened with the reviewing departments. At that meeting the consultant will have the opportunity to brief those departments regarding any prior discussions that have occurred.

4.3 Landscape Design Drawings

The **landscape design drawings will show the planting locations and details for all plant material that will be located within rights-of-way or municipal reserve parcels.** They will also show **grading, irrigation facilities** and all **proposed hard landscape features,** such as **monuments and street and park furniture.** The submission of the Landscape Design Drawings will be **accompanied by a Tree Inventory Plan,** unless that Plan has previously been submitted to the Parks Department.

The **landscape design drawings will be submitted with the engineering drawings, and also as a separate package to the Parks Department.** They will be subject to review and approval by the Parks Department. They will also be used as reference documents by the other relevant departments in order to ensure that there are adequate clearances from other elements of the infrastructure.

4.4 Drainage & Site Servicing Plans (Commercial, Multi-family, Mixed Use Parcels)

As the infrastructure in these parcels will remain in private ownership there will be little need for a review of future maintenance requirements. The review by the City of site servicing plans would be limited to ensuring that safety aspects of the criteria noted in Part II, and in the City's other by-laws and provincial legislation, are met.

4.5 Registered Linen Plans

Final plans of subdivision (linen plans) and the associated utility right-of-way plans, shall meet the following criteria.

a.) Right-of-way dimensions shall be equal to, or be greater than, all right-of-way dimensions on the approved Tentative Plan.

b.) The number of lots on any roadway shall not exceed the number of lots shown on that roadway on the approved Tentative Plan.

c.) The linen plans shall accommodate all of the infrastructure alignments and sizing noted on the approved engineering drawings.

The submitted linen plans shall be reviewed by each of the relevant City departments for conformance to the above. Approval of the linen plan(s) shall be signified by endorsement of the linen plan by each of the relevant City departments, or by endorsement by the Subdivision Officer on behalf of the relevant department.

4.6 Extraordinary Public Amenities

4.6.1 MAINTENANCE AND REPLACEMENT OF STREETSCAPE AND PARK IMPROVEMENTS

The **higher density, mixed use development within the Currie Barracks community generates a need for an improved streetscape and park spaces to support and enhance the quality of the urban environment.** The improvements typically **involve additional trees and landscaping, street furniture, pathways, signage and other social and recreational amenities that may exceed conventional municipal standards.** While the developer is responsible for the initial construction of these amenities, they will also generate on-going maintenance and replacement costs. At the same time, the higher density development typified by the Currie Barracks community could produce substantial cost savings in terms of road and utility construction and maintenance, together with operational efficiencies for transit, fire, police, garbage collection and other municipal services. These **cost savings could more than off-set any additional maintenance and replacement costs for streetscape and park improvements.**

In recognition of this situation, the additional maintenance and replacement costs for “core” public streetscape and park improvements intrinsic to the community should be borne by the City. The City accepts this principle and the developer, in its discretion can advance this argument in any relevant issue resolution or escalation process.

4.6.2 CORE STREETSCAPE AND PARKS AMENITIES

The maintenance and replacement costs for the following categories of core public streetscape and park improvements should be the responsibility of the City in recognition that these improvements are considered to be integral to the higher density, mixed use function of the Currie Barracks community.

Table 4.6 Core Public Streetscape and Park Improvements

Streetscape Improvements	**Park Improvements**
Customized Public road right-of-way surface	Landscaping
Boulevard/Median Landscaping	
Street Trees	Trees
Street Furniture	Ornamental Park Features (Excluding Water Features)
Location/Identification Signage	Pathways
Streetlights	Lighting
Transit Shelters	Recreational Equipment
Interpretive and Informational Signage	

The **core public streetscape and park improvements identified above**

a.) **can be enhanced above established City standards without affecting their municipally-funded maintenance and replacement status,** and

b.) are still subject to evaluation to address other elements of their suitability not related to long term maintenance and replacement.

In addition, a streetscape or park improvement not identified above should be considered to be a "core" public improvement to be maintained and replaced by the City where the improvement meets the following criteria:

a.) The improvement complies with, or is supported by, the policies of the CFB West Master Plan and the Currie Barracks Area Redevelopment Plan.

b.) The improvement is considered to be integral to the function of the community.

c.) The improvement will generate reasonable and manageable maintenance and replacement costs.

4.6.3 MAINTENANCE OF EXTRAORDINARY PUBLIC AMENITIES

Where a park improvement is not a "core" public improvement as defined in 4.6.2 above, the developer shall propose a funding mechanism that is adequate, sustainable and practical to provide for the long term maintenance and replacement of the improvement.

Two possible financing mechanisms have previously been identified as follows:

a.) The introduction of **Resident's Association** that is responsible for the ongoing maintenance and replacement of the amenities on public land through a sustainable and on-going fee levied and administered by the City, or a Resident's Association.

b.) The provision of an **endowment fund by the developer,** which then can be used to finance the on-going maintenance and long term replacement of the amenities, with the fund to be administered by the City, or a Resident's Association.

It is possible that other mechanisms may be proposed in the future.

In the case where a private method of funding is necessary for maintenance or possible removal costs of an amenity within a public park or street, the developer should provide information identifying:

a.) The on-going maintenance and long term replacement costs associated with the amenity.

b.) The private financing mechanism to be introduced to address the maintenance or possible removal costs.

c.) The method of implementing the funding mechanism to ensure that such maintenance or possible removal will not revert to the City in the future.

At the time of submission and review of the detailed Landscape Drawings, the mechanism for funding on-going maintenance of Extraordinary Public Amenities shall be agreed upon with the Parks Department and Urban Development.

4.6.4 **DISPUTE RESOLUTION**

In the event of a dispute over what constitutes core amenities or the funding levels for the maintenance of extraordinary amenities, the **developer shall first attempt to resolve the issue(s) through negotiation with the directly affected department.** Where there are still issues of dispute, the developer may, at its sole discretion, **escalate the unresolved issue(s)** in accordance with the process set out in Section 4.7.1. The escalation process may include an analysis by the developer, to advance their position, that outlines in general terms how the nature of the development will create benefits and/or cost savings for the City that offset possible extra maintenance expenses.

4.7 Senior Review Team

Where there are still issues of dispute after the second submission of a proposed Tentative Plan of Subdivision, the submission should then be reviewed by a Senior Review Team comprised of designated senior staff members in each affected business unit, including where appropriate:

a) Subdivision.

b) Parks.

c) Urban Development.

d) Transportation Planning.

e) Calgary Roads.

f) Water Resources.

The Senior Review Team will be responsible to the Director of Development and Building Approvals who will, where necessary, coordinate a meeting with any other senior management personnel involved in the outstanding issue.

Wherever possible, the same designated staff members that served on the Special Review Team responsible for evaluating the Outline Plan/Land Use Amendment application should be represented on the Senior Review Team.

4.7.1 ISSUE RESOLUTION

a.) Where an issue cannot be resolved between the developer and the Senior Review Team and/or the Director of Development and Building Approvals, the matter shall be referred to the Calgary Planning Commission (CPC).

The referral to CPC may comprise either a request for a decision on a particular issue or a decision on the Tentative Plan of Subdivision.

The review of a Tentative Plan of Subdivision should occur in accordance with the Recommended Review Framework approved by Council (CPC Item M-2005-020 Appendix I, Attachment 5). A request to refer the application to CPC shall be handled in an expeditious manner by the Administration, and shall be brought to CPC at the next available meeting of CPC. The developer and/or the developer's consultant shall have the opportunity to address CPC regarding the issue in dispute.

b.) Where there is an internal dispute between City Business Units which does not involve the applicant, it should be referred to the Director of Development and Building Approvals for resolution of the issue.

