



# INFRASTRUCTURE DESIGN STANDARDS AND SPECIFICATIONS

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2025 VERSION - DRAFT



Prepared for TSUUT'INA DEVELOPMENT AUTHORITY  
by ARCADIS  
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## 1 Overview

### 1.1 Purpose

The *Infrastructure Design Standards and Specifications* are available for use within the Taza Development on the Tsuut'ina Nation, effective as of the following date:

**MARCH 2025**

The *Infrastructure Design Standards and Specifications* have been prepared for the benefit of Developers, Applicants, Consultants, Contractors and other interested parties to provide procedures and standards on the Development of land and the construction of public and private infrastructure in the Taza Development on the Tsuut'ina Nation.

The *Infrastructure Design Standards and Specifications* define the minimum requirement for public and private infrastructure. It is the responsibility of Developers, Applicants, Consultants and Contractors to ensure all relevant standards, specifications, and codes referenced in this document are adhered to. It is also their responsibility to apply sound engineering principles and industry best practices to provide a final product that is practical, economical, efficient, safe and sustainable.

These *Infrastructure Design Standards and Specifications* have been developed to stay current with the *Taza Development Guidelines* and related strategic plans, industry best practices, and to remain in compliance with regulatory requirements.

It is advised that any individual using the *Infrastructure Design Standards and Specifications* contacts the Tsuut'ina Development Authority (herein referred to as TDA) to ensure they have the latest version. The document will also be accessible online at the following link:

<https://tda.tsuutina.com/>

### 1.2 Contents of This Document

The *Infrastructure Design Standards and Specifications* has been divided into three (3) Sections. The First Section titled Overview, provides an overview of this document including the purpose, disclaimer, studies relevant to the Taza Development, and the glossary of terms. Section Two (2) and Three (3) are composed of design standards and construction specifications pertaining to Public Infrastructure (PI) and Development Permit (DP) applications, respectively.

### 1.3 Disclaimer

The *Infrastructure Design Standards and Specifications* are to be read as a whole, in conjunction with the *Taza Development Guidelines* and the relevant Tsuut'ina Nation Laws, Policies, Regulations and Guidelines pertaining to the Taza Development, as well as the relevant standards, specifications, and codes referenced in this document, and no individual part or section shall be read individually. The Tsuut'ina Nation shall not be held liable for any missed information that is inappropriate or inadvertently missed by the incomplete reading or assumptions made of these *Infrastructure Design Standards and Specifications*.

Use of the *Infrastructure Design Standards and Specifications* shall not absolve any party from professional liability and the obligation to exercise professional judgment and follow good engineering and construction practice.

These *Infrastructure Design Standards and Specifications* are intended to provide information to the Developer, Applicants, Consultants and Contractors who require knowledge of the standards

governing the design and construction of infrastructure within the Taza Development on the Tsuut'ina Nation.

## 1.4 General Document & Study Requirements for Development

### 1.4.1 Taza Development Studies

The following is a list of studies completed specifically for the Taza Development. These studies should be reviewed prior to beginning a Public Infrastructure (PI) Permit or Development Permit (DP) application.

- *Taza Development Guidelines by the Tsuut'ina-Canderel Land Development Limited Partnership*
- *Taza Developments – Detailed Environmental Review Report by Stantec Consulting Ltd.*
- *Taza Developments – Phase II Environmental Site Assessment Taza Park by Pinchin Ltd.*
- *Taza Developments – Phase II Environmental Site Assessment Taza Park East Parkway & Utilities by Pinchin Ltd.*
- *Phase II Environmental Site Assessment – Taza Park West by WSP Canada.*
- *Phase I Environmental Site Assessment – Taza Exchange by MCA Environmental Management*
- *Master Drainage Plans prepared for each Taza Village.*
- *Water and Sanitary Servicing Studies prepared for each Taza Village.*
- *Master Traffic Impact Assessments prepared for each Taza Village.*
- *Taza Exchange – Potable Water Reservoir and Pump Station by MPE Engineering Ltd.*
- *Taza Park – Water Network Analysis by WSP Canada.*
- *Taza Sustainability Policy Framework and Taza Sustainability Implementation Strategy by Light House Sustainable Building Centre.*

### 1.4.2 Relevant Guidelines, Manuals, Standards and Specifications

The design standards and construction specifications for Taza need to be in accordance with this document and the latest version of the following City of Calgary and Provincial/Federal Guidelines, Manuals, Standards and Specifications:

- *CAD Standard Guidance Document*
- *Design Guidelines for Development Site Servicing Plans*
- *Design Guidelines for Street Lighting*
- *Design Guidelines for Subdivision Servicing*
- *Development Guidelines and Standard Specifications – Landscape Construction*
- *Erosion and Sediment Control Guidelines*
- *Erosion and Sediment Control Field Manual*
- *Instruction Manual for Erosion and Sediment Control Plan Applications*
- *Standard Specifications & Design Guidelines – Potable Water Feedermain Construction*
- *Standard Specifications – Erosion and Sediment Control*

- *Standard Specifications – Roads Construction*
- *Standard Specifications – Sewer Construction*
- *Standard Specifications – Traffic Signal Construction*
- *Standard Specifications – Waterworks Construction*
- *Standard Block Profile Specifications for CAD and Manual Formats*
- *Stormwater Management and Design Manual*
- *Temporary Traffic Control Manual*
- *Wastewater Lift Station Design Guidelines*
- *Alberta Transportation Recommended Practices Guidelines for Signage, Traffic Operations and Traffic Signals*
- *Transportation Association of Canada Geometric Design Guide for Canadian Roads (GDC)*
- *Transportation Association of Canada Manual of Uniform Traffic Control Devices for Canada (MUTCD)*
- *Alberta Environment and Parks Standards and Guidelines for Municipal Waterworks, Wastewater, and Storm Drainage Systems*

The *Infrastructure Design Standards and Specifications* contain amendments, changes, additions and deletions to the above noted documents as they pertain to Taza on the Tsuut'ina Nation. This document shall always take precedence over the above noted documents in the event of conflict. Any reference to the City of Calgary shall be interpreted as the Tsuut'ina Nation, and any subsidiary shall be the TDA. Any deviation from these *Infrastructure Design Standards and Specifications* including any of the above listed standards and specifications will require written approval from the TDA.

## 1.5 Glossary of Terms

The following expressions or words, when used in these *Infrastructure Design Standards and Specifications*, shall carry the following meaning, unless otherwise stated within the context of this document:

**APPLICANT** means a person, or a representative, who makes an application for Development Permit, Public Infrastructure Permit, other permits and approvals referenced in this document including any permit amendments.

**APPLICATION NUMBER** is a number provided by the TDA for a given Development Permit application or Public Infrastructure Permit application.

**BUFFALO RUN** is the one of the three Villages on the Tsuut'ina Nation, located in the southernmost area. Buffalo Run is a 390-acre Development that combines regional retail, office, and residential with recreation, entertainment, and tourism. This Village was previously referred to as Taza Exchange.

**CONSTRUCTION COMPLETION CERTIFICATE (CCC)** shall mean the certificate accepted by the TDA or their Consultant, stating that all Infrastructure Improvements and materials have been constructed, installed and inspected in conformance with the Servicing Agreement and the Infrastructure Design Standards and Specifications. CCC signifies the start of the warranty period.

**CONSULTANT** shall mean the person or persons retained by the Applicant as the professional of record, and shall include the services of a consulting engineer, landscape architect, land surveyor and planner.

CONTRACTOR shall mean the individual or corporation hired by the Applicant to supply, construct and/or install the Infrastructure Improvements pursuant to the Agreement by or at the expense of the Applicant. The Contractor shall supply materials and carry out the construction and installation in strict accordance with the Infrastructure Design Standards and Specifications.

DEVELOPER shall mean the registered lessor of the Development lands that form the Public Infrastructure.

DEVELOPMENT means:

- (a) the execution of any construction or excavation or their operation, in, on, over, or under land or water or,
- (b) the making of any change in the use or intensity of use of any land, water, building or premises.

DEVELOPMENT COMPLETION CERTIFICATE (DCC) refers to an approval issued by the TDA confirming that the requirements of a Development Permit have been satisfactorily completed.

DEVELOPMENT GUIDELINES refer to the *Taza Development Guidelines* which are the document(s) that govern the vision and values against which proposed plans and design are assessed for Tsuut'ina Nation's approval.

DEVELOPMENT PERMIT means a document authorizing a Development, issued by the Taza Development Authority pursuant to this *Infrastructure Design Standards and Specifications* governing private land use within the Tsuut'ina Nation, and includes the plans and conditions of approval.

ENGINEERING CONSULTANT shall mean a professional member licensed to practice engineering in good standing with The Association of Professional Engineers and Geoscientists of Alberta (APEGA) or The Association of Science & Engineering Technology Professionals of Alberta (ASET). This includes a Professional Engineer (P.Eng.), a Professional Licensee (P.L. (Eng.)) or a Professional Technologist (P.Tech.).

ENGINEERING DRAWINGS shall mean the engineering plans and profiles prepared by the Engineering Consultant, showing the various details of the installations and Infrastructure Improvements within the Development using standard engineering symbols, labels and best practices, all of which shall conform to the minimum requirements as outlined in these *Infrastructure Design Standards and Specifications*.

EROSION AND SEDIMENT CONTROL (ESC) is a strategy that is implemented during construction activities to limit the amount of soil loss for all exposed slopes. A Plan consisting of an application and a series of drawings that showcase the different stages of construction for a Development is assembled by a Specialist whom is deemed a Certified Professional in Erosion and Sediment Control (CPESC), Professional Engineer (P. Eng.) Professional Licensed Engineer; called a Limited License in other jurisdictions (P.L.Eng.), or a Professional Agrologist (P.Ag.).

FINAL ACCEPTANCE CERTIFICATE (FAC) shall mean the certificate accepted by the TDA or their Engineering Consultant stating that the Infrastructure Improvements and materials have been constructed, installed and inspected in conformance with the Servicing Agreement and the *Infrastructure Design Standards and Specifications* and that all defects and deficiencies in the Infrastructure Improvements have been remedied by the Applicant. FAC signifies the end of the warranty period.

IRRIGATION CONSULTANT shall mean a professional member licensed to practice irrigation design in good standing with the Irrigation Association. This includes a Certified Irrigation Designer (CID).



**LANDSCAPE ARCHITECTURAL CONSULTANT** shall mean a professional member licensed to practice Landscape Architecture in good standing with the Alberta Association of Landscape Architects.

**LANDSCAPE PLANS** shall mean the landscape plans prepared by the Landscape Architect, showing the various details of the landscape installations in support of a Public Infrastructure Permit or Development Permit application.

**PUBLIC INFRASTRUCTURE (PI)** means all exterior public spaces within the Taza Development that are generally open and accessible to all people regardless of ownership. These public spaces include Streets, lanes, greenways, bridges, squares, plaza, parks, linkages, natural areas, transit hubs, views and the waterfront. In documents issued prior to 2024, this may also be referred to as Public Realm (PR).

**PUBLIC INFRASTRUCTURE IMPROVEMENTS** shall mean all on-site and off-site services, facilities and infrastructure required to be constructed as a condition of a Public Infrastructure Permit application.

**RECORD DRAWING(S)** shall mean drawings prepared by the Consultant that accurately depicts the final constructed configuration of Infrastructure Improvements and which shall show any construction deviations and all features of the Infrastructure Improvements as actually built.

**SERVICING AGREEMENT** shall mean the written contract agreement that is duly executed between the Applicant and the TDA which details the terms and conditions under which the Applicant is to construct or install the Infrastructure Improvements.

**STREET** shall mean any public road, including the boulevards, sidewalks, and improvements, but excluding a back lane, bridge, or walkway.

**TAZA DEVELOPMENT** is the Development on the Tsuut'ina Nation totaling over 1,200 acres and stretching ten kilometers along Tsuut'ina Trail. The Development will consist of three Villages that have been named Taza Park, Taza Crossing and Buffalo Run (formerly Taza Exchange).

**TSUUT'INA DEVELOPMENT AUTHORITY (TDA)** is the appointed board by Tsuut'ina Nation to review and approve Development Permit, Public Infrastructure Permit applications, including all other permits and approvals outlined in this document.

**TAZA PARK** is one of three Villages on the Tsuut'ina Nation, located in the northernmost area. Taza Park is a 530-acre planned as a dynamic mixed-use entertainment destination with a regional and a provincial draw. Taza Park consists of two (2) sub-villages: Taza Park West and Taza Park East.

**TAZA CROSSING** is one of three Villages on the Tsuut'ina Nation, located between Taza Park and Buffalo Run. Taza Crossing is a 360-acre Village that will act as a hub that supports entrepreneurial and high-tech industries and businesses, bringing new employment and educational opportunities to the Nation, and to the region.

**TRAFFIC ACCOMODATION STRATEGY (TAS)** refers to the plans or procedures detailing the traffic accommodation (i.e. detours, road closures, etc.) required to complete work within a public road right-of-way.

**UTILITY LINE ASSIGNMENT (ULA) PERMIT** is a document authorizing the installation of utility infrastructure within public right of ways by external agencies and private utility companies (i.e. Enmax, Telus, etc.).

## 2 Public Realm (Public Infrastructure Permits)

### 2.1 General

Public Infrastructure (PI) will encompass the infrastructure corridors and open public spaces situated between the privately designated parcels including any infrastructure facilities (i.e. water, sanitary, and stormwater facilities). It is publicly accessible and includes roads, sidewalks, pathways, parks, street lighting, plazas and open spaces. This section provides the design standards and construction specifications for all aspects that form Public Infrastructure such as roads, deep/shallow utilities, storm water management facilities and other related infrastructure. For documentation prior to 2024, Public Infrastructure may also be referred to as Public Realm (PR).

#### 2.1.1 Public Infrastructure Permit Requirements

The construction of Public Infrastructure Improvements are subject to the terms and conditions of the Public Infrastructure Permit. Without an approved PI Permit, construction cannot proceed. In some cases, the TDA will issue a Conditional Public Infrastructure Permit, which will allow the Applicant to commence with construction or issue a PI Permit for a portion of the proposed Infrastructure Improvements (i.e. permitting construction of the underground infrastructure only). Conditional PI Permits will be issued if the applicant has substantially satisfied the TDA's comments. Conditional PI Permits will expire after 30 days, after which a stop work order will be issued until the conditional status is removed.

### 2.2 Submission Requirements

#### 2.2.1 General

All PI Permit submission documents including drawings, letters, studies, reports and models shall be submitted in digital format (PDF and model files). PI Permit applications must be dated and submitted online via the TDA's website. All drawings shall conform to the drawing requirements outlined in Section 2.4 - Drawing Standards. Applications that are incomplete or found to not be in accordance with the requirements outlined in this standard will be rejected. Any specific requirements or special conditions for an application will be discussed and verified at the pre-application meeting with the TDA.

#### 2.2.2 First Submission Requirements

The following are the key items that must be submitted for a Public Infrastructure Permit Application (refer to Appendix A for the complete checklist):

- Signed Cover Letter
- Public Infrastructure Permit Application Form
- Application Fee (see current TDA Fee Schedule, 2025 version is in Appendix C)
- Public Infrastructure Permit Checklist
- Letter of Authorization from the Developer of the land, or their agent (if required)
- Key plan showing the location of the Development area in relation to Taza as a whole
- A complete set of authenticated digital engineering and landscape drawings.
- Tentative Legal Plans of Survey
- Tentative Utility Right-of-Way Plans

- Completed and signed ISC Environmental Approval Application Form
- Stormwater Management Model/Report and Drainage Studies as per Section 2.3.6 and Appendix A, including Stormwater Management Checklist
- Erosion & Sediment Control Report and Drawing Application as per Section 2.3.8
- Other pertinent items as deemed necessary by the TDA, as outlined in Section 2.2.4

The TDA will require up to eight (8) weeks to review the first submission and provide Team Review Comments (TRC) or a Public Infrastructure Permit / Conditional Permit.

### **2.2.3 Second/Subsequent Submission Requirements**

The following are a list of key items that must be provided for all subsequent submissions (refer to Appendix A for the complete checklist):

- Signed cover letter giving a description of the revisions to first (or previous) submission
- Revised Public Infrastructure Permit Checklist (if applicable)
- Additional Permit Fee Payment (if applicable and in accordance with the current Fee Schedule)
- Responses to the previous set of Team Review Comments (TRC) provided directly in the issued TRC document. Comments will be closed out once they have been satisfied.
- A complete set of revised authenticated digital engineering and landscape drawings.
- Confirmation from the TDA of additional appropriate licenses, approvals, and permits as required for the construction and/or operation of the water utility, wastewater utility, stormwater utility, or other improvements as required.
- Letters from the Shallow Utility Companies acknowledging the proposed alignments and utility right-of-way plan(s) (as required)
- Other pertinent items as deemed necessary by the TDA, as outlined in Section 2.2.4

Further submissions may be required by the applicant to achieve PI Permit approval and to satisfy the comments provided by the TDA. Advisory Comments, Prior to Release Conditions and Permanent Conditions will be provided at each submission stage by the TDA.

Additional fees will be applied for reviews beyond the second submission of the PI Permit application, in accordance with the Fee Schedule in Appendix C.

### **2.2.4 Studies Prepared in Support of Application**

The following are documents that may be required for submission in support of a Public Infrastructure Permit application:

- Access Management Plan – Construction Access
- Archaeological Sites
- Biophysical Impact Assessment (BIA)
- Chemical Management Plan
- Construction Management Plan
- Cost Feasibility and Sustainability Analysis (Water, Wastewater and Stormwater)
- Environmental Impact Assessment
- Environmental Site Assessment

- Erosion & Sediment Control Plan
- Geotechnical Report / Pavement Structure Design
- Groundwater Supply Evaluation
- Historical Studies
- Master Drainage Plan / Updates
- Natural Environment Park Restoration Plan
- Paleontological Sites
- Water Servicing Study
- Sanitary Servicing Study
- Stormwater Management Report
- Traffic Accommodation Strategy (TAS) Plan
- Traffic Impact Assessment
- Tree Protection Plan
- Other reports and agreements that the TDA deems necessary

The requirements for these studies and any other supporting documentation and software models, on a given PI Permit application, will be discussed at the Pre-Application Meeting with the TDA.

## 2.3 Design Guidelines

### 2.3.1 Road and Streetscape Design

#### 2.3.1.1 General

The current editions of the following City of Calgary, and Provincial/Federal Design Guidelines, Standards and Specifications need to be utilized by the Applicant and the Engineering Consultant for the road design:

- *Design Guidelines for Subdivision Servicing*
- *Design Guidelines for Street Lighting*
- *Standard Specifications – Roads Construction*
- *Standard Specifications – Traffic Signal*
- *Transportation Association of Canada Geometric Design Guide for Canadian Roads (GDC)*
- *Alberta Transportation Recommended Practices Guidelines for Signage, Traffic Operations and Traffic Signals*

It will be the Applicant's responsibility to ensure that the design, construction and performance of all infrastructure constructed under the Servicing Agreement meets or exceeds the above-mentioned standards and guidelines.

In addition, the following documents have been specifically compiled for the Taza Development and shall be reviewed in support of the proposed road design:

- *Master Traffic Impact Assessment prepared for each Taza Village*

- *Taza Development Guidelines by the Tsuut'ina-Canderel Land Development Limited Partnership*
- *Tsuut'ina Nation Street Naming and Addressing Policies and Procedures*
- *Tsuut'ina Nation Signage Law*

### **2.3.1.2 Traffic Analyses**

A Master Traffic Impact Assessment has been prepared for each of the Taza Villages which provides an overall traffic analysis of the phasing and complete build-out of each respective village. This analysis will need to be referenced for any road design, intersection configurations and laning changes within Public Infrastructure areas. An additional, more detailed, traffic analysis pertaining to a given PI Permit application may be requested from the Applicant and their Engineering Consultant.

### **2.3.1.3 Road Classification/Right-of-Way**

Detailed Street Network Plans and unique Street Sections have been developed for each of the Taza Villages in the latest version of the *Taza Development Guidelines*. Road design within the Public Infrastructure will need to conform to the applicable sections, right-of-way requirements, landscape architecture requirements and Public Infrastructure requirements as outlined in these guidelines.

Refer to the latest edition of the *Taza Development Guidelines* for the Street Section requirements pertaining to each individual Taza Village.

### **2.3.1.4 Road Signage/Pavement Markings**

Traffic control and regulation within the Taza Development includes traffic signage, directional signage, traffic signalization, and pavement markings.

The type and location of road signage are subject to the review and acceptance of the TDA and will need to be included as a drawing in the submission set. It will be the responsibility of the Applicant to install the approved street signage to reflect the street names approved by the TDA.

All pavement markings and regulatory traffic signage need to be in accordance with the current *Alberta Transportation Recommended Practices Guidelines*, and in accordance with the *Tsuut'ina Nation Signage Law*. The Applicant shall ensure all regulatory traffic signage is in place in their permanent locations prior to the acceptance of the Construction Completion Certificate.

Bilingual signage, in both English and Dene languages, is required for all traffic signage. This will need to be coordinated early in the project, at the Pre-Application stage or Permit Application stage, with the TDA. Refer to Appendix D for standard Tsuut'ina Nation signage specifications including translations. A request will need to be submitted to the TDA for any additional custom signage translations.

### **2.3.1.5 Traffic Signalization**

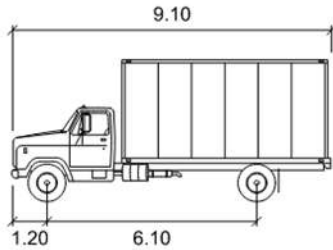
All traffic signalization must conform to the current *Alberta Transportation Recommended Practices Guidelines* and the *City of Calgary Standard Specifications – Traffic Signal Construction*. Signal phasing times need to be in accordance with the approved TIA or will require a letter of approval from the traffic engineering consultant of record.

### **2.3.1.6 Turning Movements**

Turning movements should be provided at all intersections within the permit area to illustrate all anticipated maneuvers can be safely accommodated. A clearance of 0.50 meters between the

vehicular envelope and face-of-curb, edge-of-gravel/pavement, and any above ground objects (e.g. signs, bollards, etc) needs to be provided and shown for all turning movements. The following are the required design vehicle templates that need to be shown as part of a road and streetscape design submission:

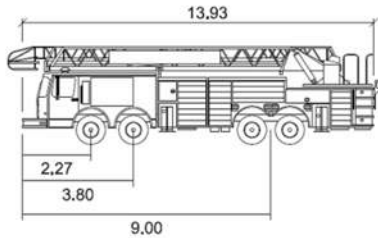
**Waste & Recycling or Storm Water Maintenance:**



**SU9**

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 31.5

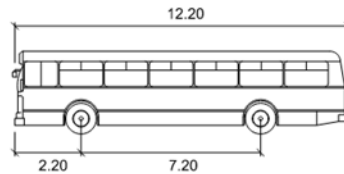
**Fire Access:**



**CFD\_Bronto\_Skylift**

	meters
Width	: 2.57
Track	: 2.57
Lock to Lock Time	: 6.0
Steering Angle	: 47.5
Turning Radius	: 10.18

**Public Transit:**



**B-12**

	meters
Width	: 2.40
Track	: 2.40
Lock to Lock Time	: 6.0
Steering Angle	: 37.1

### 2.3.1.7 Street Naming

The TDA shall be responsible for the creation of all new Civic addresses within the Taza Development. The road naming will adhere to the *Tsuut'ina Nation Street Naming and Addressing Policies and Procedures* document.

### 2.3.2 Street Lighting / Public Space Lighting

Street lighting design shall provide adequate vertical luminance at the roadway while reducing sky glow, glare, and energy consumption and minimizing light trespass onto adjacent areas. Lighting levels shall be sufficient to address the safety and security needs of the Development area and Village. In accordance with the latest version of the *Taza Development Guidelines Dark Sky Technology* that align with the Dark Sky Lighting Principles should be incorporated to maintain and preserve the nighttime environment.

An electrical permit will be required from one of the designated Taza safety codes / building permit agencies. Applicants can reach out to the TDA for a list of current contacts.

The current edition of the following City of Calgary Standard Specifications for street lighting construction needs to be utilized in Taza's lighting design practice:

- *Design Guidelines for Street Lighting*
- *Standard Specifications – Street Lighting Construction*
- *Street Lighting Kit of Parts (forthcoming)*
- Road's streetlight & Mobility division design bulletins
- All electrical work shall comply with the latest edition of the Canadian Electrical Code
- Contractor shall obtain all required permits prior to construction

Submission shall include:

- Street lighting Plans
- Voltage drop calculations
- Photometric design calculations using AGi 32 software

### 2.3.3 Water Infrastructure

#### 2.3.3.1 General

The current editions of the following City of Calgary Design Guidelines, Standards and Specifications need to be utilized by the Applicant and the Engineering Consultant for the waterworks design:

- *Design Guidelines for Subdivision Servicing*
- *Standard Specifications & Design Guidelines – Potable Water Feedermain Construction*
- *Standard Specifications – Waterworks Construction*

It will be the Applicant's responsibility to ensure that the design, construction and performance of all infrastructure constructed under the Servicing Agreement meets or exceeds the above-mentioned standards and guidelines.

In addition, the following documents have been specifically compiled for the Taza Development and shall be reviewed in support of the proposed waterworks design, including any other relevant approved water servicing studies/memorandums:



- *Water Servicing Studies prepared for each Taza Village.*
- *Taza Exchange – Potable Water Reservoir and Pump Station by MPE Engineering Ltd.*
- *Taza Park – Water Network Analysis by WSP Canada.*

### 2.3.3.2 Hydrants

#### 2.3.3.2.1 Hydrant Type

Hydrants located within the Taza Development shall conform to the following sizing and manufacturers, unless otherwise approved by the TDA:

Sizing Characteristics:

- Two (2) 65mm (2.5") hose nozzles with threads matching national, provincial, municipal standard
- One 114mm (4.5") pumper nozzle with threads matching national, provincial, municipal standards

Preferred Manufacturers:

- McAvity (Clow Canada)
- Mueller
- Canada Valve

Refer to Appendix D for the preferred McAvity (Clow Canada) Hydrant Specification.

### 2.3.3.3 Water Network Analysis

A hydraulic network analysis may be requested for any new development which has not had a previously approved analysis completed or has the potential to significantly alter the current water servicing study and/or the capacity of the network. An authenticated report or letter by the appropriate Professional of Record will need to be submitted to the TDA for review and approval. This requirement will be determined as part of the pre-application meeting. All water network analyses should be in accordance with the relevant Taza Village water servicing study. All water network models need to be completed in WaterCAD.

### 2.3.3.4 Water Treatment / Storage / Distribution Facilities

Water treatment, storage and distribution facilities may be required to meet the water quality or supply demands of a proposed development. Each proposed facility will be reviewed by the TDA on a site-specific basis. A proposed water facility may require a separate Public Infrastructure Permit depending on the application and circumstances.

Monitoring and control requirements for any proposed water facilities need to be discussed and verified with the TDA at the pre-application meeting prior to the first submission.

The current editions of the following City of Calgary and Alberta Environment and Parks (AEP) Design Guidelines, Standards and Specifications need to be utilized by the Applicant and the Engineering Consultant for the design of water treatment, storage or distribution facilities:

- *Alberta Environment and Parks Standards and Guidelines for Municipal Waterworks, Wastewater, and Storm Drainage Systems – Part 1 and 2*
- *City of Calgary Standard Specifications – Waterworks Construction*



## 2.3.4 Wastewater Infrastructure (Sanitary Sewer)

### 2.3.4.1 General

The current editions of the following City of Calgary Design Guidelines, Standards and Specifications need to be utilized by the Applicant and their Engineering Consultant for the sanitary sewer design:

- *Design Guidelines for Subdivision Servicing*
- *Standard Specifications – Sewer Construction*

It will be the Applicant's responsibility to ensure that the design, construction and performance of all infrastructure constructed under the Servicing Agreement meets or exceeds the above-mentioned standards and guidelines.

In addition, the following documents have been specifically compiled for the Taza Development and shall be reviewed in support of the proposed sanitary sewer design, including any other relevant approved sanitary servicing studies/memorandums:

- *Sanitary Servicing Studies prepared for each Taza Village.*

### 2.3.4.2 Manholes

Manholes located within the Taza Development shall be composed of the following frame and cover unless otherwise approved by the TDA:

- *TF-50 Shallow Frame by Trojan Industries Inc.*
- *TF-50CT Tsuut'ina Cover by Trojan Industries Inc.*

Refer to Appendix D for the Manufacturer's Detailed Drawing of the Shallow Frame and Tsuut'ina Cover.

### 2.3.4.3 Lift Stations

Lift stations are generally required along mains that need to overcome the effects of gravity. Each installation will be reviewed by the TDA on a site-specific basis. A proposed lift station may require a separate Public Infrastructure Permit depending on the application and circumstances.

Monitoring and control requirements for any proposed lift stations need to be discussed and verified with the TDA at the pre-application meeting prior to the first submission.

The current editions of the following City of Calgary Design Guidelines, Standards and Specifications need to be utilized by the Applicant and their Engineering Consultant for the lift station design:

- *Wastewater Lift Station Design Guidelines*

## 2.3.5 Stormwater Management

### 2.3.5.1 General

The current editions of the following City of Calgary Design Guidelines, Standards and Specifications need to be utilized by the Applicant and their Engineering Consultant for the storm sewer design:

- *Design Guidelines for Subdivision Servicing*
- *Standard Specifications – Sewer Construction*

- *City of Calgary Stormwater Management & Design Manual*

It will be the Applicant's responsibility to ensure that the design, construction and performance of all infrastructure constructed under the Servicing Agreement meets or exceeds the above-mentioned standards and guidelines.

In addition, the following documents have been specifically compiled for the Taza Development and shall be reviewed in support of the proposed storm sewer design, including any other relevant approved stormwater management studies/memorandums:

- *Master Drainage Plan prepared for each Taza Village*
- *Taza Development Guidelines by the Tsuut'ina-Canderel Land Development Limited Partnership*

### **2.3.5.2 Submission Requirements**

All public realm applications require the submission of a Stormwater Management Report which aligns to the governing Phase SWMR or Pond Report. In the case of smaller application areas, a memo may be acceptable, at the discretion of the TDA.

A complete SWMR first submission must be received before underground approvals can be considered. Surface approvals can only be granted alongside an approved SWMR.

#### **2.3.5.2.1 Runoff Volume Targets**

Areas subject to runoff volume targets (as per Phase or Pond Reports) must either use computer modelling (e.g. PCSWMM) to complete the analysis or use the City of Calgary Water Balance Spreadsheet.

#### **2.3.5.2.2 Model Files**

Submissions utilizing computer modelling must submit model files with the SWMR for TDA's records. Where applicable, these files should be packaged to include results and all files necessary for model run.

### **2.3.5.3 Analysis Methodology**

#### **2.3.5.3.1 Modeling Software**

All public realm sites require computer analysis of the storm system. The following list of software suites will be accepted for the Taza Development:

- *SWMHYMO*
- *PCSWMM*

In limited situations, TDA may consider rational method for analysis of small areas, this needs to be discussed and approved by the TDA at the pre-application meeting prior to the first submission.

### **2.3.5.4 Stormwater Management Facilities / Ponds**

Stormwater management facilities such as dry ponds, wet ponds, and wetlands receive stormwater runoff from conveyance systems (i.e. ditches, swales, roads and gutters and sewers) and discharge to downstream receiving water bodies or conveyance systems. The purpose of these facilities is to serve various functions including temporary storage, water quality enhancement, and runoff volume control.

Each facility will be reviewed by the TDA on a site-specific basis. A proposed stormwater management facility may require a separate Public Infrastructure Permit depending on the application and circumstances.

Monitoring and control requirements for any proposed facilities need to be discussed and verified with the TDA at the pre-application meeting prior to the first submission.

The current editions of the following City of Calgary Design Guidelines, Standards and Specifications need to be utilized by the Applicant and their Engineering Consultant for the stormwater facility design:

- *City of Calgary Stormwater Management & Design Manual*

### **2.3.6 Low Impact Development**

Low Impact Development (LID) is an emerging stormwater servicing strategy and is strongly encouraged in the Taza Development.

Refer to the latest version of the *Taza Development Guidelines* for a list of possible LIDs that can be incorporated into the design of the Taza Villages. For more information on the role of LIDs in the management of stormwater, refer the following documents:

- *Master Drainage Plan prepared for each Taza Village*
- *Taza Development Guidelines by the Tsuut'ina-Canderel Land Development Limited Partnership*
- *City of Calgary Stormwater Management & Design Manual*
- *City of Calgary Low Impact Development Project Modules:*
  - *Geotechnical and Hydrological Considerations*
  - *Bioretention and Swales*
  - *Green Roofs*
  - *Permeable Pavement*

Where LIDs are proposed to achieve stormwater quality improvement targets, the methodology detailed in the above-mentioned Bioretention and Swales Module must be used.