Figure 4.1 Tentative Plan Review and Approval Process

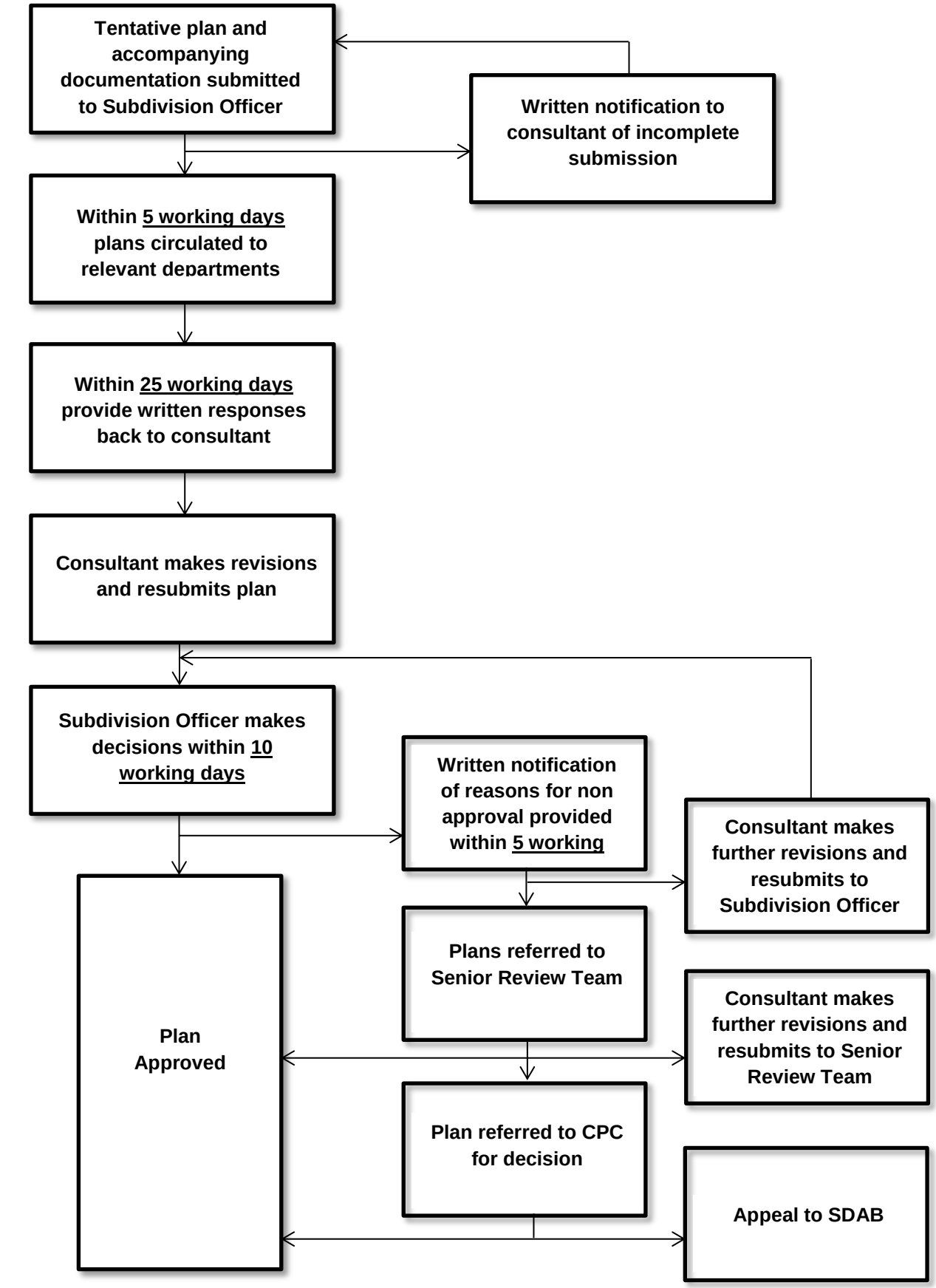


Figure 4.2 Engineering Drawing Review and Approval Process

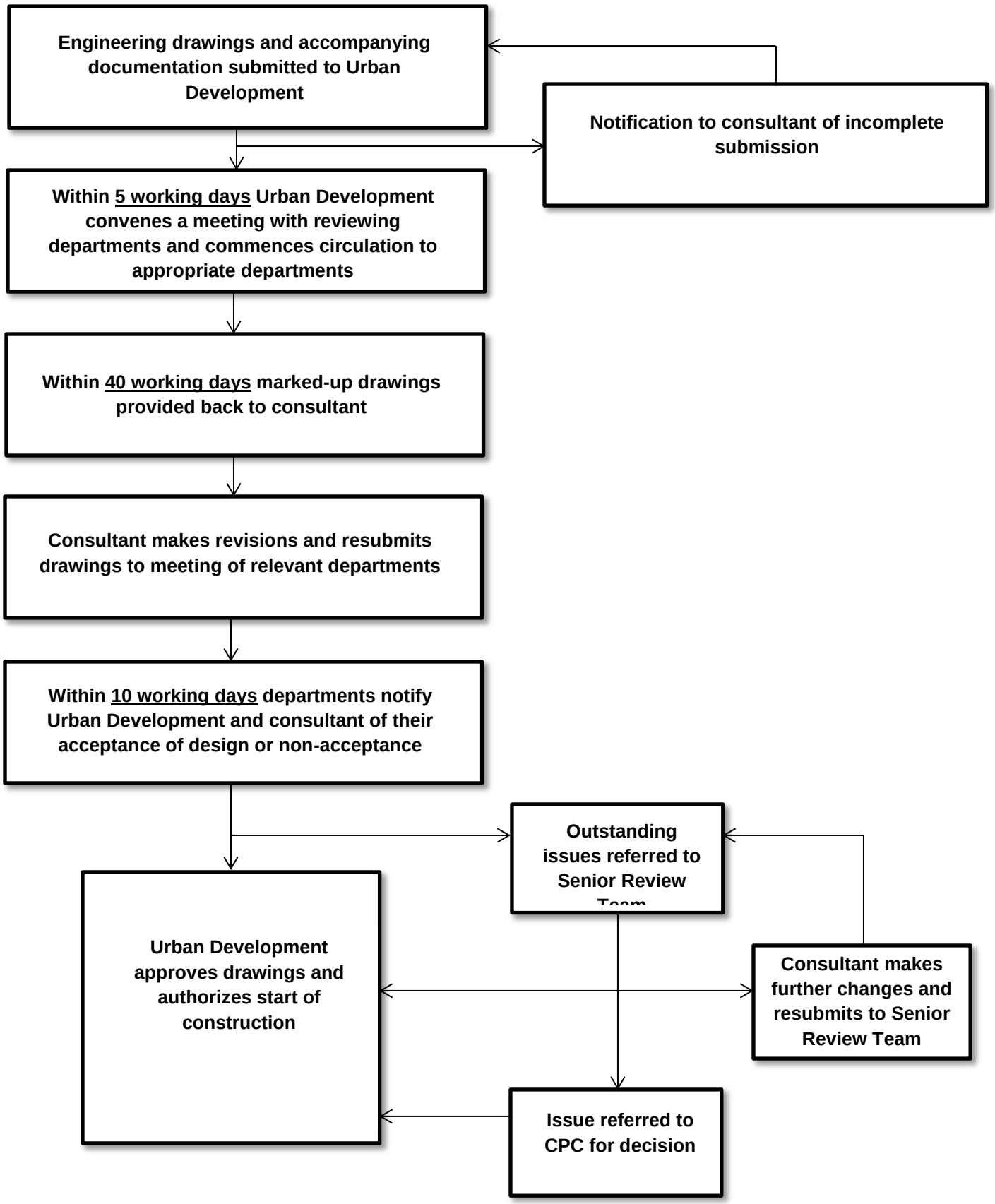
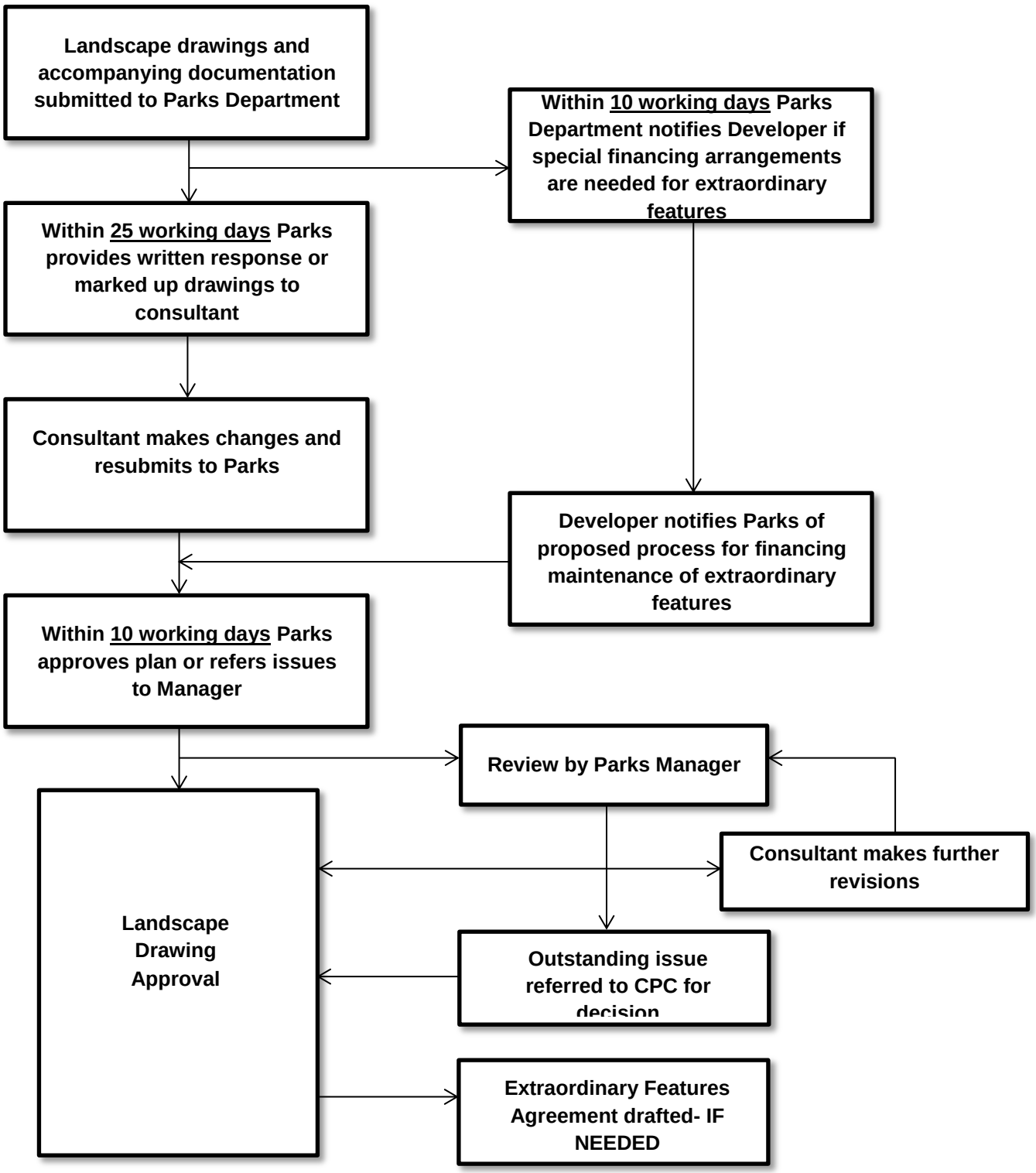