### **2.3.7 Erosion and Sediment Control (ESC)**

#### **2.3.7.1 General**

Erosion and Sediment Control needs to be developed and implemented throughout all stages of construction to limit the soil disturbance and ensure the protection of environmental resources, infrastructure and property within, and adjacent to construction sites.

Erosion and Sediment Control in the Taza Developments must be designed in accordance with the latest edition of the *City of Calgary Erosion and Sediment Control Guidelines, Specifications and Field Manual* detailed below:

- *Erosion and Sediment Control Guidelines*
- *Erosion and Sediment Control Field Manual*
- *Instruction Manual for Erosion and Sediment Control Plan Applications*
- *Standard Specifications – Erosion and Sediment Control*

### 2.3.7.2 Erosion and Sediment Control Requirements

**For sites greater than 2.0 Ha in size:** A full ESC Plan (report & drawings) needs to be developed and submitted for approval by the TDA. The ESC Plan must be implemented throughout all stages of construction. See Appendix C for a report template.

**For sites between 0.40 - 2.0 Ha in size:** ESC Construction Drawings need to be developed and submitted for approval by the TDA. The ESC Construction Drawings need to be implemented throughout all stages of construction.

**For sites less than 0.40 Ha in size:** A Good Housekeeping Letter Request must be submitted and followed throughout all stages of construction. See Appendix C for a letter template. Good Housekeeping Practices Include:

- Control of mud track out during construction, usually by means of a well-maintained construction entrance/exit on all access locations, supplemented with period street sweeping as required.
- Dust control must be implemented on site, when required.
- Install down-gradient perimeter protection (such as silt fence, compost sock, etc.) to protect off-site areas from stormwater runoff and sedimentation during construction.
- Proper placement and protection of stockpile soils and materials so they will not be eroded to off-site areas, including storm inlets.
- Inspections are required every 7 days and after rainfall or snowmelt events.

### 2.3.7.3 Winter Operations

A pre-winter inspection with the TDA is required to note any deficiencies that do not comply with the approved ESC Plan or to note any required maintenance. Examples include, but are not limited to:

- Confirm storm inlet controls have been removed.
- Ensuring sediment containment systems have adequate storage capacity
- Removal of sediment and repair of structures and controls designed to capture sediment
- Checking for adequate stabilization of all exposed areas and inspecting erosion controls to ensure proper installation and condition
- Review of potential run-on areas to see if additional measures will be required.

Winter is defined as the dates between November 1 and April 30 of each year.

Refer to the latest edition of The City of Calgary Erosion and Sediment Control Standard Specifications for winter operation requirements for each standard specification.

### 2.3.7.4 Erosion and Sediment Control Exceptions

Unless requested, RUSLE calculations are not required for areas that have permanent erosion and sediment control measures in place (i.e. grass/weeds with 80%+ ground cover, pavement, concrete, etc.).

## 2.3.8 Landscape

### 2.3.8.1 General

The current editions of the following City of Calgary Design Guidelines, Standards and Specifications need to be utilized by the Applicant and their Consultant for the landscape design:

- *Canadian Landscape Standard - the Guide for Landscape Construction Projects across Canada (Latest Version)*

- *Development Guidelines and Standard Specifications – Landscape Construction-Calgary Parks and Open Spaces (Latest Version)*
- *City of Calgary Seed Mixes. Recommendations and Guidelines to inform revegetation work in Calgary (Latest Version)*
- *City of Calgary Plant List (Latest Version)*
- *Residential Street Design Policy*

It will be the Applicant's responsibility to ensure that the design, construction and performance of all infrastructure constructed under the Servicing Agreement meets or exceeds the above-mentioned standards and guidelines.

In addition, the following documents have been specifically compiled for the Taza Development and shall be reviewed in support of the proposed landscape design. It is important to note that there is emphasis on the vegetation and tree species utilized in Taza to align with Tsuut'ina Nation cultural requirements.

- *Taza Development Guidelines by the Tsuut'ina-Canderel Land Development Limited Partnership (Latest version)*

## 2.4 Drawing Standards

### 2.4.1 Drawing Requirements

This Section lists the requirements specific to the Tsuut'ina Nation related to the preparation of Engineering Drawings for the Public Infrastructure Permit application. Refer to the checklist in Appendix A for further information on drawing requirements. For information not covered in this section, refer to the City of Calgary drawing specifications detailed within the latest edition of the following:

- *Standard Block Profile Specifications for CAD and Manual Formats*
- *CAD Standard Guidance Document*

### 2.4.2 General Drawing Requirements

#### 2.4.2.1 Sheet Size

The following sheet sizes will be accepted:

- A1
- A3 shall be provided in addition to the above for field inspections

#### 2.4.2.2 North Arrow

The north arrow is to be placed within the upper right-hand corner of the sheet. The drawing should be oriented such that north faces the upper edge of the drawing sheet. The north arrow may face to the left of the page, however this is dependent on the scope of the project.

#### 2.4.2.3 Title Block

All drawings must be accompanied with a title block along the right side or bottom of the drawing. The following information must be detailed within the title block:

- Applicant's name

- Consultant(s) name
- Relevant TDA Application Number (if available at the time of application):
- Village name including staging and/or phasing, if applicable
- Legal plan, if available
- Civic address, if applicable
- Drawing number/name (Refer to Section 2.4.3.1)
- Horizontal and vertical scale used
- Fields for the initials of:
  - Designer
  - Draftsperson
  - Checker
- A revisions table documenting the issued drawings and the number of revisions including a number, date, description and relevant consultant approver initials.
- An allocated space for the name of the Consultant, the signed professional of record's stamp (P.Eng., P.L.(Eng.), P.Tech., Landscape Architect stamp (if applicable), and Permit to Practice stamp for engineering drawings.
- Legend
- Total site area in hectares
- Notes

#### **2.4.2.4 Drawing Scale**

The following scales are a guideline to be used for the preparation of the construction drawings. Exceptions will be noted for specific drawings.

- A scale of 1:1000 should be used for all key plans.
- A scale of 1:500 should be used for all plans.
- A scale of 1:50 to 1:100, shall be used for typical profile drawings. Discretion is to be used for vertical profiles in cases where steep profiles are present.
- All landscape construction plans must be in metric and preferred scales are 1:200, 1:300 1:500

### **2.4.3 Plan Drawing Requirements**

#### **2.4.3.1 List of Applicable Drawings**

The following is a list of drawings that shall be submitted in support of a Public Infrastructure Permit application.

#### **Table 2A – Public Infrastructure Drawing Requirements**

The following drawing naming and numbering can be used as a guideline. Required drawings will be on a per application basis, which will be confirmed at the pre-application meeting with the TDA.

SHEET NUMBER	SHEET NAME
-	Cover Sheet c/w Location Plan
-	Land Use & Outline Plan
-	Legal Plan c/w: Utility Right of Way Survey Plan (Shallow Utilities), Utility Right of Way Survey Plan (Deep Utilities), and Utility Right of Way Survey Plan (Stormwater).
-	Index Plan
C1.0	Grading Plan c/w Original Ground Contours
C1.1	Cut & Fill Plan
C2.0	Test Hole Logs
C3.0	Overland Drainage
C4.0	Storm Sewer Design
C4.1	Storm Catchment Area Plan
C5.0	Sanitary Sewer Design
C6.0	Waterworks Design
C7.0	Surface Works
C8.0	Pavement Marking and Signage
C9.0	Cross-section Details
C10.0	Stormwater Facilities (Underground Storage Tank / Pond Details)
C11.0	Water / Wastewater Facilities
L1.0, L1.1, etc.	Landscape Plans, including but not limited to: Layout Plan, Grading Plan, Planting Plan
L2.0, L2.1, etc.	Landscape Details
IR1.0, IR1.1, etc.	Irrigation Plan
C11.0, C12.0, etc.	Other Details
PP1.0, PP2.0, etc.	Plan/Profiles
ESC1.0, ESC2.0, etc.	Erosion and Sediment Control Plan
SL1.0, SL1.1, etc.	Street Lighting
TS1.0, TS1.1, etc.	Traffic Signals

The details and minimum drawing requirements for each of the drawings listed above can be found in the subsequent sections.

#### **2.4.3.2 Grading Plan**

The following information must be clearly identified on the Grading Plan:

- Legal description (Lot/Block/Plan number) for each parcel of land
- Civic address
- Back of sidewalk and property line elevations at lot lines
- Lane/public utility lot elevations at lot lines

- Lot drainage pattern
- Location of traplows
- Location of hydrants, streetlights, transformers, switch gear cubicles, underground distribution, telephone pedestals, and cable television pedestals
- Indication of areas where depth of fill exceeds 2.0m (bearing capacity confirmation required)
- Service trench location
- Driveway location
- Property corner elevation
- Electrical service location
- Sump pump location
- Original ground elevation
- Minimum building opening elevation
- Suggested front grade
- Suggested rear grade
- Groundwater elevation
- Lowest top of footing
- Sanitary and storm service invert 5m inside the property line
- Rear property corner elevation
- Direction of grading

#### **2.4.3.3 Cut/Fill Plan**

The following information must be clearly identified on the Cut/Fill Plan:

- Construction boundary
- Depth of cut/fill elevations/contours
- Cut/fill volume table
- Information regarding subgrade/stripping depth(s)

#### **2.4.3.4 Overland Drainage**

The following information must be clearly identified on the Overland Drainage:

- Construction boundary
- Original ground contours
- Major drainage routes
- Slopes, highpoints and low points
- Location of traplows with traplow storage table
- Drainage catchment areas and labels
- ICDs, catchbasin types and interconnected catchbasins



- Q,v,d's for streets, gutters or swales
- Overland escape route arrows and associated Q,v,d.
- Legal base plan including easements
- Drainage easements

#### **2.4.3.5 Storm Sewer Design**

The following information must be clearly identified on the Storm Sewer Design:

- Construction boundary
- Storm main alignments
- Direction of pipe flow
- Pipe invert elevation(s) at all manholes
- Pipe length, pipe size, pipe material (general note acceptable), and grade between manholes
- Manholes, catch basin manholes, manhole type, rim elevation and identification numbers
- Catch basin leads
- Easement/right-of-way

#### **2.4.3.6 Storm Drainage Plan**

The following information must be clearly identified on the Storm Catchment Area Plan:

- Construction boundary
- Storm main alignments
- Direction of pipe flow
- Pipe length, pipe size, pipe material (general note acceptable), and grade between manholes
- Manholes, catch basin manholes, manhole type, rim elevation and identification numbers
- CDs, catchbasin types and interconnected catchbasins
- Stormwater catchment areas and labels
- Label UARR and/or imperviousness of each catchment
- Catchment tie-in locations
- Easements/right-of-way
- Minor System Table (i.e. stage, area, volume and discharge table, etc.)

#### **2.4.3.7 Sanitary Sewer Design**

The following information must be clearly identified on the Sanitary Sewer Design:

- Construction boundary
- Sanitary main alignments

- Direction of pipe flow
- Pipe invert elevation(s) at all manholes
- Pipe length, pipe size, pipe material (general note acceptable), and grade between manholes
- Manholes, and manhole rim elevations and identification numbers
- Identify drop manholes (interior/exterior)

#### **2.4.3.8 Waterworks Design**

The following information must be clearly identified on the Waterworks Design:

- Construction boundary
- Water main alignments and angle of bends
- Pipe material and size
- Hydrants (Hydrant identification numbers will be provided by Tsuut'ina Nation)
- Valves (Valve identification numbers will be provided by Tsuut'ina Nation)
- Locations of air/pressure release valves and pressure reducing valves
- Easement/right-of-way
- Water network analysis

#### **2.4.3.9 Surface Works**

The following information must be clearly identified on the Surface Works:

- Construction boundary
- Street name(s)
- Right-of-way alignments with dimensions
- Carriageway width (i.e. from edge of pavement to edge of pavement)
- Sidewalk and/or curb type and width
- Boulevard width
- Driving lane width(s)
- Approach details and locations
- Horizontal curve (HC) information
- Catch basin manholes and catch basins, including type and ICD details
- Curb ramps
- Drainage features including waterways, lakes, ponds, canals, swales, ditches and culverts, noting direction of flow
- Hydrants
- Temporary access roads and/or turnarounds
- Pathways and/or sidewalks, including bollard locations and cross sections
- Mailbox turnouts

- Transit stops/laybys
- Retaining wall and barrier locations

#### **2.4.3.10 Pavement Marking and Signage**

The following information must be clearly identified on the Pavement Marking and Signage:

- Traffic signage
- Pavement markings
- Street name identification signs
- Construction signs
- Pond warning signs
- Relevant detailed signage drawings
- Bilingual signage (i.e. English and Dene languages) will be required and will need to be coordinated with the TDA. Refer to Appendix D for all current signage specifications.

#### **2.4.3.11 Cross-section Details**

The following information must be clearly identified on the Cross-section Details:

- Road structure design details (in accordance with Pavement Design Report)
- Dimensions of lanes, boulevards, sidewalks/pathways, road right-of-way, etc.
- Deep and shallow utilities
- Light standard locations
- Relevant road grades, side sloping, back sloping, etc.

Separate cross-sections should be provided for any LID infiltration features

#### **2.4.3.12 Stormwater Facilities / Pond Details**

The following information must be clearly identified on the Stormwater Facilities drawings:

- Construction Boundary
- Drainage boundaries, areas and sizes
- Stage – Storage – Discharge table
- Pond outline with pond bottom, NWL, (L)NWL, (U)NWL, HWL, FB and 1:100 year elevations (if different than HWL), where applicable.
- Area of inundation corresponding to non-operational water re-use system for zero-discharge facilities
- Sediment forebay(s) or alternative (design and sediment storage capacity)
- Pond staging shown when permitted
- Land use for surrounding area
- Location of structures
- Location of monitoring panel

- Access road to inlet and outlet structures and boat ramp: location, width and structure requirements
- Pathway: locations, width and structure requirements
- Overland escape route and details (longitudinal profile and cross sections)
- Signage locations and type
- Details of SCPs (if within pond boundary)

#### **2.4.3.13 Landscape Plans**

A landscape drawing submission will consist of a Layout Plan, Grading Plan, Planting Plan, and Irrigation Plan (as required). The General Requirements for all landscape plans and specific requirements for each type of plan has been detailed below:

##### **2.4.3.13.1 Concept Plan**

Concept Plans are a visual representation of the written Design Statement required as part of the Public Infrastructure Permit Approval Process. Concept Plans should clearly indicate how the Public Infrastructure responds to the Vision, Values and four Pillars (as identified in the *Taza Development Guidelines*) in its own unique way.

Concept plans precede the preparation of detailed Layout, Grading, Planting and Irrigation Plans. These concept plans are to ensure that the *Taza Development Guidelines* and site-specific Design Statement objectives are being achieved in the proposed open space design.

Concept Plans that reinforce the Design Statement shall consist of:

- The type, function and/or theme of the Open Space, including parks and/or streetscape based on its context within the Village.
- Rendered plans showing the high-level relationships of spaces, functions and design features within the site.
- Conceptual grading information including contours and minimum and maximum slopes.
- Conceptual planting design.
- Property lines, easements and utility right of ways.

##### **2.4.3.13.2 General Requirements for all Landscape Construction Plans**

- Refer to the *Taza Development Guidelines* and *City of Calgary Development Guidelines and Standard Specifications – Landscape Construction* for additional detailed requirements.
- All landscape construction plans must be sealed and signed by a Registered Landscape Architect with current membership in the Alberta Association of Landscape Architects.
- All drawings and supplemental material(s) for irrigation systems that will be turned over to the Tsuut'ina Nation, must be stamped and signed by a Certified Irrigation Designer (CID) - Commercial. This certification must be issued by the Irrigation Association (IA). The certified designer must be in good standing with the association.
- Be a maximum scale of 1:500 to be used for all landscape plans. Preferred smaller scales are 1:200 and 1:250.

- Include the legal description, municipal address (if available), site property lines, legal easements, encumbrances and rights-of-way.
- Existing and proposed infrastructure/Infrastructure Improvements located within and/or adjacent to the site.
- Adjacent land uses, roads, utilities, structures.
- Include curbs, sidewalks, fences, and any other boundary conditions.
- Include existing tree locations, diameter at breast height (DBH), and species (where possible).
- All berms, parks, roadway boulevards, medians and traffic islands, utility lots and rights of way, buffers, and dry ponds.
- Details of items that are not included in the Standard Specifications for Landscape Construction (as required).

#### **2.4.3.13.3 Layout Plan**

In addition to the General Requirements for Landscape Plans, the following must be identified on Layout Plans:

- Existing site features and vegetation to be retained.
- Proposed layout of all open space infrastructure and site amenities including but not limited to parks, recreational facilities, playgrounds, baseball diamonds, sports fields, buildings, pathways, trails, bollards, gates, garbage receptacles, site furnishings, benches, basketball courts, outdoor rinks, tennis courts, mailboxes, signage (including dog bylaw signs, pathway signs, and trail signs), fencing, etc.
  - All playground equipment layout must be shown as per CSA guidelines, including non-encroachment zones, fall zones and protective surfacing zones. Provide supplier elevations, cross sections, photos or 3D renderings for playground designs (where possible).
  - Provide a detailed section for poured-in-place fall surface indicating the depth of the clay base, gravel layer, rubber crumb base layer and rubber crumb top layer.
- Fencing or other property delineation specifications and alignment.
- Pedestrian crossing locations and details.

#### **2.4.3.13.4 Grading Plan**

In addition to the General Requirements for Landscape Plans, the following must be identified on Grading Plans:

- Major items associated with layout but not including dimensions, i.e. walkways, play fields, roads, curbs, structures, and natural areas.
- Surrounding grade information affecting site development.
- Existing and proposed contours at 0.5 m contour intervals.
- Elevations at each break point (top and toe of slope).
- Existing and proposed spot elevations including, but not limited to, manhole rim, catch basin rim and invert elevations (as required), top of wall, top of curb, and finished floor elevations (as required).

- Existing and proposed concrete gutters.
- All trap lows with their 1:100 inundation area and emergency spill routes.

#### **2.4.3.13.5 Planting Plan**

In addition to the General Requirements for Landscape Plans, the following must be identified on Planting Plans:

- Major items associated with “Layout” but not including dimensions, i.e. walkways, roads, curbs, hard surface areas, structures, natural areas.
- Contours at 0.5 m intervals.
- Planting bed outlines.
- Existing trees, vegetation and other natural features to be retained or removed.
- Topsoil depths for plant beds and areas to be sodded or seeded.
- The type and depth of mulch for shrub beds and tree wells.
- Proposed seed mixes.
- The location of proposed plants including trees, shrubs and groundcovers.
- Include a plant list identifying species botanical and common names, quantities, sizes, habit, spacing, and specific remarks (as required).

#### **2.4.3.13.6 Irrigation Plan**

In addition to the General Requirements for Landscape Plans, the following must be identified on Irrigation Plans:

- Major items associated with “Layout” but not including dimensions, i.e. walkways, roads, curbs, hard surface areas, structures, natural areas.
- Major items associated with the Grading and Planting Plans (faded back).
- Locations of all lines, sprinkler heads, valves, drains, sleeves, electrical drop-offs, 100-volt wire, 110-volt conduit, and electrical controllers and dimensions from adjacent property lines.
- Whether the system will be trenched or “plowed in” and whether the system will be gravity drained, blown out, or a combination.
- A schedule of materials/products describing sizes, manufacturers and model numbers, pipe fitting method, performance standards, and sources of materials/products.
- Minimum Static Water Pressure.
- Irrigation Scheduling Chart.
- Additional detailed requirements for Irrigation Plans to be referenced in Section 2.3.8 of the City of Calgary Development Guidelines and Standard Specifications: Landscape Construction.

#### **2.4.3.14 Plan/Profile**

##### **2.4.3.14.1 Plan View**

See requirements as described in Section 2.4.3.

#### **2.4.3.14.2 Profile View**

The profile view needs to show the following road and utility information:

- Stationing for road, lane, and/or utility lot center lines
- Vertical and horizontal scale indexing the survey datum
- Vertical and horizontal point of intersection (P.I) elevations for utility mains and surface improvements
- Length and grade between P.I.'s for utility mains and surface improvements
- Vertical curve information including chainage and elevations of BVC, PVI and EVC; length of curve; K values and M values
- Approach locations including culvert locations with invert elevations
- Vertical alignments of manholes, valves, and hydrants
- Manhole rim and invert elevations
- Utility main lengths, sizes, materials, and gradients

#### **2.4.3.15 Erosion and Sediment Control (ESC)**

The ESC drawings must comply with the latest edition of *The City of Calgary Instruction Manual for ESC Plan applications*.

#### **2.4.3.16 Street Lighting**

The following information must be clearly identified on the Street Lighting drawings:

##### **2.4.3.16.1 Plan Layout**

- Titleblock
- Notes
- Road names and future roadworks
- North arrow
- Design consultant permit to practice and professional seal
- Offsets and dimensions
- Curbs and walkways
- Utilities
- Lot line and property lines
- Call-outs
- Electrical and street lighting infrastructure
- Electrical loads
- Electrical panel schedule
- Coordinates
- Photometric Drawing
- Luminaire schedule

- Numeric summary
- Road classifications and pedestrian conflict
- Single line diagram
- Details
- Street light elevation drawing details
- Voltage drop calculations

#### **2.4.3.17 Traffic Signals**

The following information must be clearly identified on the Street Lighting drawings:

##### **2.4.3.17.1 Plan Layout**

- Titleblock
- Notes
- Road names and future roadworks
- North arrow
- Design consultant permit to practice and professional seal
- Offsets and dimensions
- Curbs and walkways
- Utilities
- Lot line and property lines
- Call-outs
- Electrical and signal infrastructure
- Electrical loads
- Electrical panel schedule
- Coordinates
- Numeric summary
- Road classifications and pedestrian conflict
- Single line diagram
- Details
- Traffic signal elevation drawing details
- Voltage drop calculations
- Signal timing

#### **2.4.4 Record Drawing Requirements**

Record drawings will need to be prepared and submitted at both the CCC and FAC stages.

Record drawings are detailed engineering drawings showing the surface and the underground features such as legal, roadworks, waterworks, sanitary, storm sewers, landscape, streetlighting,



and traffic signals. Depending on the application, the record drawings shall include the following plans, as described below:

- Plan view displaying the final surface features such as legal descriptions and bordering property data, curbs, sidewalks, etc.
- Utility plan view displaying the as-built underground utilities such as, the waterworks, sanitary, and storm sewers, including profile views showing the utility grades, elevations and related data.
- Facility drawing packages displaying as-built water, sanitary facilities and stormwater facilities (i.e. ponds, storage facilities) including and any respective underground utilities and services for these facilities.
- Electrical plans displaying streetlighting and traffic signals.

For all road / streetscape applications, plan / profile views need to be combined to show underground utilities in both.

All record drawings will need to be authenticated by the professional of record. An authenticated PDF of the record drawings including the CAD and GIS files will be required at both the CCC and FAC stages. Refer to the relevant CCC and FAC checklists in Appendix A for further detail.

**2.4.4.1 Infrastructure Asset Numbering System**

An Applicant’s local numbering system (for manholes, stormwater facilities and hydrants) may be used on design drawings submitted in support of a Permit application. However, the numbering of the new infrastructure should not conflict with the numbering of existing infrastructure for design clarity.

**2.4.4.1.1 Manhole Numbering**

The Infrastructure Asset Numbering System is provided as a guideline and pertains to sanitary and stormwater manholes. The system uses an alphabetical prefix for sanitary and stormwater, followed by a digit for the Taza Village/Zone, two digits for the catchment area and three digits for the manhole number, summarized as follows:

Sanitary or Storm Manhole	Taza Village/Zone	Catchment Area	Manhole Number
S or ST	1	06	005

Examples: ST1-06-005 (Stormwater manhole #5 for Catchment Area 6 in Taza Park)  
S2-121 (Sanitary manhole #121 in Taza Crossing)

**2.4.4.1.2 Water/Sanitary/Stormwater Facilities Numbering**

Prefixes for other water, sanitary and stormwater facilities are summarized as follows:

Catch basin	Drywell	Oil/Grit Separator	Outfall	Isolation Valve	Pressure-Reducing Valve	Hydrant	Lift Station	Air-Relief Valve
CB	DW	OGS	OL	IV	PRV	H	LS	ARV

Examples: PRV3-002 (Pressure-Reducing Valve #2 in Taza Exchange)  
OGS3-01-001 (Oil/Grit Separator #1 for Catchment Area 1 in Taza Park)

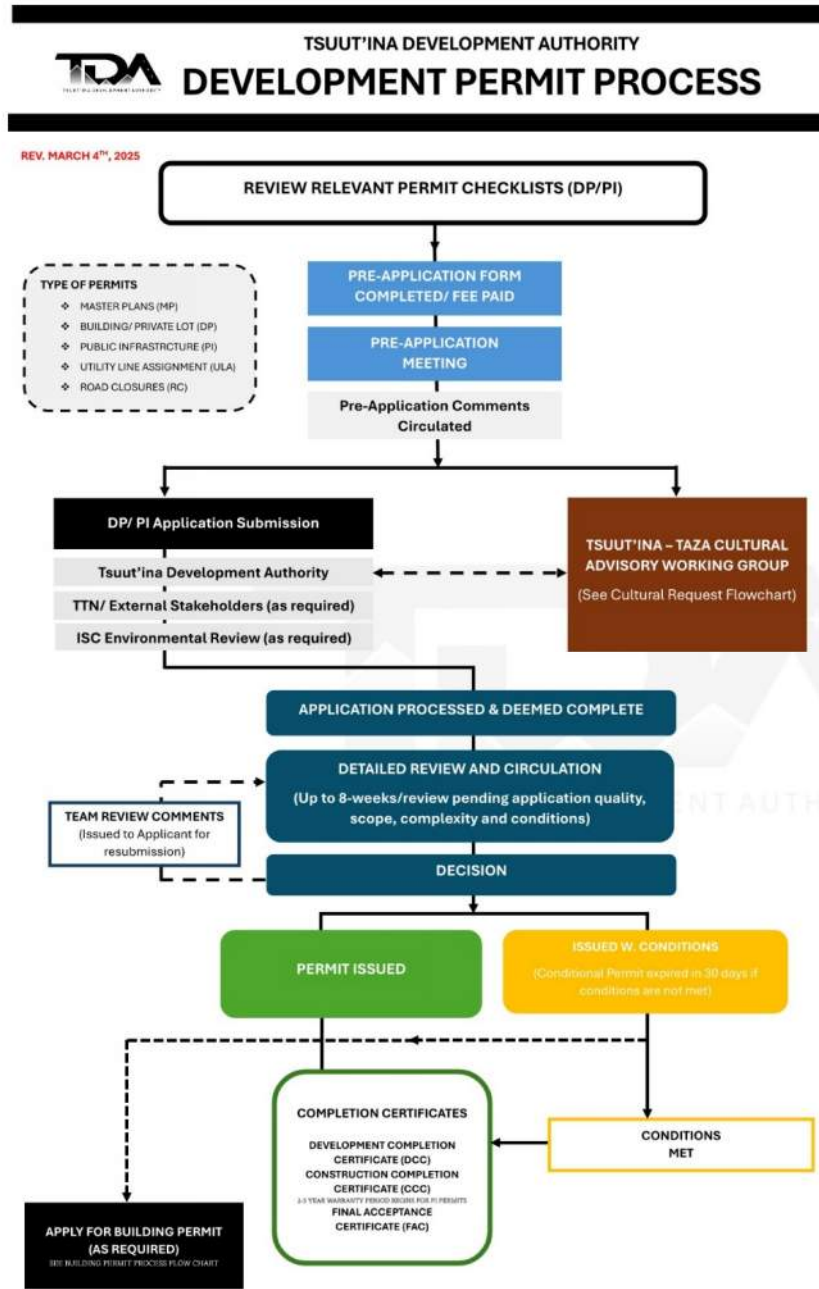
**2.4.4.1.3 Irrigation As-built Drawings**

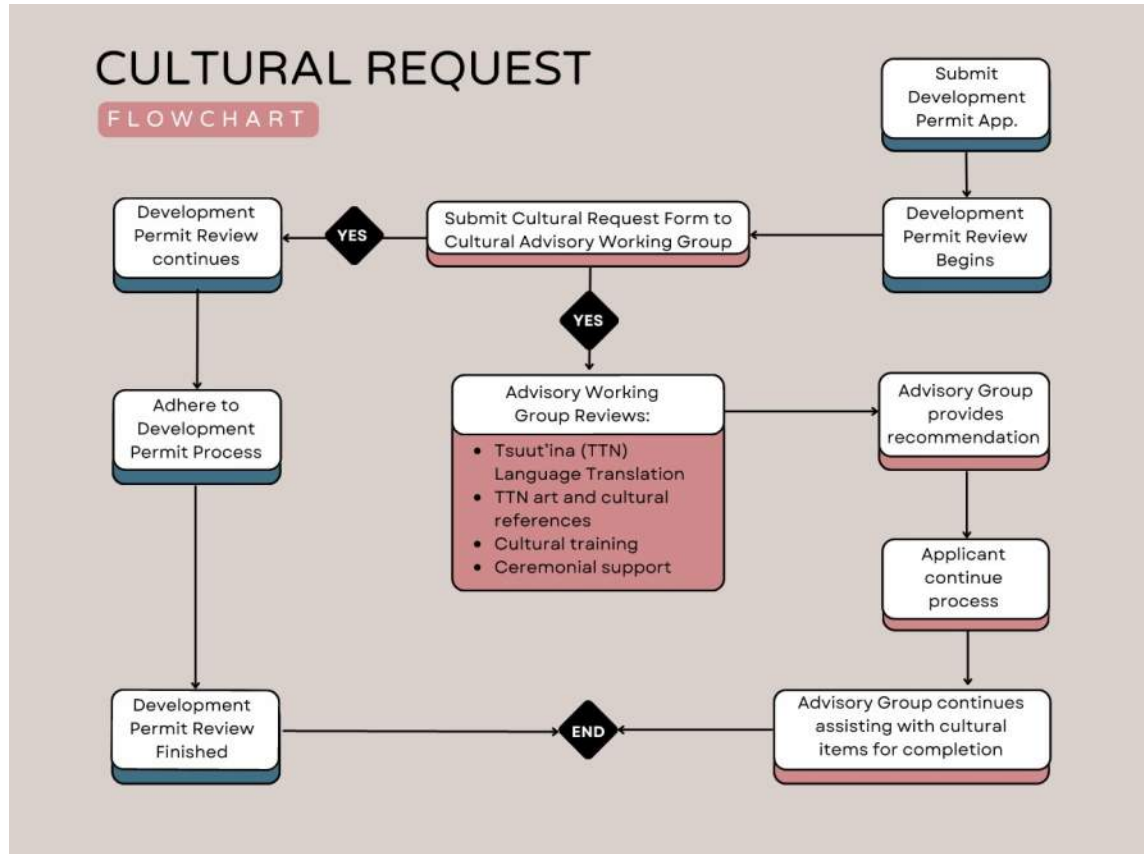
Irrigation As-built drawings will be required at the Construction Completion Stage and shall be prepared per the detailed requirements outlined in the latest edition of the City of Calgary Development Guidelines and Standard Specifications: Landscape Construction.

## 2.5 Review and Approval Process

### 2.5.1 Public Infrastructure Permit Application Circulation Process

The following figure is the circulation, review and approvals process administered by the TDA for a given Public Infrastructure Permit Application. Refer to Appendix A for the applicable Public Infrastructure Permit application forms and checklists.





## 2.5.2 Public Infrastructure Amendment Process

### 2.5.2.1 Procedure

In the event design revisions are required as a result of unexpected and/or unforeseen field conditions following a Public Infrastructure Permit drawing approval; a Public Infrastructure Amendment may be accepted by the TDA. To initiate the Amendment process, the following must be submitted:

- A cover letter detailing project information such as the PI Permit Application Number, Servicing Agreement Number, any other relevant project information as well as a description of the redline revisions and justification for the changes.
- An authenticated digital drawing set documenting the proposed design revisions.
- Amendment fee, as outlined in the Fee Schedule in Appendix C.

### 2.5.3 Construction Completion Certificate (CCC)

The TDA utilizes a Construction Completion Certificate (CCC) and Final Acceptance Certificate (FAC) procedure to sign off on all Public Infrastructure Improvements completed by the Applicant.