Figure 4.3 Landscape Drawing Review and Approval Process



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Canada Lands Company Limited

PART II · CUSTOMIZED DESIGN CRITERIA

AS APPROVED BY COUNCIL ON NOVEMBER 20, 2006

FILE NO. 569. 100

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PART II

CUSTOMIZED DESIGN CRITERIA

PART II – CUSTOMIZED DESIGN CRITERIA

1. INTRODUCTION

This section outlines the basic criteria for the elements of customized design. The criteria is to be used as a guide for the site specific urban design and is not intended to replace the best practice, which relies heavily on knowledge , experience and fundamental principles of urban planning and infrastructure engineering systems to create a safe, efficient, economical and functional environment.

2. PUBLIC ACCESS

2.1 Streets

If there is a discrepancy between the requirements of the Alberta Fire Code or the Alberta Building Code and the following Customized Design Criteria, the Codes will be the overriding requirement.

2.1.1 GEOMETRIC DESIGN

Speed Limit

The **speed limit** on Quesnay Wood Drive SW should be **50 kph** and Flanders Avenue SW shall be **40 kph.** A speed limit of 30 kph may be posted at all entrances to the rest of the neighbourhood, and at other locations throughout the neighbourhood where necessary to enforce the implementation of a 30 kph speed limit, in accordance with the Alberta Traffic Highway Safety Act.

Design Speed and Geometry

Design speed for each roadway will be based on the specific urban design objectives and in most cases a **design speed of 30 kph will** be utilized. In **no situations will a design speed of greater than 50 kph be utilized. Traffic calming measures may be implemented to ensure that actual speeds are less than the design speeds and the posted speed limits.**

Design Use Vehicles

(i) **Frequent Use Vehicles**

Frequent use vehicles are defined as vehicles which will access the streets on a daily or weekly basis and include **passenger vehicles** (P) and **garbage trucks** (City of Calgary Waste Collection Vehicle Front end Loader in residential land uses, and HSU in multi-family and commercial land uses). On streets that serve as **transit routes, buses** (B-12 TAC) will be considered **frequent use vehicles.**

Only where required for specific site uses as needed (Grocery Store or Commercial Site), a WB-19 should be accommodated as the design vehicle for swept path analysis. The entire road network is not to be designed for a WB-19 vehicle, and intersection design will only be provided for access to and from required site uses.

(ii) Emergency Response Vehicles

Emergency response vehicles are defined as the vehicles which will use the streets infrequently but are to be accommodated to ensure timely and effective access for emergency situations.

Emergency response vehicles listed below:

Built Form	Vehicle Description	Specifications	Pumper Truck	Aerial/ Truck	Bronto Skylift
Single Family	Pumper/Aerial	Lengths (m)	9.14 – 9.75	10.97	14.63
Multi-Family up to 4 Storeys	Pumper/Aerial	Width (m)	2.59	2.59	2.59
Commercial/Mixed Use 5 Storeys or more	Pumper/Bronto	Wheel Base (m)	4.82 – 5.18	5.33	6.35
		Turning Radius (m)			
		I Curb	9.75	9.75	11.58
		II Wall	10.97	10.97	12.80

(iii) **Infrequent Use Vehicles**

Infrequent use vehicles are defined as the vehicles which will access the community rarely and are expected to manoeuvre at very slow speeds through public right-of-ways, when required. Infrequent vehicles are **moving vans** (WB-19) and **construction vehicles** (SU-9).

(iv) User Defined Vehicles

The following parameters will be provided for user defined vehicles: type of vehicle, vehicle length, wheelbase length, front overhang, rear overhang, vehicle width and steering lock angle (or minimum turn radius).

Vehicle Swept Path Analysis

Vehicle turn simulation will be required for intersections, or locations where confirmation is required that vehicles can manoeuvre effectively. Vehicle turn simulation will be completed using the latest version of AutoTurn Software Modelling. The parameters to be utilized in the modelling of the vehicle swept path are listed in Appendix B. Where multiple design vehicles are required at a particular intersection, the most conservative design vehicle swept path will govern.

Vehicle pathway sweep to be based on the appropriate design vehicle expected to use that particular road. For emergency vehicles and other service vehicles, which are expected to use the road infrequently, the vehicle pathway can encroach beyond the street centre line during the turning movement without interfering with parked vehicles and fixed structures adjacent to roadway. Fire truck access shall be based on land use e.g. in a single family district the type of fire truck modelled will be different than in a high rise district. For a private site a minimum 6m wide access will be provided. Fire/Emergency vehicles require the following minimum widths for access and set-up: Pumper trucks – 5m, Aerials – 6m. Various options for meeting these requirements will be utilized, including the established of occasional emergency vehicle zones to provide set up areas for fire trucks within the public roadways.

2.1.2 WIDTH OF STREET CARRIAGEWAYS

The **streets will be designed to achieve urban design objective while maintaining the function of the street and adequate level of performance for its users.**

Traffic Lane Widths

Driving lane width for Residential Roads (2.35m to 2.5m) and Bus Routes (minimum 3.3m) will be based on design speed, adjacent parking lanes, traffic volume, type of user and fire truck access. Lower design speeds will allow lane width to be minimized. A public residential two-way street with parking on both sides will have a minimum carriageway of 9.0m from face of curb to face of curb (8.5m LG), comprised of two 2.35m driving lanes and two 2.15m parking lanes.

A minimum 6m clear distance shall be provided between permanent above ground structures along all fire access routes.

On streets, lanes or mews where the width of pavement is less than 6.0 metres emergency vehicles set-up areas shall be provided every 90 metres along the right-of-way. The set-up areas shall be 6.0 m wide unobstructed, no parking, hard surfaced without vertical obstructions, and a minimum of 10 m in length. This may be achieved through various means including driveways or lane intersections. No Parking areas at fire hydrants shall be considered setup areas.

Parking Lane Widths

Minimum parking lanes widths will be 2.15m including the gutter pan. Parking lanes widths will be increased in commercial area and multi-use areas.

2.1.3 PRIMARY ACCESS ROUTES

*The permanent “Primary Access Routes” into the neighbourhood are shown on Drawing 3.1. The “Primary Access Routes” shall be a minimum 9.6 metres of hard surface between curb faces for a two-way road or a minimum 6 metres for a one-way road, except where there are “bump outs” or other features which are not compromising the viability of the Primary Access Route. Vehicle swept path analysis will be used to confirm vehicle access.

Where a phase of development is not directly accessible from a “Primary Access Route” the developer shall provide documentation to show that there is adequate emergency vehicle access to that phase of development; as an interim condition. This can be accomplished by provision of multiple routes of lesser dimension to the phase, “no parking” requirements on routes narrower than 9 metres, reinforced surfaces across landscaped areas, upgraded rear lanes or walkways, or any suitable combination of these options. Where the primary access to any phase is less than 9 metres hard surface, a secondary access route shall be identified.

Where a primary access route crosses un-subdivided land or private parcels, the route shall be protected by suitable easements.

2.1.4 TURN-AROUND DESIGN

The size of cul-de-sacs shall be based on accommodating the most frequent users. Other infrequent users, such as emergency vehicles, may require three-point turn for turnaround movement.

Site-specific design shall be considered, including parking restrictions, location of hydrants, etc.

Appropriate vehicle swept path analysis shall be used to design site-specific cul-de-sacs.

Temporary turn-around facilities are required where dead-end roadways greater than 120m in length will occur. Where buses are intended to operate, temporary cul-de-sacs with a 15.25m radius or equivalent configuration are required. Where buses will not operate, a 10.5m radius cul-de-sacs or equivalent configuration will be required. Post and cable fencing shall be installed where necessary to prevent vehicles from encroaching onto park space or onto private property. The cul-de-sacs design will meet the requirements of Alberta Building Code and Alberta Fire Code. For cul-de-sacs less than 90m long, fire trucks do not require a turn around.

2.1.5 INTERSECTION DESIGN

Tight intersection curb radii (minimum of 5.0m on residential streets) shall be used based on the concept that larger infrequent vehicles may encroach onto on-coming traffic at an intersection in the approaching leg, the departing leg, or both. Encroachment for the garbage truck will only be permitted where the roadway has a traffic volume in the lower half of their environmental capacity as defined by the draft 2013 Environmental Capacity Guidelines in conjunction with the completed TIA for the study area. The intersection will be designed based on using appropriate vehicle swept path. Where there are unusual features which may obstruct sight lines, analyses of the sight lines shall be carried out. Corner widening to be provided based on vehicle swept path.

Centreline alignments of opposing legs of an intersection should align. Where site specific constraints dictate, centerline alignments of opposing legs of intersections may be offset by up to 1.0m with sufficient design rationale.

The minimum distance between vehicle swept path and fixed objects shall be 0.5 metres.

The length of cross-walk for the pedestrian at an intersection shall be minimized. Site specific parking restrictions at intersections shall be applied where needed to assist larger vehicle turning movements.

2.1.6 ROUNDABOUTS AND TRAFFIC CIRCLES

Roundabouts and traffic circles shall be used where appropriate to reduce both the number and severity of collisions; to **improve capacity and safety;** and to **create an attractive neighbourhood. Roundabouts and traffic circle locations shall be identified in the Tentative Plan submission** and the **rationale for the use of the roundabout or traffic circle shall be provided at that time.**

Roundabouts and traffic circles shall be designed generally in accordance with the FHWA and TAC guidelines and the **City of Calgary Traffic Calming Policy,** and shall facilitate the safe movement of pedestrians.

2.1.7 TRAFFIC CALMING MEASURES

Traffic calming measures shall include, but not be limited to, those noted in the City of Calgary Traffic Calming Policy. Traffic calming features shall generally be designed in accordance with the guidelines in Sections 4 and 5 of that document.

Traffic calming measures, such as bump-outs, raised cross walks, etc. shall be designed to serve multiple-purposes (e.g. aesthetics, pedestrian friendly crossing, storm water management, slowing traffic, etc.). Minimum width between curb faces at a bump out shall be adequate to accommodate an emergency vehicle (with possible encroachment over centre line), or a bicycle next to a frequent use vehicle. This criteria is based on the queuing principle, whereby oncoming traffic must give way to the emergency vehicle. Where there are likely to be bicycle movements, the traffic calming measures shall not prejudice the safety of cyclists.

Signs will be posted at all entrances to the Currie Barracks area stating, "Currie Barracks is a Traffic Calmed Community".

2.1.8 OFF-CENTRE CARRIAGE WAYS AND CURVILINEAR ROADWAYS WITHIN A STREET RIGHT-OF-WAY

Where appropriate, roads will be off-set within right-of-ways based on providing minimum clearance between property line and the adjacent structure (e.g. service valves, trees, street light, poles, pedestals, sidewalk, pathways, etc.) and addressing associated utility line assignment.

Curvilinear streets will be designed to accommodate the swept path of frequent use vehicles and emergency response vehicles and to provide stopping sight distance.

2.1.9 TRANSIT ROUTES AND TRANSIT STOPS

Bus routes shall be designed to provide a minimum driving lane width of 3.3m and a standard bus pathway sweep without crossing centre line. Transit stop locations shall be designated.

Where there is a functioning bus route which terminates at the edge of a phase of development, an adequate bus turnaround will be provided.

Where a bus zone has to be located in front of a residential lot, the lot shall be designed such that vehicle access does not conflict with the bus zone.

2.1.10 INTERSECTION SPACING/BLOCK LENGTH

An offset intersection is defined as an intersection in which the centerlines of the intersecting streets do not align across the intersection. **Offset intersections will be avoided where possible;** the rationale for the use of the off-set intersection will be included at the submission of the tentative plan. Minimum centre line spacing for offset intersections of side roads along primary access routes shall be 60m, unless it can be shown that lesser spacing provides a functional configuration. Geometric design of off-set intersections must accommodate the vehicle swept path for frequent use vehicles and emergency response vehicles.

2.1.11 BOULEVARD GRADES

Boulevard grades may vary in order to accommodate existing trees and vegetation. Minimum boulevard slope shall be 2.0% or as needed to provide positive drainage. Maximum boulevard slope shall not exceed 20%, and not be greater than 5% where there are features requiring maintenance, such as hydrants, valves, street signs, or electrical installations.

Retaining walls on public road right-of-ways will require encroachment agreements to be registered on the adjacent private property, with the obligation to maintain the retaining wall.

2.1.12 INCORPORATING BMP'S INTO ROAD DESIGN

The use of roads for stormwater quantity control (trap lows) shall be normal practice. In addition, the stormwater quality enhancement where feasible into the roadway design.

2.1.13 CUSTOMIZED STREET DESIGN PARAMETERS

The following table specifies key parameters for the design of streets, within Currie Barracks.

Speed Limits	
Speed Limit	**30 kph within boundaries of Currie Barracks land, except for 50 kph on Quesnay Wood Drive SW and 40 kph on Flanders Avenue SW.**
Maximum Speed in Lanes	**15 kph** (not posted)
Horizontal Design Speeds	
Primary Access Routes	50 kph or less †
All Other Streets	Design based on maneuverability of frequent use vehicles and emergency response vehicles, and a design speed of 30 kph* †
Traffic Calming Installation	30 kph or less
Traffic Circles	20 kph or less
Vertical Design Speeds	
Primary Access Routes	50 kph sag curves and crest curves
Local Residential Streets	40 kph sag curves and 50 kph crest curves †
Lane Widths	
Minimum Parking Lane Width	**2.15 m** (including gutter pan)
Minimum Driving Lane Width • **Local Residential** • **Primary Access Route** • **Bus Route**	 **2.35m** **2.75m** **3.30m**
Primary Access Routes (Noted on Drawings 3.1)	
Two-Way Carriageway	**Minimum 9.8 metres between curb faces***
One-Way Carriageway	**Minimum 6.0 metres between curb faces***
Bus Routes	
As shown on Outline Plan and Drawing 3.1	

† Traffic calming and customized street cross-sections that create lower localized design speeds shall be permitted throughout the neighbourhood.

* Except where there are “bump outs” or other features which do not compromise the viability of the Primary Access Route.

2.1.14 STREET SIGNAGE

"No Parking" and "No Stopping" signs will be specified where required at intersections and alley entrances where needed at specific locations to ensure clearance for turning movements and adequate sight distances.

2.2 Rear Lanes

2.2.1 REAR LANE SPEED LIMITS

The **recommended speed for rear lanes is 15 kph.**

2.2.2 REAR LANE GEOMETRIC DESIGN

Geometric design elements for rear lanes including rear lane intersection shall be based on the appropriate design vehicle swept path. In cases where rear lanes are designed to be used as emergency access route or built form requires emergency vehicle access, the design vehicle shall be appropriate emergency response vehicle.