Once the Applicant completes a Public Infrastructure Improvement, the Consultant must follow the procedure below, in the order shown:

1. Inspect the Public Infrastructure Improvement with the Applicant's Contractor and record any deficiencies.

2. Conduct further inspection(s) once the Applicant's Contractor repairs the initial deficiencies until all deficiencies are repaired to a satisfactory level.
3. Resolve any outstanding field orders related to the Public Infrastructure Improvement.
4. Schedule and conduct an inspection with the TDA. Any further outstanding deficiencies are to be repaired to a satisfactory level. A second/final inspection may be required to confirm the satisfactory completion of works. Note that inspections will be weather permitting at the discretion of the TDA inspector.
5. Submit to the TDA the signed and stamped CCC, relevant checklist(s), Record Drawings and the required documentation for the Public Infrastructure Improvement, as outlined in the checklists in Appendix A (i.e. PDF, CAD, GIS files).

The Public Infrastructure Improvements are categorized as follows:

- A. Underground Infrastructure – Water Services
- B. Underground Infrastructure –Sanitary Sewer Services
- C. Underground Infrastructure –Storm Sewer Services
- D. Surface Works – Concrete – Curb, Gutter & Sidewalk
- E. Surface Works – Asphalt – Parking Lots, Roads and Recreational Pathways
- F. Surface Works – Landscape
- G. Facilities (Stormwater Management Facilities, Lift Stations, Water and Wastewater Treatment Facilities, and Booster Pump Stations)
- H. Electrical Infrastructure – Street Lighting
- I. Electrical Infrastructure – Traffic Signals
- J. Demolition and Removals

Infrastructure improvements for underground can be combined into one or more certificates upon request from the applicant and acceptance / approval from the TDA.

The CCC application package for each Public Infrastructure Improvement category shall be submitted to the TDA and must include the following key items:

- Detailed Cover Letter
- CCC Checklist found in Appendix A for the respective Infrastructure Improvement
- One (1) digital copy of the Construction Completion Certificate, duly signed and sealed by the appropriate Professional of Record. The template for the Construction Completion Certificate can be found in Appendix A.
- One (1) full digital set of authenticated engineering and landscape record drawings indicating the completed Improvements and marked "Record Drawings" with the Consultant's stamp and signature being dated to reflect the CCC application date. Testing Material / Requirements as listed in Table B
- One (1) digital copy of a list identifying the Contractors that the Applicant has retained to carry out underground infrastructure, surface works, surface grading and facility maintenance. The list, at a minimum shall include the following:
  - Contractor name and area of responsibility
  - Contractor business phone number and contact information
  - Contractor after hours phone number

- Contractor emergency phone number
  - One (1) list of deficiencies and/or defects indicating when they were repaired.

Refer to Appendix A for all CCC Checklists and the Construction Completion Certificate template. Once the CCC application package for the respective Improvement is approved by the TDA, the Construction Completion Certificate will be signed and issued to the Applicant, signifying the start of the warranty period as per the documented date in the CCC.

**Table B – CCC Requirements**

This table outlines the Testing Material / Requirements required to be submitted for each Infrastructure Improvement Category in support of a Construction Completion Certificate submission. These requirements are also outlined on each of the respective CCC Checklists in Appendix A.

Infrastructure Improvement Category	Testing Material / Requirements
<b>UNDERGROUND INFRASTRUCTURE</b>	
Water Infrastructure	Pressure Test Results Water Quality Test – Chlorine/Bacteriological Testing Compaction Test Results and Acceptance Letter with Location Plan Grade Sheets Bedding Sand Report Hydrant Pressure & Flow Testing in accordance with current Specifications
Sanitary Infrastructure	Video Inspection completed after backfill and prior to surface completion. (Submit electronically or via a CD/DVD/USB) Video Inspection Log / Consultant Review Report Compaction Test Results and Acceptance Letter with Location Plan Grade Sheets Bedding Sand Report Infiltration / Exfiltration Testing (at TDA discretion)
Storm Infrastructure	Video Inspection completed after backfill and prior to surface completion. (Submit electronically or via a CD/DVD/USB) Video Inspection Log / Consultant Review Report Compaction Test Results and Acceptance Letter with Location Plan Grade Sheets Bedding Sand Report Infiltration / Exfiltration Testing (at TDA discretion)
<b>SURFACE WORKS</b>	
Concrete – Curb, Gutter & Sidewalk	Concrete Test Results Compaction Test Results and Acceptance Letter with Location Plan (subgrade and trench backfill) Grade Sheets Erosion & Sediment Control Inspection Logs
Asphalt – Parking Lots, Roads, Recreational Pathways (Paved and Gravel)	Asphalt Test Results Compaction Test Results and Acceptance Letter with Location Plan (subgrade and trench backfill) Proof Roll Report (Subgrade) Erosion & Sediment Control Inspection Logs
<b>LANDSCAPE</b>	

	<p>Digital Landscape “As-built Drawings” stamped and signed by a Landscape Architect</p> <p>Topsoil Test</p> <p>Open Trench Inspection Log (for Mains and Laterals)</p> <p>Certificate of CSA Compliance Letter (for Playgrounds)</p> <p>Poured in Place Rubber Fall Surface Drop Test</p> <p>Asphalt Compaction/ Density Reports (as required)</p> <p>Annual Double Check Valve (DCV) Report</p> <p>Seed Testing Certificate (as required)</p> <p>Concrete Mix Design (as required)</p> <p>Geotechnical recommendations for construction</p> <p>Compaction Testing for Backfill</p> <p>Fusion Test Logs</p> <p>Back Bend Test (as required)</p> <p>Leak Test as per ASTM F2164 - 13 (or most current) Standard Practice for Field Leak Testing of Polyethylene (PE) Pressure Piping Systems Using Hydrostatic Pressure</p> <p>Irrigation “As-built Drawings”</p> <p>C.N.L.A. Specification Met</p> <p>List of outdoor furniture, specifications</p> <p>As-built grading plan for Quality Control LIDs, authenticated by Engineering Consultant</p>
<b>STORMWATER MANAGEMENT FACILITIES</b>	
<p>Storm Ponds</p> <p>Underground / Above Ground Storage Tanks</p> <p>Lift Stations</p>	<p>Erosion &amp; Sediment Control Inspection Log</p> <p>Operation &amp; Maintenance Manual and Plan Log</p> <p>Registrations and copies of existing / new Code of Practice</p> <p>Pond and/or Outfall registrations and approvals transferred to the Tsuut'ina Nation</p>
<b>WATER AND WASTEWATER FACILITIES</b>	
<p>Lift Stations</p> <p>Treatment Facilities</p> <p>Booster Pump Stations</p> <p>Reservoirs</p>	<p>Substantial or Construction Complete Certificates for the construction contract</p> <p>TDA Approval to Operate (If applicable)</p> <p>Operation &amp; Maintenance Plans and Manuals</p> <p>Registrations and copies of existing / new Code of Practice (If applicable)</p> <p>Commission reports and summaries</p>
<b>ELECTRICAL INFRASTRUCTURE – STREET LIGHTING</b>	
	<p>Copy of electrical permit(s)</p> <p>Ground connection testing (if applicable)</p> <p>Fillcrete testing for concrete bases (if applicable)</p> <p>Pole powder coating quality control reports (if applicable)</p>

	Shop drawings and product information sheets for all non-standard products (if applicable)
<b>ELECTRICAL INFRASTRUCTURE - SIGNALS</b>	
	Cabinet wiring diagrams Cabinet bench test results Checklist for flashing operation Commissioning report for full operation Phasing and timing sheets Copy of electrical permit(s)
<b>DEMOLITION AND REMOVALS</b>	
	Submission of FAC Only (pending review and confirmation by the TDA)

### 2.5.4 Final Acceptance Certificate (FAC)

The Final Acceptance Certificate (FAC) can be applied for after the noted maintenance period expiry date shown on the CCC. The maintenance period will be two (2) years for underground / surface infrastructure improvement and water / wastewater facilities, and three (3) years for stormwater facilities. The FAC application categories will be the same as the CCC application categories.

A final inspection with the TDA will need to be scheduled prior to FAC acceptance. Any outstanding deficiencies are to be repaired to a satisfactory level. A second/final inspection may be required to confirm the satisfactory completion of works. Note that inspections will be weather permitting at the discretion of the TDA inspector.

The FAC application package for each Infrastructure Improvement category shall be submitted to the TDA and must include:

- Detailed Cover letter
- FAC Checklist found in Appendix A for the respective Infrastructure Improvement
- One (1) digital copy of the Final Acceptance Certificate, duly signed and sealed by the Consultant with tabloid (11"x17") plans attached highlighting the Improvement constructed
- One (1) full digital set of engineering, landscape and/or irrigation drawings indicating the completed Improvements and marked as "As-built Drawing" with the Consultant's stamp and signature being dated to reflect the FAC application date
- Testing Material / Requirements as listed in Table C
- One (1) digital copy of "As-built" engineering, landscape drawings as per Section 2.2.4.
- One (1) list of deficiencies and/or defects indicating when they were repaired.

Refer to Appendix A for all FAC Checklists and the Final Acceptance Certificate template. Once the FAC application package for the respective Improvement is approved by the TDA, the Final Acceptance Certificate will be signed and issued to the Applicant.



**Table C – FAC Requirements**

This table outlines the Testing Material / Requirements required to be submitted for each Infrastructure Improvement Category in support of a Final Acceptance Certificate submission. These requirements are also outlined on each of the respective FAC Checklists in Appendix A.

Infrastructure Improvement Category	Testing Material / Requirements
<b>UNDERGROUND INFRASTRUCTURE</b>	
Water Infrastructure	Pressure Test Results – Completed at CCC Water Quality Test – Completed at CCC Hydrant Pressure & Flow Testing in accordance with current Specifications – Completed at CCC
Sanitary Infrastructure	Video Inspection completed within 90 days of the maintenance expiry date. (Submit electronically or via a CD/DVD/USB) Video Inspection Log / Consultant review report Infiltration / Exfiltration Testing (at TDA discretion)
Storm Infrastructure	Video Inspection completed within 90 days of the maintenance expiry date. (Submit electronically or via a CD/DVD/USB) Video Inspection Log / Consultant review report Infiltration / Exfiltration Testing (at TDA discretion)
<b>SURFACE WORKS</b>	
Concrete – Curb, Gutter & Sidewalk	Concrete Test Results (For repaired areas) Erosion & Sediment Control Inspection Logs
Asphalt – Parking Lots, Roads, Recreational Path (Paved and gravel)	Asphalt Test Results (Top-lift and any repaired areas) Compaction Test Results and Acceptance Letter with Location Plan Erosion & Sediment Control Inspection Logs
<b>LANDSCAPE</b>	
	Maintenance Log Irrigation Meter Information Sheet Irrigation Information Sheet Maintenance Manuals Annual Double Check Valve (DCV) Report Irrigation “As-built Drawings” stamped and signed by a Certified Irrigation Designer. Digital “As-built Drawings” stamped and signed by a Landscape Architect
<b>STORMWATER MANAGEMENT FACILITIES</b>	
Storm Ponds Underground / Above Ground Storage Tanks Lift Stations	Erosion & Sediment Control Inspection Log Operation & Maintenance Manual and Plan Log – with final comments addressed Water Table Testing Reports Confirmation of landscape establishment

<b>WATER AND WASTEWATER FACILITIES</b>	
Lift Stations Treatment Facilities Booster Pump Stations Reservoirs	Submission of FAC only
<b>ELECTRICAL INFRASTRUCTURE – STREET LIGHTING</b>	
	Copy of electrical permit(s) Ground connection testing (if applicable) Fillcrete testing for concrete bases (if applicable) Pole powder coating quality control reports (if applicable) Shop drawings and product information sheets for all non-standard products (if applicable)
<b>ELECTRICAL INFRASTRUCTURE - SIGNALS</b>	
	Cabinet wiring diagrams Cabinet bench test results Checklist for flashing operation Commissioning report for full operation Phasing and timing sheets Copy of electrical permit(s)
<b>DEMOLITION AND REMOVALS</b>	
	Compaction Test Results and Acceptance Letter with Location Plan

### **2.5.5 Professional of Record**

For the entire duration of the Public Infrastructure Permit, the Applicant must retain an Engineering / Landscape Consultant(s) to design, supervise, inspect, monitor and certify all work carried out. The Engineering / Landscape Consultant is deemed to be an agent of the Applicant for the purposes of the Public Infrastructure Permit. If they cease to be the Professional of Record, the TDA will need to be notified. In this case, the Applicant must immediately retain the services of a new Professional of Record.

### **2.5.6 Proximity Agreements and Utility Line Assignment (ULA) Permits**

#### **2.5.6.1 Crossing, Proximity, Ground Disturbance and / or Encroachment Agreements**

It is the Applicant's responsibility to obtain all necessary Agreements, Approvals, and/or Permits from any applicable Utility company prior to construction. Separate agreements related to crossing, proximity, ground disturbance and/or encroachment may be required if the Applicant's proposed work or offsite upgrade requirements includes crossings of and/or construction activity adjacent to the following:

- Oil or gas pipelines
- Well sites
- Overhead or underground telecommunication lines
- Overhead or underground power lines

- Railways
- Other rights-of-ways

#### **2.5.6.2 Utility Line Assignment (ULA) Permits for Shallow and Overhead Utilities**

The Applicant is responsible for coordinating the location of the existing and proposed power, gas, street lighting, and telecommunication lines with the respective utility companies including any conflict resolutions. Any new proposed shallow utilities will require a ULA Permit from the TDA. Plans will need to be provided showing the offsets of the proposed ULA from property lines and existing underground infrastructure. A final set of record drawings or redline as-built drawings of the proposed utility will be required by the TDA to close out the ULA permit. It will be the Applicant's responsibility to ensure all utilities are properly registered within the right-of-way. Confirmation that the line assignment has been reviewed by the Applicant and their Engineer of Record will also be required prior to approval.

See Appendix A for Utility Line Assignment (ULA) Permit application form.

#### **2.5.7 Traffic Accommodation Strategy (TAS) Plans**

For any works which will be performed within a public road right-of-way and require a modification to the existing traffic patterns or a road/lane closure, a Traffic Accommodation Strategy (TAS) Plan will be required to be submitted and approved by the TDA.

The following City of Calgary and Transportation Association of Canada (TAC) documents can be utilized to inform the development of a TAS Plan:

- *City of Calgary Temporary Traffic Control Manual*
- *TAC Manual of Uniform Traffic Control Devices for Canada (MUTCD)*

Any works which encroach into the Alberta Infrastructure Transportation Utility Corridor (TUC) or City of Calgary rights-of-way, or any other jurisdiction will require a separate submission and approval from the relevant approving authority.

For any TAS Plan submission, the TDA requires minimum of 10 business days' notice. Traffic detours or road closures cannot commence without an approved TAS Plan by the TDA. See Appendix C for TAS Plan application form and checklist.

#### **2.5.8 Demolition & Removal Permits**

A demolition permit will be required for any proposed demolition or removal of any existing structure or infrastructure. This permit will fall under the Public Infrastructure Permit Application. Applicants will need to select the appropriate category and provide the relevant information required.

## 3 Private Realm (Development Permits)

### 3.1 General

Site Servicing Plans (SSP) are the detailed civil engineering and landscape drawings provided with a Development Permit (DP) application. These drawings outline the supply and distribution of potable water, the network of sanitary sewer service, the collection of stormwater, road geometrics / grading, parking lot configuration, vehicular movements, traffic analysis, site electrical / lighting, landscape design, erosion and sediment control, landscape architecture, and various supporting studies as outlined below in Section 3.2.4. The submission of these drawings ensures that private developments are designed to comply with the design standards and construction specifications outlined herein. Approval of a Development Permit application, including all drawings and supporting studies will grant the applicant permission to commence with the proposed site development work and connect to the Tsuut'ina Nation water, sanitary, stormwater and road networks. In some cases, a Public Infrastructure permit will be required for any offsite construction work that falls within the Public Realm.

#### 3.1.1 Development Permit Requirements

A Development Permit (DP) Application is required for all new private developments where utility connections (water, sanitary and stormwater) are proposed or where the existing water service, metering, or on-site sewers will be changed. It is also required in situations where the proposed private Development will increase the stormwater release from site or where there are significant changes to the site grading. These proposed changes must be reviewed by the TDA to ensure that any new or altered utility service systems are designed and installed to meet the requirements of all applicable standards and specifications.

The Professional of Record maintains full responsibility to exercise competence and good engineering judgement for the entirety of the design and construction. Further, they must adhere to the most current versions of standards and specifications as outlined and listed in Section 1.4. The Professional of Record is also responsible for ensuring any other applicable federal, provincial, and Nation laws and policies are adhered to and for performing inspection and documentation for all site development and retaining these records for the use of the Applicant. The Contractor maintains full responsibility for the entirety of their construction, installation or alteration activities, during construction until development completion is certified by the TDA, ensuring their work is as per the approved plans and meets all the above requirements.