Lane aprons will be provided for rear lane to street intersections. These aprons are to be designed based on "design" vehicle swept path and encroachment of the vehicle over the centre line of the rear lanes. Some encroachment over the centre line of the street shall be considered on a minor street. Additional areas of rear lanes, as identified by vehicle sweep plan, may have to be paved to facilitate turning movements of garbage trucks.

A **minimum 4.0m width of the rear lanes shall be hard surface with an option of 1.0m or more planting strip on either side.** The **minimum alley right-of-way shall be 6.0m.** In cases where a reduced pavement width is utilized, a reinforced edge shall be provided to reinforce the pavement edge; geotechnical design details will be included in the Subdivision Construction Drawings. **A paved 6m wide emergency vehicle zone at maximum interval of 70m shall be provided in any rear lane that is designated to be an emergency access route.**

Wherever possible shallow utility pedestals shall be accommodated within pocket easement on the private lots.

2.2.3 WIDTH OF REAR LANES

In general, **the urban design objective is to encourage use of lanes for other functions than just providing vehicles access to garages.** Lanes should **be aesthetically attractive, and should be available for use by pedestrians and cyclists**.

2.2.4 GARBAGE COLLECTION ROUTE

Garbage truck routes shall be identified and intersections of rear lanes to rear lanes shall be designed based on swept path analysis.

2.2.5 ACCESS TO MULTI-FAMILY SITES FROM REAR LANES

Rear lanes may be used to provide access to multi-family sites, commercial sites, and for emergency escape routes, etc. and designed based on the anticipated traffic flow, pedestrian and bicycle movement.

2.3 Pedestrians and Multi-Use Pathways

Duplication of a pathway and a sidewalk shall be avoided wherever possible, (e.g. situations where there are both a sidewalk and a parallel pathway on one side of a road).

The **regional pathway system shall be incorporated into the plan.**

Walks shall be designed to accommodate all reasonable pedestrian circulation movements. Walks shall be provided on both sides of all two-way bus routes, (except where it can be shown that there will be no pedestrian movements on one or both sides of the bus route). **In cases where sidewalks are not provided, the rationale will be provided with the tentative plan submission. Public access easements will be required in cases where sidewalks or pathways for public use are located on private land.**

2.3.1 SIDEWALK DESIGN

Designs shall include both mono and separate walks in order to accommodate existing trees, and to **create a variety of streetscapes.** Minimum **width of sidewalk shall be 1.2m. Minimum width of sidewalk on bus routes or streets where high pedestrian use is expected (e.g. Quesnay Wood Drive SW) shall be 1.5m.**

Meandering of separate walks shall be permitted in order to create attractive streetscape and to protect existing trees.

2.3.2 PATHWAY DESIGN

Multi-use pathways shall include a minimum 2.5m of paved asphalt or equivalent surface, and **shall be designed to accommodate both bicycles and pedestrians.** In cases **where multi-use pathways are located between two flanking private lots, the minimum width of the right-of-way shall be 10.0m.**

Minimum right-of-way for a walkway between lots shall be 3.0m. This shall include a minimum of 1.5m asphalt, concrete, or equivalent hard surface. The remainder of the right-of-way shall be landscaped and the landscape design shall be included for approval in both the engineering drawings and the landscape design drawings.

Minimum clearances from surface features such as lighting, hydrants, and trees shall be as specified in Sections 3.1, 3.2, and 3.3. Minimum separation from bicycle travel lanes to above ground obstructions (except bollards, safety barriers, etc. which are integrated into the pathway) shall be 1.0m.

2.3.3 PEDESTRIAN CROSSINGS

All proposed pedestrian crossing locations shall provide individual wheelchair ramps, appropriate signage and any customized materials for pavement marking are to be reviewed and approved by The City of Calgary, or standard markings are to be used instead. The safety of pedestrians shall be considered in specifying the location of trees and other landscaping elements.

2.3.4 MID BLOCK CROSSINGS

Preferable crossing location is at an intersection. Mid-block crossings are to be designed based on safety, taking into consideration sight lines, bump-outs, signage, lighting and other elements for the design. Where appropriate raised walks or other traffic calming features shall be incorporated into the crossing.

2.4 Customized Materials

Customized design for elements including, but not limited to, street, alleys, and pathways may include alternative materials such as previous pavement, concrete, unit pavers, ornamental slates, patterned/coloured concrete etc. as appropriate to create a functional, aesthetically pleasing urban form.

The rationale for customized material will be included with the subdivision construction drawings or the landscape design drawings, and the cost and maintenance obligations for customized materials will be as outlined in Part I Section 4.6.

2.5 Mews

2.5.1 MEWS SPEED LIMITS

The recommended speed for mews is 15kph.

2.5.2 MEWS GEOMTETRIC DESIGN

Geometric design elements for mews, including mews intersections, shall be based on the appropriate design vehicle swept path. In cases where mews are designed to be used as emergency access route or the built form requires emergency vehicle access, the design vehicle shall be the appropriate emergency response vehicle.

Typical driveway layouts will be provided for mews to street intersections. These driveway layouts are to be designed based on infrequent “design” vehicle swept path and encroachment of the vehicle over the centre line of the mews. Some encroachment over the centre line of the street shall be considered on a minor street. Additional areas of mews, as identified by a vehicle sweep plan, may have to be paved to facilitate turning movements of garbage trucks.

A minimum 6.0m width of the mews shall be hard surface with 2.0m width sidewalks on either side of the mews. The minimum mews easement (right-of-way) shall be 10.0m. In cases where a reduced pavement width is utilized, a reinforced edge shall be provided to reinforce the pavement edge; geotechnical design details will be included in the Subdivision Construction Drawings.

Wherever possible, shallow utility pedestals shall be accommodated within pocket easements on the private lots.

2.5.3 WIDTHS OF MEWS

In general, the urban design objective is to encourage use of mews for other functions than just providing vehicle access to garages. Mews should be aesthetically attractive, and should be available for use by pedestrians and cyclists.

2.2.4 GARABAGE COLLECTION ROUTES

Garbage truck routes shall be identified and intersections of mews to mews shall be designed based on swept path analysis. Refuse containers accessed from mews must be fully enclosed.

2.2.5 ACCESS TO MULTI-FAMILY SITES FROM MEWS

Mews may be used to provide access to multi-family sites, commercial sites, and for emergency escape routes etc. and designed based on the anticipated traffic flow, pedestrian, and bicycle movements.

2.2.6 MEWS ON PARKADES

Mews may be built on multi-family or commercial underground parkades. The associated pavement structure must be designed and approved by a Geotechnical Engineer. Parkades must be designed by a Structural Engineer to support the design vehicles and/or emergency response vehicles where applicable. Private surface easements must be granted to support vehicle and pedestrian flows.

3. UNDERGROUND UTILITIES

The road cross-sections shall illustrate all the deep utilities, shallow utilities and landscape elements within the proposed right-of-way and proposed utility easements.

The general parameters outlined in the following sections may be applied, recognizing the complex inter-relationship between the various utility components.

3.1 Deep Utilities

3.1.1 STORM AND SANITARY SEWER ALIGNMENT

Minimum horizontal separation between sanitary & storm sewers shall be 1.2m. Separation shall be increased if vertical clearance between sewers exceeds 1.0m.

Minimum horizontal separation between sanitary/storm sewers adjacent to curb shall be 1.2m from lip of gutter. Separation shall be increased if utilities are deeper than 3.5m.

Minimum horizontal separation between sanitary/storm sewers and the adjacent encumbrance (i.e. hydrant, street lighting) shall be 1.8m.

3.1.2 WATERMAIN ALIGNMENT

Minimum horizontal separation between sanitary/storm sewers & watermains shall be 2.5m.

Minimum horizontal separation between watermain and lip of curb shall be 1.5m.

Any reduction in minimum pipe separations will require a risk management analysis.

Methods to ensure adequate compaction between utilities with reduced separation will be required.

3.1.3 SERVICE CONNECTIONS

Water service valve will be located a minimum 0.5m from property line. Minimum separation between lot line and service connection shall be 2.5m.

Service connections maybe augered under and in the vicinity of existing trees to protect the trees. The minimum horizontal clearance between service connection and new deep rooted trees shall be 2.5m.

3.1.4 HYDRANTS

Hydrants will be located a minimum 0.75m from property line. Minimum horizontal separation between hydrant and lip of gutter shall be 1.5m.