Review and inspection by the TDA is not to be considered a substitute for supervision by the Professional of Record, Applicant, and Contractor. The professional responsibility of the design and construction of the proposed development remains with the Applicant and their Professional of Record and Contractor.

Construction cannot commence without a Development Permit issued by the TDA. In some cases, the TDA will issue a Conditional Development Permit which will allow the Applicant to commence with construction. The Conditional Development Permit will expire in thirty (30) calendar days until the final conditions are addressed by the Applicant to a satisfactory level at which point the conditional status will be removed.

#### 3.1.2 Building Permit Requirements

To apply for and obtain a building permit from the TDA, an approved or conditionally approved Development Permit will be required.

## 3.2 Submission Requirements

### 3.2.1 General

All Development Permit (DP) submission documents including drawings, letters, studies, reports and models shall be submitted in digital format (PDF and model files). Development Permit applications must be dated and submitted online via the TDA's website. All drawings shall conform to the drawing requirements outlined in Section 3.4 - Drawing Standards. Applications that are incomplete or found to not be in accordance with the requirements outlined in this standard will be rejected. The requirements and any special conditions will be confirmed at the pre-application meeting with the TDA.

Development Permit Checklists have been prepared to assist the Applicant in the preparation of a DP application for the site servicing and landscape requirements. Refer to Appendix B for a copy of Development Permit Checklists. Applications that are incomplete or found to not be in accordance with the requirements will be rejected.

It is recommended that the Engineering Drawings / Site Servicing Plans are submitted with the Development Permit application for a timely review of the submission. Site Servicing Plans that are submitted following the Development Permit application may experience a longer application circulation period.

### 3.2.2 First Submission Requirements

The following are the key items that must be submitted for a Development Permit Application (refer to Appendix B for the complete checklists):

- Signed cover letter
- Development Permit Application Form (refer to *the Taza Development Approval Process Law* for further details on DP requirements)
- Design Statement (in accordance with the *Taza Development Approval Process Law*)
- Development Permit Checklist
- Application Fee (refer to current version of the TDA Fee Schedule)
- Development Permit Number (to be provided by the TDA)
- Current copies of any Restrictive Covenants, Utility Rights-of-Way, Easements, Drainage Agreements or Caveats registered on the Title(s)
- Site DP Drawings, including building elevations
- A complete set of authenticated digital engineering and landscape drawings
- Cultural Advisory Group Form (if applicable)
- Letter of Authorization from the owner / developer or their agent including legal plans (if required)
- ISC / Health Canada Approval(s)
- Tentative Legal Plans of Survey, as required.
- Tentative Utility Right-of-Way Plan(s), as required.
- Geotechnical Report, including pavement structure design, as required.
- Environmental Site Assessment or any other relevant environmental studies, if required.

- Stormwater Management Model/Report and any relevant studies as per Section 3.3.4 and Appendix C, including Stormwater Management Checklist
- Erosion & Sediment Control Report and Drawing Application as per Section 3.3.6 and Appendix C. The requirement for a report will be determined at the pre-application meeting.
- Traffic Impact Assessment, as required.
- Other pertinent items as deemed necessary by the TDA as per Section 3.2.4.

Depending on the scope and magnitude of the Development Permit Application, Bonding by the Applicant and their Contractor may be a requirement. This will be confirmed at the Pre-Application meeting.

The TDA will require up to eight (8) weeks to review the first submission and provide Team Review Comments (TRC) or a Development Permit approval or a conditional permit.

### **3.2.3 Second/Subsequent Submission Requirements**

The following are a list of key items that must be provided for all subsequent submissions (refer to Appendix B for the complete checklists):

- Signed cover letter giving a description of the revisions to first (or previous) submission
- Revised DP Checklist
- Responses to the previous set of Team Review Comments (TRC) can be provided directly in the provided document. Comments will be closed out once they have been satisfied.
- Resubmission of any drawings, plans, or reports, including DP site plans and building elevations, as required.
- A complete set of revised, authenticated engineering and landscape drawings. Partial drawing submissions will not be accepted.
- Design Statement (if revised)
- Other pertinent items as deemed necessary by the TDA, as outlined in Section 3.2.4.

Further submissions may be required by the Applicant to achieve Development Permit approval and to satisfy the comments provided by the TDA. Advisory Comments, Prior to Release Conditions and Permanent Conditions will be provided at each submission stage by the TDA.

Conditional DP Permits will be issued if the applicant has substantially satisfied the TDA's comments. Conditional DP Permits will expire after thirty (30) calendar days, after which a stop work order will be issued until the conditional status is removed.

Additional fees will be applied for additional reviews beyond the second submission of the Development Permit application, in accordance with the Fee Schedule in Appendix C.

### **3.2.4 Studies Prepared in Support of Application**

The following are documents that may be required for submission in support of a Development Permit application:

- Access Management Plan – Construction Access
- Archaeological Sites
- Biophysical Impact Assessment (BIA)
- Chemical Management Plan

- Construction Management Plan
- Cost Feasibility and Sustainability Analysis (Water, Wastewater and Stormwater)
- Environmental Impact Assessment
- Environmental Site Assessment
- Erosion & Sediment Control Plan
- Groundwater Supply Evaluation
- Historical Studies
- Master Drainage Plan / Updates
- Natural Environment Park Restoration Plan
- Paleontological Sites
- Water Servicing Study
- Sanitary Servicing Study
- Stormwater Management Report
- Traffic Accommodation Strategy (TAS) Plan
- Traffic Impact Assessment
- Tree Protection Plan
- Other reports and agreements that the TDA deems necessary

The requirements for these studies and any other supporting documentation on a given Development Permit application will be discussed at the Pre-Application Meeting with the TDA.

### 3.3 Design Guidelines

#### 3.3.1 Road and Streetscape Design

##### 3.3.1.1 General

The current editions of the following City of Calgary, and Provincial/Federal Design Guidelines, Standards and Specifications need to be utilized by the Applicant and the Engineering Professional of Record for any road design within the Development Permit property:

- *Design Guidelines for Development Site Servicing Plans*
- *Design Guidelines for Street Lighting*
- *Standard Specifications – Roads Construction*
- *Standard Specifications – Traffic Signal*
- *Transportation Association of Canada (TAC) Manual*
- *Alberta Transportation Recommended Practices Guidelines for Signage, Traffic Operations and Traffic Signals*

It will be the Applicant's responsibility to ensure that the design, construction and performance of all infrastructure constructed meets or exceeds the above-mentioned standards and guidelines.



In addition, the following documents have been specifically compiled for the Taza Development and shall be reviewed in support of the proposed road design:

- *Master Traffic Impact Assessment prepared for each Taza Village*
- *Taza Development Guidelines by the Tsuut'ina-Canderel Land Development Limited Partnership*
- *Land-Use Document*
- *Tsuut'ina Nation Street Naming and Addressing Policies and Procedures*
- *Tsuut'ina Nation Signage Law*

### **3.3.1.2 Traffic Analyses**

A Master Traffic Impact Assessment for each Taza Village has been prepared, which provides an overall traffic analysis for each Village. This analysis will need to be referenced for any road design, intersection configurations and laning changes. An additional, more detailed, traffic analysis pertaining to the DP application may be requested from the Applicant and their Engineering Consultant.

### **3.3.1.3 Road Classification/Right-of-Way**

Detailed Street Network Plans and unique Street Sections have been developed for each of the Taza Villages in the latest version of the *Taza Development Guidelines*. Road design will need to conform to the applicable sections, right-of-way requirements, and landscape architecture requirements as outlined in these development plans.

Refer to the latest edition of the *Taza Development Guidelines* for the Street Section requirements pertaining to each individual Taza Village.

### **3.3.1.4 Traffic Signage/Directional Signage/Pavement Markings**

Traffic control and regulation within the Taza Development includes traffic signage, directional signage, traffic signalization and pavement markings.

The type and location of road signage are subject to the review and acceptance of the TDA and will need to be included as a drawing in the submission set. It will be the responsibility of the Applicant to install the approved street signage to reflect the street names approved by the TDA, if applicable.

All pavement markings and regulatory traffic signage need to be in accordance with the current *Alberta Transportation Recommended Practices Guidelines*, and in accordance with the *Tsuut'ina Nation Signage Law*. The Applicant shall ensure all regulatory traffic signage is in place in their permanent locations prior to the acceptance of the Development Completion Certificate.

Bilingual signage, in both English and Dene languages, is required for all traffic and directional signage in Taza. This will need to be coordinated early in the project, at the Pre-application stage or Development Permit application stage, with the TDA. Refer to Appendix D for standard Tsuut'ina Nation signage specifications including translations. A request will need to be submitted to the TDA for any additional custom signage translations. All translated signage within a Development Permit Application will need to be included in the application and will require review and approval by the Tsuut'ina Nation Cultural Committee. In some instances, a separate signage DP application will be accepted by the TDA in accordance with the Signage Law.



**3.3.1.5 Traffic Signalization**

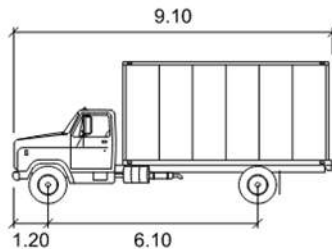
All traffic signalization must conform to the current *Alberta Transportation Recommended Practices Guidelines* and the *City of Calgary Standard Specifications – Traffic Signal Construction*.

**3.3.1.6 Turning Movements**

Turning movements should be provided at key locations within the Development Permit area including site egress / ingress points and internal intersections to illustrate all anticipated maneuvers.

Maneuvers can be safely accommodated. A clearance of 0.50 meters should typically be provided between the vehicular envelope and face-of-curb, edge-of-gravel/pavement, and any above ground objects (e.g. signs, bollards, etc). The following vehicle templates should be used for this analysis. Site specific vehicles may be requested by the TDA during the pre-application meeting depending on the nature of the proposed development.

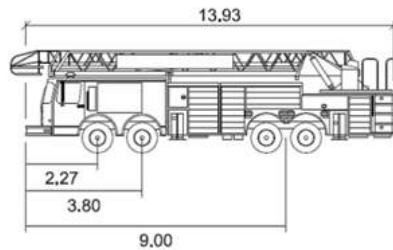
**Waste & Recycling:**



**SU9**

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 31.5

**Fire Access:**



**CFD\_Bronto\_Skylift**

	meters
Width	: 2.57
Track	: 2.57
Lock to Lock Time	: 6.0
Steering Angle	: 47.5
Turning Radius	: 10.18

**3.3.1.7 Street Naming**

The TDA shall be responsible for the creation of all new Civic addresses within the Taza Development, if applicable to the Development Permit application. The road naming will adhere to the *Tsuut'ina Nation Street Naming and Addressing Policies and Procedures* document.

**3.3.2 Street and Site Lighting**

Street and site lighting design shall provide adequate vertical luminance at the roadway while reducing sky glow, glare, and energy consumption and minimizing light trespass onto adjacent areas. Lighting levels shall be sufficient to address the safety and security needs of the Development area and Village. In accordance with the latest version of the *Taza Development Guidelines*, Dark Sky Technology that align with the Dark Sky Lighting Principles should be incorporated to maintain and preserve the nighttime environment.

An electrical permit will be required from one of the designated Taza safety codes / building permit agencies. Applicants can reach out to the TDA for a list of current contacts.

The current edition of the following City of Calgary Standard Specifications for street lighting construction needs to be utilized in Taza's lighting design practice:

- *Design Guidelines for Street Lighting*

- *Standard Specifications – Street Lighting Construction*
- *Street Lighting Kit of Parts (forthcoming)*
- Road's streetlight & Mobility division design bulletins
- All electrical work shall comply with the latest edition of the Canadian Electrical Code
- Contractor shall obtain all required permits prior to construction

Submission shall include:

- Street lighting Plans
- Voltage drop calculations
- Photometric design calculations using AGI 32 software

### **3.3.3 Water Infrastructure**

#### **3.3.3.1 General**

The water system on a private site is evaluated from the connection at the Tsuut'ina Nation's main to the master control valve inside the building. All design of the water system up to and including the water valve must conform to the applicable potable water study completed for each Taza Village. following document(s) compiled for the Taza Development:

- *Water Servicing Studies prepared for each Taza Village.*
- *Taza Exchange – Potable Water Reservoir and Pump Station by MPE Engineering Ltd.*
- *Taza Park – Water Network Analysis by WSP Canada.*

For any aspect of water supply or distribution not detailed within the above-mentioned documents, Tsuut'ina Nation retains the ability to defer to the current edition of the City of Calgary Design Guidelines, Standards and Specifications listed below:

- *Design Guidelines for Development Site Servicing Plans*
- *Standard Specifications – Waterworks Construction*

It will be the Applicant's responsibility to ensure that the design, construction and performance of all infrastructure constructed meets or exceeds the above-mentioned standards and guidelines.

A hydraulic network analysis may be requested for any new development which has not had a previously approved analysis completed or has the potential to significantly alter the current water servicing study and/or the capacity of the network. An authenticated report or letter by the appropriate Professional of Record will need to be submitted to the TDA for review and approval. This requirement will be determined as part of the pre-application meeting. All water network analyses should be in accordance with the relevant Taza Village water servicing study. All water network models need to be completed in WaterCAD.

#### **3.3.3.2 Hydrants**

##### **3.3.3.2.1 Hydrant Type**

Hydrants located within the Taza Development shall be of the following hydrant model unless otherwise approved by the TDA:

Sizing Characteristics:

- Two (2) 65mm (2.5") hose nozzles with threads matching national, provincial, municipal standard

- One 114mm (4.5") pumper nozzle with threads matching national, provincial, municipal standards

Preferred Manufacturers:

- McAvity (Clow Canada)
- Mueller
- Canada Valve

Refer to Appendix D for the preferred McAvity (Clow Canada) Hydrant Specification.

### 3.3.3.3 Meter Units

#### 3.3.3.3.1 General

All water connections to the Tsuut'ina Nation water system will require the installation of a water meter. Applicants will need to contact and coordinate with the TDA for water meter specifications and requirements. All current contact information for Tsuut'ina Nation departments can be requested from the TDA or found in the *Taza Development Level of Service* document.

#### 3.3.3.3.2 Metering

Utility billing will be effective from the date that the water meter is installed. Once the meter is installed, the water shall be turned on by the TDA only. The following stipulations for metering apply:

- One water meter is required for each registered Applicant.
- No branch line or tap between the water meter and service line are permitted.
- The TDA will determine the size, type and number of water meters to be supplied and installed for each Applicant.

### 3.3.4 Wastewater Infrastructure (Sanitary Sewer)

#### 3.3.4.1 General

The following document(s) have been compiled for the Taza Development and shall be reviewed prior to designing the wastewater network on the Tsuut'ina Nation:

- *Sanitary Servicing Studies prepared for each Taza Village.*

For any aspect of the wastewater network not detailed within the above-mentioned documents, the TDA retains the ability to defer to the current edition of the City of Calgary Design Guidelines, Standards and Specifications listed below:

- *Design Guidelines for Development Site Servicing Plans*
- *Standard Specifications – Sewer Construction*

It will be the Applicant's responsibility to ensure that the design, construction and performance of all infrastructure constructed meets or exceeds the above-mentioned standards and guidelines.

### **3.3.4.2 Manhole Covers**

Manholes located within the Taza Development shall be composed of the following frame and cover unless otherwise approved by the TDA:

- *TF-50 Shallow Frame by Trojan Industries Inc.*
- *TF-50CT Tsuut'ina Cover by Trojan Industries Inc.*

Refer to Appendix D for the Manufacturer's Detailed Drawing of the Shallow Frame and Tsuut'ina Cover.

### **3.3.5 Stormwater Management**

#### **3.3.5.1 General**

The following document(s) have been compiled for the Taza Development and shall be reviewed prior to beginning stormwater analysis on a Private Development within the Taza Development:

- *Master Drainage Plan prepared for each Taza Village*
- *Taza Development Guidelines by the Tsuut'ina-Canderel Land Development Limited Partnership*
- *The applicable Pond or Phase Report for the site.*

For any aspect of stormwater management or storm sewer design not detailed within the above-mentioned documents, the TDA retains the ability to defer to the current edition of the City of Calgary Design Guidelines, Standards and Specifications listed below:

- *Design Guidelines for Development Site Servicing Plans*
- *Standard Specifications – Sewer Construction*
- *Stormwater Management & Design Manual*

It will be the Applicant's responsibility to ensure that the design, construction and performance of all infrastructure constructed meets or exceeds the above-mentioned standards and guidelines.

#### **3.3.5.2 Submission Requirements**

Private realm applications may use the Rational Method for stormwater analysis when the following conditions are met:

- Site is under 2.0ha,
- No runoff volume targets apply to the site,
- And there are fewer than 5 traplows onsite.
- Final requirements are at the discretion of the TDA.

All other private realm applications require the submission of a Stormwater Management Report which aligns to the governing Phase SWMR or Pond Report. In the case of smaller application areas, a memo may be acceptable, at the discretion of the TDA.

A complete SWMR first submission must be received before underground approvals can be considered. Surface approvals can only be granted alongside an approved SWMR.

#### 3.3.5.2.1 Runoff Volume Targets

Areas subject to runoff volume targets (as per Phase or Pond Reports) must either use computer modelling (e.g. PCSWMM) to complete the analysis or use the City of Calgary Water Balance Spreadsheet.

#### 3.3.5.2.2 Model Files

Submissions utilizing computer modelling must submit model files with the SWMR. Where applicable, these files should be packaged to include results and all files necessary for model run.

#### 3.3.5.3 Modeling Programs

The following list of software suites will be accepted for the Taza Development:

- *SWMHYMO*
- *PCSWMM*

#### 3.3.6 Low Impact Developments

Low Impact Development (LID) is an emerging stormwater servicing strategy and is strongly encouraged in the Taza Development.

Refer to the *Taza Development Guidelines* for a list of possible or required LIDs to be incorporated in the design of the Taza Villages. For more information on the role of LIDs in the management of stormwater, refer to the Master Drainage Plan detailed below:

- *Master Drainage Plan prepared for each Taza Village*
- *Taza Development Guidelines by the Tsuut'ina-Canderel Land Development Limited Partnership*
- *City of Calgary Stormwater Management & Design Manual*
- *City of Calgary Low Impact Development Guidelines:*
  - *Geotechnical and Hydrological Considerations*
  - *Bioretention and Swales*
  - *Green Roofs*
  - *Permeable Pavement*

Where LIDs are proposed to achieve stormwater quality improvement targets, the methodology detailed in the above-mentioned Bioretention and Swales Module noted above, must be used.

#### 3.3.7 Erosion and Sediment Control

##### 3.3.7.1 General

Erosion and Sediment Control needs to be developed and implemented throughout all stages of construction to limit the soil disturbance and ensure the protection of environmental resources, infrastructure and property within, and adjacent to construction sites.

Erosion and Sediment Control in the Taza Developments must be designed in accordance with the latest edition of the *City of Calgary Erosion and Sediment Control Guidelines, Specifications and Field Manual* detailed below:

- *Erosion and Sediment Control Guidelines*

- *Erosion and Sediment Control Field Manual*
- *Instruction Manual for Erosion and Sediment Control Plan Applications*
- *Standard Specifications – Erosion and Sediment Control*

### 3.3.7.2 Erosion and Sediment Control Requirements

**For sites greater than 2.0 Ha in size:** A full ESC Plan (report & drawings) needs to be developed and submitted for approval by the TDA. The ESC Plan must be implemented throughout all stages of construction. See Appendix C for a report template.

**For sites between 0.40 - 2.0 Ha in size:** ESC Construction Drawings need to be developed and submitted for approval by the TDA. The ESC Construction Drawings need to be implemented throughout all stages of construction.

**For sites less than 0.40 Ha in size:** A Good Housekeeping Letter Request must be submitted and followed throughout all stages of construction. See Appendix C for a letter template. Good Housekeeping Practices Include:

- Control of mud track out during construction, usually by means of a well-maintained construction entrance/exit on all access locations, supplemented with period street sweeping as required.
- Dust control must be implemented on site, when required.
- Install down-gradient perimeter protection (such as silt fence, compost sock, etc.) to protect off-site areas from stormwater runoff and sedimentation during construction.
- Proper placement and protection of stockpile soils and materials so they will not be eroded to off-site areas, including storm inlets.
- Inspections are required every 7 days and after rainfall or snowmelt events.

### 3.3.7.3 Winter Operations

A pre-winter inspection with the TDA is required to note any deficiencies that do not comply with the approved ESC Plan or to note any required maintenance. Examples include, but are not limited to:

- Confirm storm inlet controls have been removed.
- Ensuring sediment containment systems have adequate storage capacity
- Removal of sediment and repair of structures and controls designed to capture sediment
- Checking for adequate stabilization of all exposed areas and inspecting erosion controls to ensure proper installation and condition
- Review of potential run-on areas to see if additional measures will be required.

Winter is defined as the dates between November 1 and April 30 of each year.

Refer to the latest edition of The City of Calgary Erosion and Sediment Control Standard Specifications for winter operation requirements for each standard specification.

### 3.3.7.4 Erosion and Sediment Control Exceptions

Unless otherwise requested, RUSLE calculations are not required for areas that have permanent erosion and sediment control measures in place (i.e. existing grass/weeds with 80%+ ground cover, pavement, concrete, etc.).

### 3.3.8 Landscape

The following document(s) have been compiled for the Taza Development and shall be reviewed prior to landscape design on the Tsuut'ina Nation:

- *Taza Development Guidelines by the Tsuut'ina-Canderel Land Development Limited Partnership*

The current editions of the following City of Calgary Design Guidelines, Standards and Specifications need to be utilized by the Applicant and the Consultant for the landscape design:

- *Canadian Landscape Standard - the Guide for Landscape Construction Projects across Canada*
- *Development Guidelines and Standard Specifications – Landscape Construction-Calgary Parks and Open Spaces (Latest Version)*
- *City of Calgary Seed Mixes. Recommendations and Guidelines to inform revegetation work in Calgary (Latest Version)*
- *City of Calgary Plant List (Latest Version)*
- *Residential Street Design Policy*

It will be the Applicant's responsibility to ensure that the design, construction and performance of all infrastructure constructed under the Servicing Agreement meets or exceeds the above-mentioned standards and guidelines.

### **3.3.9 Waste and Recycling Requirements**

Waste and recycling services will be the responsibility of the Applicant. Refer to the *Taza Development Level of Service* for further information.

## **3.4 Drawing Standards**

### **3.4.1 Drawing Requirements**

This Section lists the requirements specific to the TDA related to the preparation of Engineering Drawings for Development Permit application. For information not covered in this section, refer to the City of Calgary drawing specifications detailed within the latest edition of the following:

- *Design Guidelines for Development Site Servicing Plans*
- *Standard Block Profile Specifications for CAD and Manual Formats*
- *CAD Standard Guidance Document*
- *Development Guidelines and Standard Specifications – Landscape Construction*

### **3.4.2 General Drawing Requirements**

#### **3.4.2.1 Sheet Size**

The following sheet sizes will be accepted:

- A1
- A3 shall be provided in addition to the above for field inspections

#### **3.4.2.2 North Arrow**

The north arrow is to be placed within the upper right-hand corner of the sheet. The drawing should be oriented such that north faces the upper edge of the drawing sheet. The north arrow may face to the left of the page however, this is dependent on the scope of the project.



### **3.4.2.3 Title Block**

All drawings must be accompanied with a title block along the right side or bottom of the drawing. The following information must be detailed within the title block:

- Applicant's name
- Consultant's name
- Relevant TDA Development Permit (DP) Application Number
  - The Application Number may not be available at the First Submission therefore, it may be provided by the Second Submission.
- Village name including staging and/or phasing, if applicable
- Legal plan
- Civic address
- Drawing number/name (refer to Section 3.4.3.1)
- Horizontal and vertical scale used
- Fields for the signature of:
  - Designer
  - Draftsperson
  - Checker
- A table documenting the issued drawings and the number of revisions including a number, date, description and initials of the Consultant's Approver.
- An allocated space for the name of the Consultant, the signed professional of record's stamp (P.Eng., P.L.(Eng.), P.Tech., Landscape Architect stamp (if applicable), and Permit to Practice stamp for engineering drawings.
- Legend
- Total site area in hectares
- Notes

### **3.4.2.4 Drawing Scale**

The following scales are to be used for the preparation of plan drawings. Exceptions will be noted for specific drawings.

- A minimum scale of 1:100 and a maximum scale of 1:1000 should be used for all plan drawings.

## **3.4.3 Plan Drawing Requirements**

### **3.4.3.1 List of Applicable Plan Drawings**

The following is a list of plan drawings that may be submitted in support of a Development Permit application.

The following drawing naming and numbering can be used as a guideline. Required drawings will be on a per application basis, which will be confirmed at the pre-application meeting with the TDA.



SHEET NUMBER	SHEET NAME
C1.1, C1.2, etc.	Underground Layout Plans
C2.1, C2.2, etc.	Surface and Grading Plans
C3.1, C3.2, etc.	Stormwater Management Plans
C4.1, C4.2, etc.	Low Impact Development Plans
C5.1, C5.2, etc.	Road/Pavement Marking and Signage Plans
C6.1, C6.2, etc.	Cross-Sections
C8.1, C8.2, etc.	Details
C9.0, 10.0, etc.	Additional Site Plans
SL1.1, SL1.2, etc.	Site Photometric/Lighting Plans
L1.0, L1.1, etc.	Landscape Plans, including but not limited to: Concept Plan, Layout Plan, Grading Plan, Planting Plan
L2.0, L2.1, etc.	Landscape Details as Required
IR1.0, IR1.1, etc.	Irrigation Plan
ESC1.0, ESC2.0, etc.	Erosion and Sediment Control Plans

The details and minimum drawing requirements for each of the plan drawings listed above can be found in the subsequent sections.

#### **3.4.3.2 Underground Layout Plans**

The following information must be clearly identified on the Underground Layout Plan:

- Alignments for all deep utility services including water, sanitary and stormwater (within and adjacent to the Site)
- Location of manholes and catch basins including their associated identification numbers,
- Pipe length, pipe size, pipe material (general note acceptable), pipe invert elevations at manholes, and grade between manholes and catch basins,
- Rim elevations at all manholes and catch basins,
- Direction of pipe flow,
- Location of all shallow utilities (within and adjacent to the Site),
- Off-site connections (outside the proposed development boundary),
- Water meter room and,
- Stormwater calculations – Minor System Table.

#### **3.4.3.3 Surface and Grading Plans**

The following information must be clearly identified on the Surface and Grading Plans:

- Existing and proposed surface grades along the property line and on site,
- Grade changes and ramps within all driveways and parking areas,
- Drainage pattern indicated by boundary lines and arrows,
- Surface material, curbs, sidewalks, parking areas,
- Existing ground contour lines at 0.5m intervals,

- Location of depression storage by trap lows,
- Emergency spill route including spill elevation and location and,
- Stormwater calculations – Overland Flow Summary Table and Graph, and Traplow Storage Table.

#### **3.4.3.4 Storm Drainage Plans**

Storm Drainage Plans are required for all private Developments. Refer to Section 3.3.4 for Stormwater Management Submissions. The following should be identified on the Storm Drainage Plan:

- Catchment labels including catchment number, total area (m<sup>2</sup>) and the runoff coefficient (C factor),
- Location of all underground storm infrastructure including pipe inverts,
- Direction of pipe flow,
- Location of manholes and catch basins including their associated identification numbers and rim elevations,
- Stormwater features such as storm ponds, trap lows, ICDs, oil/grit separators, BMPs, or Low Impact Developments Practices and,
- ICD and Oil/Grit Separator details.
- Sub-drain plans and details, if applicable.

#### **3.4.3.5 Low Impact Development Plan**

If a Low Impact Development (LID) has been incorporated on the private Development, identify the location and type of Low Impact Development proposed. If necessary, a separate Low Impact Development Plan may be submitted within the Development Permit Application Submission.

- Cross-sections
- Detailed grading
- Associated landscape plans
- Product details if included
- Layout or key plan for multiple features

#### **3.4.3.6 Road/Pavement Marking and Signage Plan**

A Road/Pavement Marking and Signage Plan will outline the road or parking lot pavement marking design details and site/road signage locations. Bilingual signage, in both English and Dene languages, will be required for onsite traffic/directional signage. This will need to be coordinated early in the project, at the Pre-application stage or Development Permit application stage, with the TDA.

Refer to Appendix D for all current signage specifications.

#### **3.4.3.7 Cross-sections**

Detailed cross-sections will need to be provided outlining the pavement structure details in accordance with the Geotechnical Report and Pavement Structure Design. The cross-sections need to be sequential in both directions.

#### 3.4.3.8 Details

Detail sheets may be included with a Development Permit application drawing submission when site-specific details are required for the submission yet exceed the available space on the above plan drawings. This includes but is not limited to the following:

- Signage details
- Structural details (bollards, light pedestals, monuments, etc.)
- Stormwater facility details
- Water/wastewater infrastructure details

#### 3.4.3.9 Additional Site Plans

Additional site plans covering project specific items will be required as part of the Development Permit application drawing submission. These include but are not limited to the following:

- Heat trace plans
- Regional pathway plans
- Site electrical plans
- Other applicable site plans as required by the project or requested at the Pre-application meeting

#### 3.4.3.10 Erosion and Sediment Control (ESC)

The ESC drawings must comply with the latest edition of *The City of Calgary Instruction Manual for ESC Plan applications*.

#### 3.4.3.11 Landscape Plans

A landscape drawing submission will consist of a Layout Plan, Grading Plan, Planting Plan, and Irrigation Plan (as required). The General Requirements for all landscape plans and specific requirements for each type of plan has been detailed below:

##### 3.4.3.11.1 Concept Plan

Concept Plans are a visual representation of the written Design Statement required as part of the Development Permit Approval Process. Concept Plans should clearly indicate how the Private Site responds to the Vision, Values and four Pillars (as identified in the *Taza Development Guidelines*) in its own unique way.

Concept plans precede the preparation of detailed Layout, Grading, Planting and Irrigation Plans. These concept plans are to ensure that the *Taza Development Guidelines* and site-specific Design Statement objectives are being achieved in the proposed open space design.

Concept Plans that reinforce the Design Statement shall consist of:

- The type, function and/or theme of the Open Space, including parks and/or streetscape based on its context within the Village.
- Rendered plans showing the high-level relationships of spaces, functions and design features within the site.
- Conceptual grading information including contours and minimum and maximum slopes.
- Conceptual planting design.

- Property lines, easements and utility right of ways.

#### **3.4.3.11.2 General Requirements for all Landscape Plans**

- Refer to the *Taza Development Guidelines* and *City of Calgary Development Guidelines and Standard Specifications – Landscape Construction* for additional detailed requirements.
- All landscape construction plans must be sealed and signed by a Registered Landscape Architect with current membership in the Alberta Association of Landscape Architects.
- All drawings and supplemental material(s) for irrigation systems that will be turned over to the Tsuut'ina Nation, must be stamped and signed by a Certified Irrigation Designer (CID) - Commercial. This certification must be issued by the Irrigation Association (IA). The certified designer must be in good standing with the association.
- Be a maximum scale of 1:500 to be used for all landscape plans. Preferred smaller scales are 1:200 and 1:250.
- Include the legal description, municipal address (if available), site property lines, legal easements, encumbrances and rights-of-way.
- Existing and proposed infrastructure/Infrastructure Improvements located within and/or adjacent to the site.
- Adjacent land uses, roads, utilities, structures.
- Include curbs, sidewalks, fences, and any other boundary conditions.
- Include existing tree locations, diameter at breast height (DBH), and species (where possible).
- All berms, parks, roadway boulevards, medians and traffic islands, utility lots and rights of way, buffers, and dry ponds.
- Details of items that are not included in the Standard Specifications for Landscape Construction (as required).

#### **3.4.3.11.3 Layout Plan**

In addition to the General Requirements for Landscape Plans, the following must be identified on Layout Plans:

- Existing site features and vegetation to be retained.
- Proposed layout of all open space infrastructure and site amenities including but not limited to parks, recreational facilities, playgrounds, baseball diamonds, sports fields, buildings, pathways, trails, bollards, gates, garbage receptacles, site furnishings, benches, basketball courts, outdoor rinks, tennis courts, mailboxes, signage (including dog bylaw signs, pathway signs, and trail signs), fencing, etc.
  - All playground equipment layout must be shown as per CSA guidelines, including non-encroachment zones, fall zones and protective surfacing zones. Provide supplier elevations, cross sections, photos or 3D renderings for playground designs (where possible).
  - Provide a detailed section for poured-in-place fall surface indicating the depth of the clay base, gravel layer, rubber crumb base layer and rubber crumb top layer.
- Fencing or other property delineation specifications and alignment.