Minimum horizontal clearance between hydrant and sidewalk shall be 0.6m. Hydrant valves will be located 1.0m from watermains.

3.1.5 WATER DISTRIBUTION SYSTEM

The Waterworks department has previously provided a plan of The City of Calgary's preferred water distribution system for the lands within the Outline Plan area.

The developer has the option to either:

A. Submit servicing plan in accordance with the City's preferred servicing plan.

B. Submit an alternate servicing plan with supporting hydraulic network analysis reports for the proposed servicing.

Option A <u>System Design in Accordance with the City of Calgary's Preferred Water Distribution System</u>

If the water distribution system is constructed in accordance with the system illustrated in Appendix H, a phasing diagram will be required with the submission of the Subdivision Construction Drawings illustrating the proposed phasing in the vicinity of the subdivision area and outlining the following:

1. The phasing strategy to convert from the existing bulk metering on the CFB West lands to individual metering, in accordance with the Water Utility Bylaw, and ultimately eliminate the bulk metering currently on the site.

2. Confirmation that the proposed phasing provides adequate fire flows as outlined in the criteria noted below. Pre-building parts of the network may be required in order to achieve the required flows. Where appropriate the existing watermain system may be used on an interim basis to supplement the new watermains to provide adequate fire flows.

Option B <u>Alternate Water Distribution System Design</u>

If the developer chooses to submit an alternate water distribution system design for development within the Outline Plan area, the developer will be responsible to complete the design of the water distribution system in order to ensure satisfactory operation of the system. The developer will be responsible to provide the following:

1. A phasing diagram to be submitted at the time of the first tentative plan, illustrating the proposed phasing for the water system in the vicinity of the tentative plan, and outlining the phasing strategy to convert from the existing bulk metering on the CFB West lands to individual metering, in accordance with the Water Utility Bylaw, and ultimately eliminate the bulk metering currently on the site.

2. A hydraulic network analysis report for each tentative plan area is to be submitted with the Subdivision Construction Drawings. The hydraulic network analysis is to include simulation of all pipes within the tentative plan area, based on boundary conditions provided by the City of Calgary Waterworks Department. The report should include the following:

    a. An introduction with a general description of the proposed development.

    b. A section defining the population densities and commercial/industrial flow rates used along with an explanation of how they were determined and assigned to the individual model nodes.

    c. A section describing the results of all simulations.

    d. A figure showing the location of the development, the site topography and the node demand boundaries.

    e. A figure showing the assigned pipe and node numbers, pipe diameters and lengths, location of fire flow simulation, node elevations and any other hydraulic elements modeled into the system (i.e. check valves, booster pumps).

    f. The identification of any multi-family or commercial areas with on-site grading that results in peak hour pressures below 280 kPa at ground level.

    g. An appendix containing model runs for the following conditions:

        i. Peak hour

        ii. Maximum days plus fire flow runs at all critical locations.

3. The criteria to be used in the hydraulic network analysis are listed below:

Water Distribution System Design Parameters

Parameter	Value
Minimum peak hour pressure	280 kPa (40 psi)
Minimum maximum day + fire flow pressure	140 kPa (20 psi)
Minimum maximum day pressure (for operation of residential fire sprinklers)	350 kPa (50 psi)
Maximum allowable pressure in distribution system	700 kPa (100 psi)
Maximum allowable pressure for water services	650 kPa (80 psi)
Maximum day consumption rate	725 L/c/d
Peak hour consumption rate	1,100 L/c/d
Maximum Hazen-William's coefficient	120
Fire flow for residential development	100 L/s
Fire flow for multi-family residential development up to and including three stories	180 L/s
Fire flow for commercial development and multi-family residential development four stories or greater	300 L/s
Maximum desired velocity	3 m/s

3.2 Shallow Utilities

Shallow utilities include street lighting, power, gas, cable and telecommunications.

3.2.1 CABLE, POWER, GAS & TELECOMMUNICATION

Shallow utilities maybe located in rear lanes; underneath sidewalks and roads; and in front lot easements.

A four party trenching and installation of shallow utilities and use of joint pedestals will be negotiated with franchise utility providers. A minimum separation between gas and other shallow utilities shall be 0.3m.

Minimum horizontal clearance between back of curb/sidewalk and all other shallow utilities shall be 0.75m, except for shallow utilities located under the sidewalk.

Minimum horizontal clearance between shallow utility located within road right-of-way and property line shall be 0.5m.

3.2.2 STREET LIGHTING

Minimum horizontal separation between street light pole and lip of gutter shall be 1.50m.

Minimum horizontal separation between sidewalk and street light pole shall be 0.3m.

Minimum horizontal clearance between back of curb/sidewalk and street light cable shall be 0.3m, except where cable is under the sidewalk.

The style and intensity of the street lighting will vary based on the different types of development districts.

3.3 Landscaping Elements within Public Right-of-Way

3.3.1 TREES & LANDSCAPING

A variety of large street trees suitable to Calgary weather will be used for planting within public right-of-way. Trees are to be located such that they will not seriously impact pathways or bikeways or traffic sightlines. Road location within right-of-way shall vary in order to protect exiting trees and vegetation.

The minimum horizontal clearance between concrete walk or back of curb and new trees shall be 0.8m. Where necessary, root barriers may be required to protect other elements from horizontal spread of roots.

3.3.2 HARD LANDSCAPING

A variety of material and finishes applicable to the local weather conditions may be used. Detailed material specifications, including maintenance procedures, shall be outlined as part of the detailed design.

For park sites with amenities that are not “core” improvements, maintenance costs for non-core improvements shall be funded as outlined in Section 1 – 4.6.3.

A minimum of 1.2m high fence with a maximum of 10cm openings and/or wall combinations shall be constructed on any private development site along all property lines shared with municipal reserve.

3.3.3 STREET FURNITURE

Customized designs will be utilized for benches, seat walls, transit stops, garbage bins, bollards, raised planters, historic monuments, chain fencing, bicycle racks, and screening for control structures. These features will be located to provide the appropriate clearances from adjacent structures for safety, operations and maintenance.

4. PUBLIC PARKS

4.1 Design of Municipal Reserves

The Municipal Reserve shall be designed to meet specific functions:

1. serve as functional open space and convey the impression that the Municipal Reserve is public open space;

2. provide for direct and efficient access, including a minimum of two (2) street frontages or accesses to other public spaces;

3. and maximize exposure to sunlight.

Each park shall be custom designed to fulfill a specific function, or combination of functions.

4.2 Storm Water Facilities on Municipal Reserves

Wet ponds shall not be allowed on Municipal Reserve land.

Dry ponds shall:

1. not encumber more than one third of the total reserve dedicated within the community;

2. not impact the primary open space function of the reserve.

Dry ponds should:

1. on the interior slopes, have the ability to be revegetated with low groundcover or native grasses;

2. on the basin, allow for limited plants, including trees and shrubs which are able to tolerate frequent inundation, as well as limited areas of porous or non-porous materials.

Any elements of stormwater management built into the municipal reserve site will be secondary to its primary function of open park space. The ultimate design must feel like a “public space” and must be readily accessible to the public.

5. STORMWATER MANAGEMENT

The stormwater management aspect of CFB West shall be innovative and focused towards optimal management of runoff quality and quantity. The overall strategy is to improve the management of quantity and quality by recognizing ‘clean’ pathways and pathways generating pollutant loadings. Customized design will be implemented through distributed storages and maximizing the utilization of absorbant landscaping and appropriate Best Management Practices (e.g., bio-retention areas, rain barrels, bio-swales, pervious pavement, bio-retention areas filter strips, green alleys, depressed medians, road openings into swales and ditches etc.)

All stormwater management facilities shall be designed to complement the aesthetically pleasing nature of the development, and will include, where appropriate, shrubs, trees and other items of street furniture.

The design of the stormwater management system will generally adhere to the City of Calgary's Stormwater Management and Design Manual; and is to be in accordance with Currie Barracks Master Drainage Plan and Staged Master Drainage Plan.

Approval processes will require facilitating the need to move away from the conventional stormwater management guidelines, for example eliminating the need for a traditional concrete drainage gutter and substituting with a bioswales that will improve water quality.

5.1 Minor System (Pipe Flow)

1. The ultimate release rate from the Currie Barracks catchment area into the Garrison Wood Storm Trunk will be 2355 l/s, including the Crowchild Trail catchment, Currie Barracks lands, Richmond Park, Richmond Green Golf Course and the Department of National Defence lands.