- Pedestrian crossing locations and details.

#### **3.4.3.11.4 Grading Plan**

In addition to the General Requirements for Landscape Plans, the following must be identified on Grading Plans:

- Major items associated with layout but not including dimensions, i.e. walkways, play fields, roads, curbs, structures, and natural areas.
- Surrounding grade information affecting site development.
- Existing and proposed contours at 0.5 m contour intervals.
- Elevations at each break point (top and toe of slope).
- Existing and proposed spot elevations including, but not limited to: manhole rim, catch basin rim and invert elevations (as required), top of wall, top of curb, and finished floor elevations (as required).
- Existing and proposed concrete gutters.
- All trap lows with their 1:100 inundation area and emergency spill routes.

#### **3.4.3.11.5 Planting Plan**

In addition to the General Requirements for Landscape Plans, the following must be identified on Planting Plans:

- Major items associated with “Layout” but not including dimensions, i.e. walkways, roads, curbs, hard surface areas, structures, natural areas.
- Contours at 0.5 m intervals.
- Planting bed outlines.
- Existing trees, vegetation and other natural features to be retained or removed.
- Topsoil depths for plant beds and areas to be sodded or seeded.
- The type and depth of mulch for shrub beds and tree wells.
- Proposed seed mixes.
- The location of proposed plants including trees, shrubs and groundcovers.
- Include a plant list identifying species botanical and common names, quantities, sizes, habit, spacing, and specific remarks (as required).

#### **3.4.3.11.6 Irrigation Plan**

In addition to the General Requirements for Landscape Plans, the following must be identified on Irrigation Plans:

- Major items associated with “Layout” but not including dimensions, i.e. walkways, roads, curbs, hard surface areas, structures, natural areas.
- Major items associated with the Grading and Planting Plans (faded back).
- Locations of all lines, sprinkler heads, valves, drains, sleeves, electrical drop-offs, 100-volt wire, 110-volt conduit, and electrical controllers and dimensions from adjacent property lines.

- Whether the system will be trenched or “plowed in” and whether the system will be gravity drained, blown out, or a combination.
- A schedule of materials/products describing sizes, manufacturers and model numbers, pipe fitting method, performance standards, and sources of materials/products.
- Minimum Static Water Pressure.
- Irrigation Scheduling Chart.
- Additional detailed requirements for Irrigation Plans to be referenced in Section 2.3.8 of the City of Calgary Development Guidelines and Standard Specifications: Landscape Construction.

#### **3.4.4 Record Drawing Requirements**

Record drawings will need to be prepared and submitted at the Development Completion Certificate (DCC) stage. Record drawings are detailed engineering drawings showing the surface and underground features such as legal, roadworks, waterworks, sanitary and storm sewers, spill elevations, as they have been constructed.

All record drawings will need to be authenticated by the Professional of Record. An authenticated PDF of the record drawings including CAD and GIS files will be required at the DCC stage.

An authenticated letter should also be included, which confirms all underground and surface works, including site grades and spill elevations have been constructed in accordance with the approved design. See Section 3.5.3 for additional Development Completion Certificate requirements.

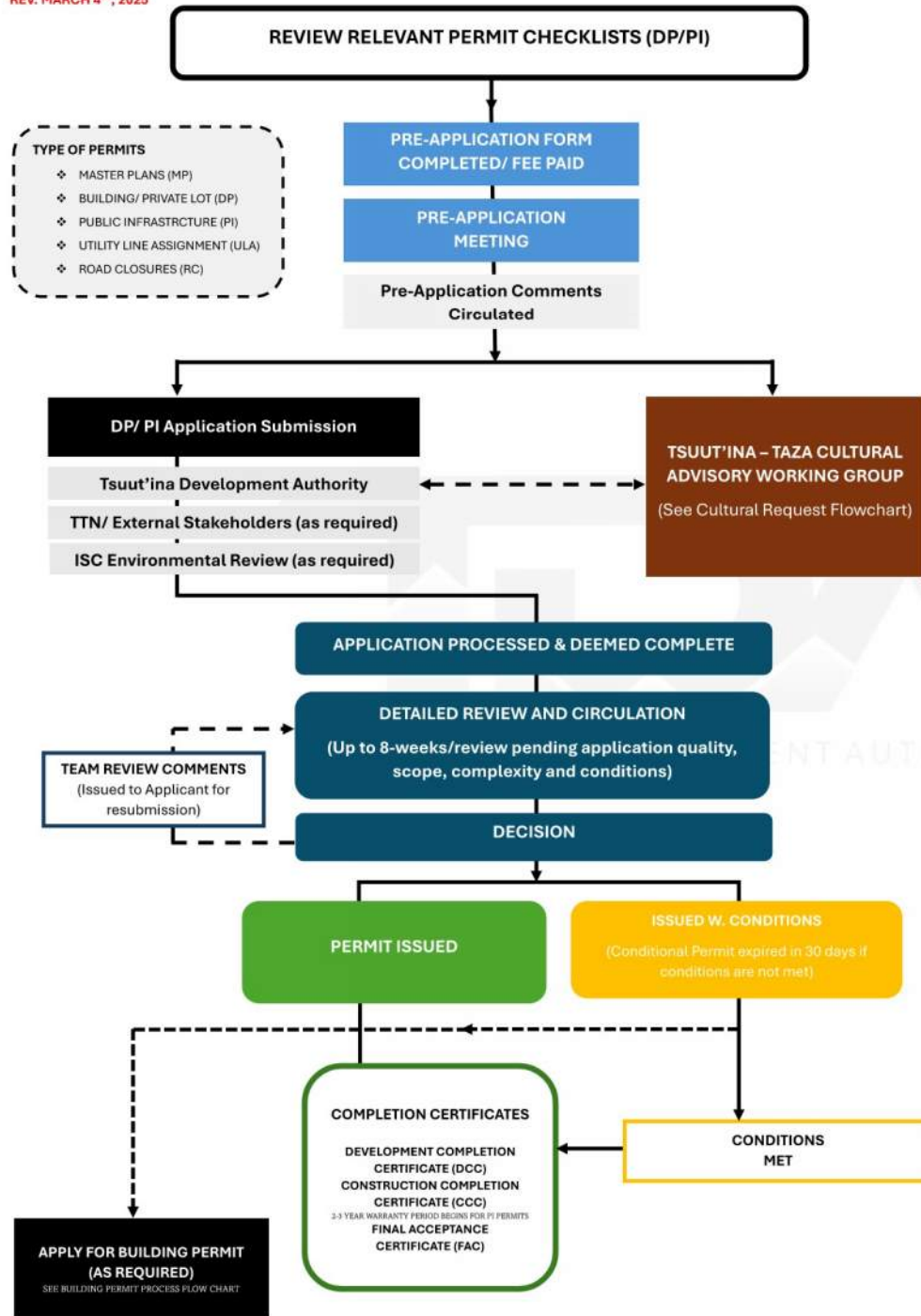
### **3.5 Reviews/Approvals Process**

#### **3.5.1 Development Permit Application Circulation Process**

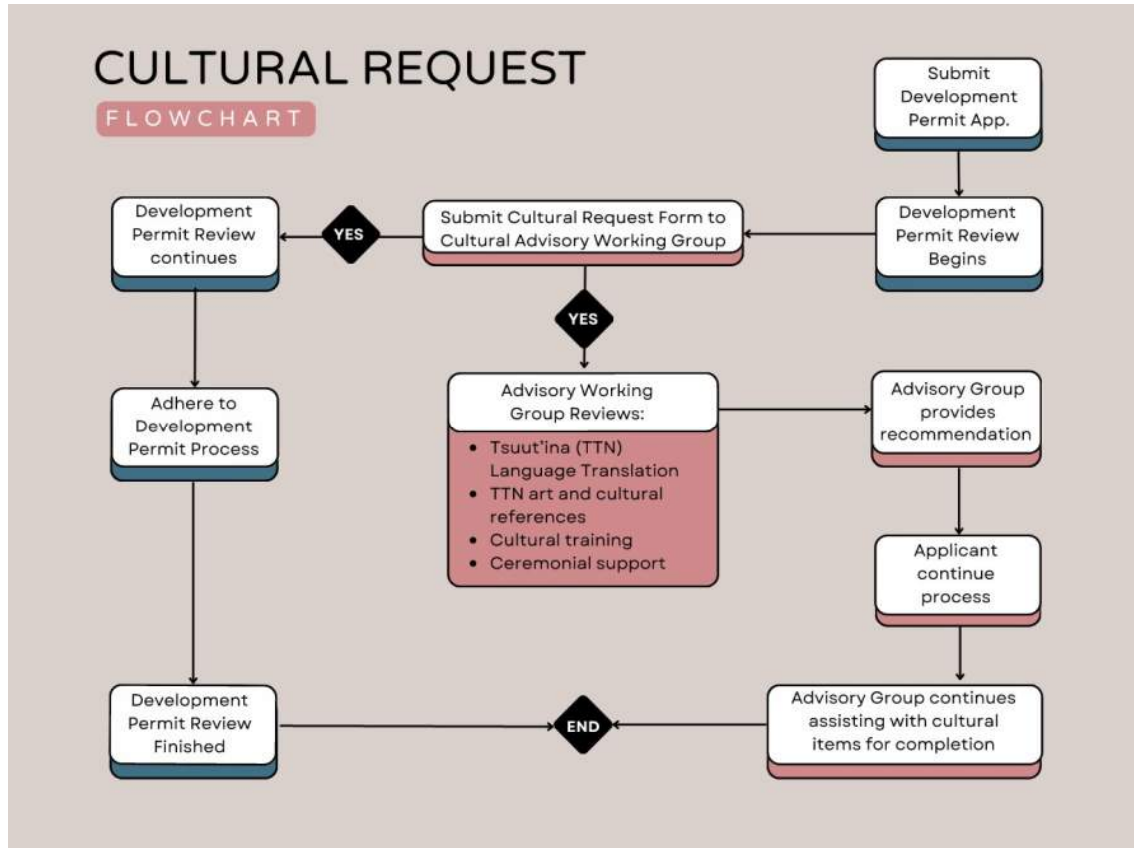
The following figure is the circulation, review and approvals process administered by the TDA for a given Development Permit application in accordance with the *Taza Development Approval Process Law*. Refer to Appendix B for the applicable Development Permit application forms and checklists.

TSUUT'INA DEVELOPMENT AUTHORITY  
**DEVELOPMENT PERMIT PROCESS**

REV. MARCH 4<sup>TH</sup>, 2025







### 3.5.2 Development Permit Amendment

In the event of design revisions may be required because of unexpected and/or unforeseen field conditions following a Development Permit Approval, a Development Permit Amendment can be submitted to the TDA for review. A Development Permit Amendment consists of the following:

- A cover letter detailing project information such as the DP Application Number, any other relevant project information, as well as a description of the proposed amendments and justification for the changes.
- An authenticated digital drawing set documenting the proposed design revisions.
- Amendment fee, as outlined in the Fee Schedule in Appendix C.

### 3.5.3 Development Completion Certificate

The TDA utilizes a Development Completion Certificate (DCC) procedure to sign off on all Development Permits completed by the Applicant.

To initiate the request for a Development Completion Certificate (DCC). It will be the responsibility of the Applicant to contact the TDA for a DCC inspection. A DCC will only be issued to the Applicant once the Development has been fully constructed to the satisfaction of the TDA and in accordance with the following procedure:

- Inspect the Development with the Applicant's Contractor and record any deficiencies. Note that inspections will be weather permitting at the discretion of the TDA inspector.
- Conduct further inspection(s) once the Applicant's Contractor repairs the initial deficiencies until all deficiencies are repaired to a satisfactory level.



- Resolve any outstanding field orders related to the Development.
- Schedule and conduct an inspection with the TDA. Any further outstanding deficiencies are to be repaired to a satisfactory level. A second/final inspection may be required to confirm the satisfactory completion of works.
- Submit the signed and stamped DCC, including Record drawings in accordance with Section 3.4.4 to the TDA (i.e. PDF, CAD, GIS files).

The DCC application package shall be submitted to the TDA and must include:

- Detailed Cover Letter
- One (1) full digital set of authenticated engineering and landscape record drawings indicating the completed Improvements and marked “Record Drawings” with the Consultant’s stamp and signature being dated to reflect the DCC application date.
- One (1) list of deficiencies and/or defects indicating when they were repaired.
- Authenticated letter which confirms all underground and surface works, including site grades and spill elevations have been constructed in accordance with the approved design.

Once the DCC application package for the respective Development is approved by the TDA, a Development Completion Certificate will be signed and issued to the Applicant.

An Occupancy Permit will not be issued without an approved DCC.

### **3.5.4 Offsite Public Infrastructure Modifications**

Any work, excavation, reconstruction or service extensions within Public Infrastructure areas related to the work associated with a Development Permit will require a separate Public Infrastructure Permit in accordance with Section 2. This includes but is not limited to streets, sidewalks, driveway crossings, landscaping, boulevards, curbs and gutters, back lanes/alleys, walkways, utilities, and any modifications within Public Infrastructure areas.

A Public Infrastructure Permit authorizes an Applicant and their Contractor to excavate, break or reconstruct all or any portion of a Street for a particular project. This Permit will:

- Protect Tsuut’ina Nation from potential lawsuits that could arise from work performed within Public Infrastructure areas;
- Ensures that construction within Public Infrastructure areas complies with the Infrastructure Design Standards and Specifications; and
- Requires the Applicant who enters into the Agreement to maintain the work for two years under the CCC and FAC process.

## **Appendix A – Public Realm (Public Infrastructure Permits)**

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1. Public Infrastructure Permit Application Form
2. Public Infrastructure Permit Application Checklist
3. Construction Completion Certificate (CCC) Checklists:
  - a. Checklist CCC for UI –Water Services
  - b. Checklist CCC for UI – Sanitary Sewer Services
  - c. Checklist CCC for UI – Storm Sewer Services
  - d. Checklist CCC for SW – Concrete – Curb, Gutter & Sidewalk
  - e. Checklist CCC for SW – Asphalt – Parking Lots, Roads & Recreational Pathways
  - f. Checklist CCC for SW – Landscape
  - g. Checklist CCC for Facilities – Stormwater Management Facilities, Lift Stations, Water and Wastewater Treatment Facilities & Booster Pump Stations
  - h. Checklist CCC for EI – Street Lighting Installation
  - i. Checklist CCC for EI – Traffic Signals Installation
  - j. Checklist CCC for Demolition and Removals
  - k. Construction Completion Certificate Template
4. Final Acceptance Certificate Checklists:
  - a. Checklist FAC for UI –Water Services
  - b. Checklist FAC for UI – Sanitary Sewer Services
  - c. Checklist FAC for UI – Storm Sewer Services
  - d. Checklist FAC for SW – Concrete – Curb, Gutter & Sidewalk
  - e. Checklist FAC for SW – Asphalt – Parking Lots, Roads & Recreational Pathways
  - f. Checklist FAC for SW – Landscape
  - g. Checklist FAC for Facilities – Stormwater Management Facilities, Lift Stations, Water and Wastewater Treatment Facilities & Booster Pump Stations
  - h. Checklist FAC for EI – Street Lighting Installation
  - i. Checklist FAC for EI – Traffic Signals Installation
  - j. Checklist FAC for Demolition and Removals
  - k. Final Acceptance Certificate Template
5. Utility Line Assignment (ULA) Application Form

## **Appendix B – Private Realm (Development Permits)**

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1. Development Permit Application Checklist
2. Development Permit Pre-Application Form
3. Development Permit Application Form
4. Stripping and Grading Permit Checklist

## **Appendix C – General Forms and Fee Schedule**

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1. TDA Fee Schedule (for current version refer to TDA website)
2. Traffic Accommodation Strategy (TAS) Plan Application Form
3. Traffic Accommodation Strategy (TAS) Plan Checklist
4. Indigenous Services Canada (ISC) Forms
5. Stormwater Management Report Checklist
6. Erosion and Sediment Control Report and Drawing Application
7. Erosion and Sediment Control Good Housekeeping Letter Template

## **Appendix D – Specifications & Plan Drawings**

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1. McAvity (Clow Canada) Hydrant Specifications and Spec Sheet
2. Shallow Frame and Tsuut'ina Cover by Trojan Industries Inc.
3. Taza ATS Signage Specifications