2. The target unit area release rate for lands within the Outline Plan area, discharging to Garrison Woods shall adhere to the approved Currie Barracks Master Drainage Plan (Westhoff Engineering Resources Inc.) and Currie Barracks Staged Master Drainage Plan.
3. Generally, the minor system shall be designed to convey design flows when flowing full with the hydraulic grade line (HGL) at or below the crown of the pipe. In some instances local surcharging may occur in the vicinity of detention ponds due to the stored water level in the ponds.

4. Surcharge to ground surface shall not be permitted. Sewer pipes may surcharge to an elevation 0.6m below the ground surface, for 100 year lows in specific situations. Surcharging shall not be considered in locations where weeping tile drains are connected to the storm system.

5. The interim minor system, necessary for the phasing of the development shall be developed on the principle of "no net increase" in flows from the existing Currie Barracks catchment area.

6. Weeping tile (foundation drains), are required for all areas, unless a qualified soil consultant has determined otherwise. Weeping tile may be connected to the storm system via sump pump or gravity drainage. In cases a situation prevents installation of storm mains at an adequate depth to permit gravity drainage, sump pumps will be required discharge to the surface. Similarly, where BMP's are implemented so that there are no storm sewers in the street or lane, weeping tile shall be discharged to the surface by sump pumps.

7. Traplow storage shall be permitted in rear lanes, where required to provide adequate storage.

8. Underground storage may be utilised in locations where adequate surface storage cannot be provided.

5.2 Major System (Overland flow)

1. A continuous escape route shall be provided for all overland flows.

2. Roadway and laneway corridors may form a component of the escape route, provided flows up to and including the 100 year flow, are contained within the corridors.

3. Grass swales with grades between 1% and 2% shall be accepted where a French drain is installed below the swale, and is connected to the piped system, or where it can be shown that a French drain is not needed at that particular location.

4. Standing water at low points in trap lows on roadways shall not exceed 0.5m in depth. Where possible, the maximum depths of trap lows shall be 0.3m.

5. Primary access roads must have at least two lanes which are not inundated with overland flow. Where overland flows cross these access roads, flow depths and velocities shall conform to the Alberta Environment guidelines. Depths in excess of the recommended flow rate will require approval of the Senior Review Team.

6. Depths of trap lows any not exceed 0.5m in areas where grass swales are used for linear storage: depths greater than 0.5m constitute a dry pond, and appropriate approvals will be required.

7. The use of trap lows in the vicinity of entrance roads to areas with a single access road (such as cul-de-sacs), shall be avoided where possible.

8. Overland drainage routes from public lands across private property will be permitted in specific areas where building envelopes are not affected by drainage paths, and where overland easements are registered.

9. Overland drainage from private property to adjacent private property shall be permitted in specific cases where building envelopes are not affected by drainage paths, and where overland easements are registered.

10. Overland escape routes will generally not be permitted to cross private property, unless easements are provided.

11. Variances from the requirements of the Drainage Bylaw shall be subject to approval from the Director of Water Resources.

5.3 Stormwater Management Facilities (Detention)

The design of the stormwater management facilities shall generally adhere to the City of Calgary's Stormwater Management & Design Manual, December 2011, applicable amendments, and shall conform to the approved Currie Barracks Master Drainage Plan (Westhoff Engineering Resources Ltd.).

1. The governing criteria regarding minimum detention times shall be compliance with the Alberta Environment requirements for water quality. Relaxation of these criteria shall be subject to approval from the Director of Water Resources.

2. Dimensional requirements for storm ponds and forebays will be designed to meet site-specific situations and ensure that settlement criteria are achieved.

3. Grades of side slopes for storm ponds shall generally conform to guidelines outlined in the Stormwater Management & Design Manual.

5.4 Stormwater Quality

Water quality targets will be met in general conformance to the WATER RESOURCES/WATER SERVICES INTERIM STORMWATER TARGETS 2014.

5.5 Best Management Practices (BMP's)

Best Management Practices are to be utilized in the Outline Plan area to address both stormwater quality and stormwater quantity requirements. BMP's shall be specified in the Stormwater Management Report that shall accompany the Subdivision Construction Drawings.

The Director of Water Resources shall determine the evaluation of the effectiveness of the BMP's. BMP's that may be implemented in the first stages of development include:

1. Bio-retention / rain gardens
2. Underground storage
3. Grass swales
4. Grass roofs
5. Silva-cells
6. Rainwater storage and spray irrigation
7. Planter boxes integrated with building architecture
8. Pervious pavement in trap low parking areas
9. Landscape components in rear alleys
10. Depressed islands
11. Traffic calming devices in conjunction with trap low storage
12. Stormwater harvesting and re-use, such as rain barrels and cisterns

6. GRADING CONTROLS

6.1 Residential Lots

If at any location it is planned that the lot grading will vary from the normal requirements of the Drainage By-law, or if BMP's are planned to be situated on to the private lots, this shall be indicated on the engineering drawings.

On completion of the lot landscaping, the builder will ensure that a qualified professional (i.e. engineer or legal surveyor) will issue a grading certification complying with the design drawings.

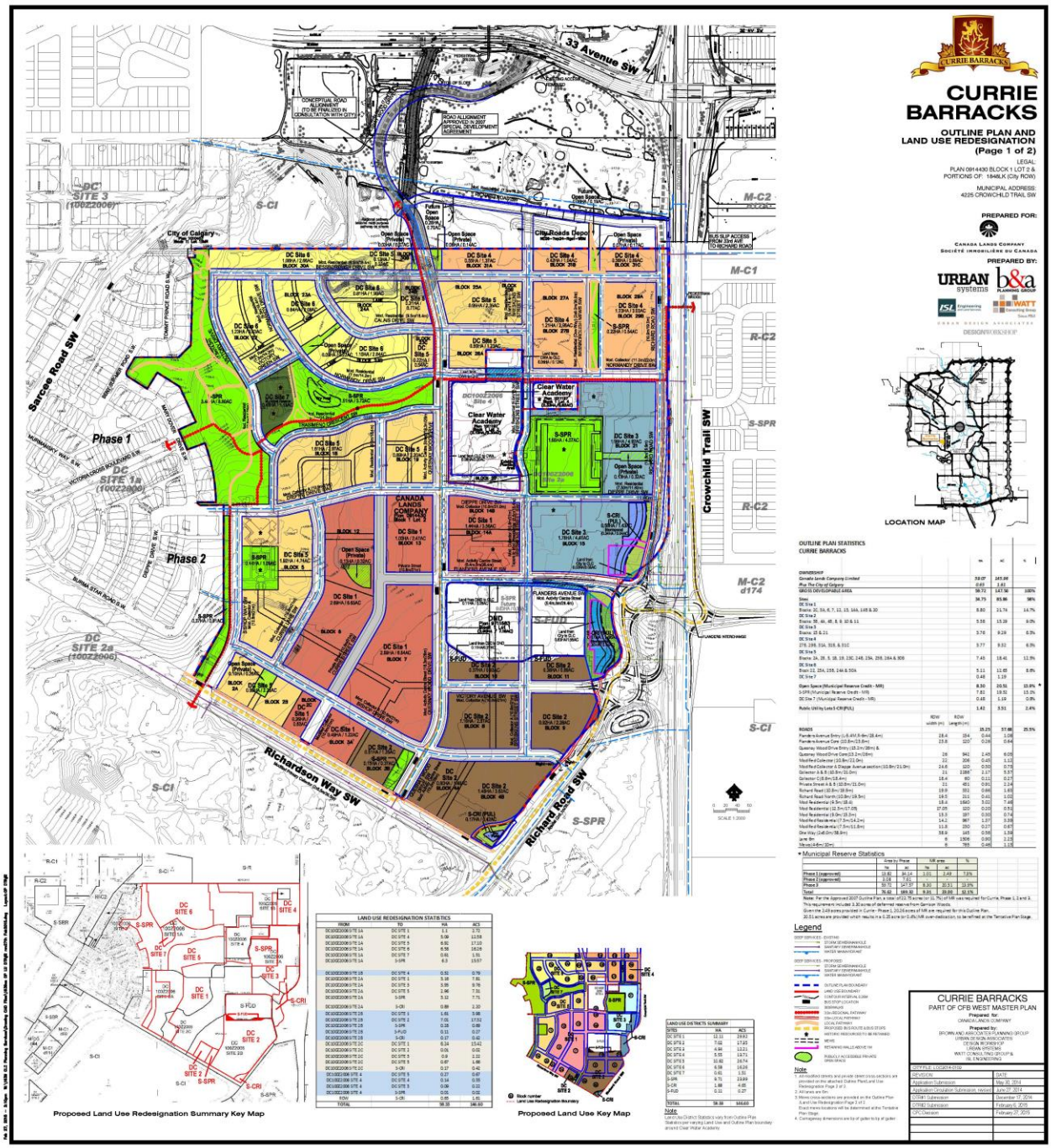
6.2 Private Development Sites

Comprehensive development sites, commercial building sites and street oriented sites are to be graded in accordance with the Drainage By-law, Lot Grading By-law and engineering drawings. The engineering drawings will indicate the BMP's that will be implemented on the site.

On completion of the lot landscaping, the builder will ensure that a qualified professional (i.e. engineer or legal surveyor) will issue a grading certification complying with the design drawings.

APPENDIX A

CURRIE BARRACKS OUTLINE PLAN


CURRIE BARRACKS
OUTLINE PLAN AND LAND USE REDESIGNATION
(Page 1 of 2)
33 Avenue SW
Sarcee Road SW
Crowchild Trail SW
Richardson Way SW
Richard Road SW
Phase 1
Phase 2
LOCATION MAP
Proposed Land Use Redesignation Summary Key Map
Proposed Land Use Key Map
Legend

APPENDIX B

PARAMETERS FOR VEHICLE SWEPT PATH ANALYSIS

The following parameters are to be utilized in the modelling of the vehicle sweep path:

1. Dry steering is not permitted.

2. Minimum vehicle turn speed at intersection to be 5kph.

3. Minimum vehicle turn speed at roundabouts is to be assigned on a site specific basis.

4. Minimum distance between wheel swept path and fixed objects is to be 0.5m.

5. Minimum distance from overhang to any above grade structure or element is to be 0.75m. The limit of a parked vehicle on street shall be 2.0m from face to curb.

6. Allowance to be made for Traffic calming elements which restrict the path of the design vehicle.

7. Frequent Use Vehicles:
   (i.) All turning movements on the Primary Access route shown in Drawing 3.1 to be completed without crossing the road centre line except where accommodated at intersections by a traffic control device and associated pavement markings.

   (ii.) Turning movements onto local roads may require the vehicle to cross the road centre line but to be completed without interference from legally parked vehicles and fixed structures adjacent to roadway.

   (iii.) Hammer heads to accommodate a full turnaround movement of frequent use vehicles for that location with a three-point turn.

   (iv.) All turning movements of frequent use vehicles on bus routes to be completed without crossing the road centre line. Turning movements for WB-19 commercial access vehicles only to be accommodated where access is required for site specific uses.

8. Emergency Response Vehicles:
   (i.) All turning movements on the Primary Access Route in drawing 3.1 to be completed without crossing the road centre line.

   (ii.) Turning movements on local roads may require the vehicle to cross the road centre line but can be completed without interference from legally parked vehicles and fixed structures adjacent to the roadway.

   (iii.) Hammer heads and cul-de-sacs will accommodate a full turnaround movement with a three-point turn.

9. Infrequent Use Vehicles:
   (i.) Turning movements may require the vehicle to cross the road centre line but can be completed without interference from fixed structures adjacent to roadway.

   (ii.) Turnaround movements in cul-de-sacs and intersections may require temporary no-parking restrictions.

APPENDIX C

EXAMPLES OF CUSTOMIZED DEIGN IN GARRISON WOODS AND CURRIE BARRACKS PHASE 1

In order to illustrate the implications and benefits of a customized design approach, the following pages show photographs of customization elements of Garrison Woods and Currie Barracks Phase 1.

Customized Blvd

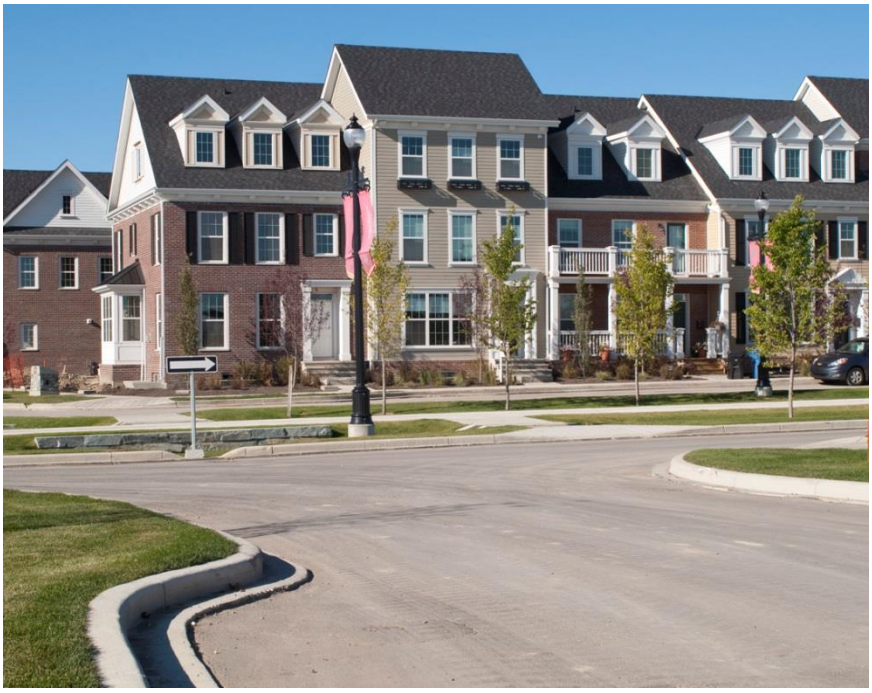
- Rain Garden
- Curb bump outs
- Legacy Monuments

A Very Good Example of Customized Design

- Nonstandard materials
- Nonstandard dimensions
- Customized fencing
- Customized “furniture”
- Customized tree planting

Customized Street

- Nonstandard alignments
- Nonstandard street furniture
- Randomized picket fences
- Retained trees



Customized Streetscape

- Narrow Street
- Curb bump outs
- Urban housing forms

Customized Victoria Crossed Blvd

- Narrow One Way Streets
- Multi-purpose central open space functions as recreational open space, historic walk & stormwater management
- Urban housing forms

Customized Garrison Boulevard and Flanders Traffic Circle

Customized Street Cross-Section

- Wide boulevard and walk on right side
- Resident has “landscaped” R.O.W. on the left side

Customized Street Furniture

- Extra wide R.O.W. between existing houses and trees
- Legacy monuments explaining street names

Customized Open Space

- Stormwater integrated open space

Linear Somme Park

- Customized Walk
- Tree Retention
- Legacy Monuments

Velour Park

- Multi-purpose Open space, which includes:
  - Historic programming in the center of the park
  - Bio-retention facility in around the historic programming
  - Open space programming around bio-retention facility

Somme Linear Park

- Customized Street Furniture

Customized Lanes

- 6m wide lanes with 4 meter drivable surface
- Planting permitted

Customized Street Furniture

Somme Park North

- Customized furniture
- Customized walk alignments
- Tree retention

Customized Play Area at West End of Flanders Park

- Non-standard street lights
- Non-standard fencing and other features

APPENDIX D

EXAMPLES OF CUSTOMIZED DESIGNS THAT HAVE BEEN IMPLEMENTED SUCCESSFULLLY IN OTHER COMMUNITIES

Walkway Treatment
Design Elements:
- Meandering pathway
- Customized tree planting
- Integrated with rear yards

Walkway Treatment
Design Elements:
- Integrated with rear yards
- Customized tree planting

Lane Treatment
Design Elements:

- Planting strip
- Garbage collection route with narrow pavement width
- Low level lighting

Lane Treatment
Design Elements:

- Planting strip
- Garage with “granny/garden suite”
- Shallow lighting pedestal

Lane Treatment

Design Elements:

Landscape strip
Narrow lanes

Street Treatment

Design Elements:

Narrow road
Varying Blvd/Sidewalk width
Bump-out for tree retention

Street Treatment

Design Elements:

- Tree retention
- Varying housing set-back
- Bump-outs for parking
- Non-standard sidewalk

Street Treatment

Design Elements:

- Customized streetscape
- Bump-out
- One-way traffic with parking on one side

Flanders Lane SW Treatment

Design Elements:

- Zero set-back
- Urban streetscape
- Customized hard landscaping
- Parking bump-outs

Stormwater Management

Design Elements: Street traplow

Stormwater Management
Design Elements: MR traplow

APPENDIX E

PRELIMINARY WATER DISTRIBUTION SYSTEM DESIGN – CITY OF CALGARY