Consulting Engineer's Field Services Guidelines

2025

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i. Terms and Definitions

In the Consulting Engineer's Field Service Guidelines, the following terms have meanings set out below:

(1) **"Agreement"** means the agreement between the City and the Developer and includes the following:

(a) Development Agreement; and

(b) Development Agreement Standard Terms and Conditions

(2) **"City"** means The City of Calgary, a municipal corporation in the Province of Alberta;

(3) **"City Specifications"** means the design and construction requirements for items arising in connection with the subdivision or development of land contained in all City policy documents, as amended and replaced from time to time, including but not limited to the Infrastructure, parks, subdivision servicing and erosion and sediment control;

(4) **"Construction Completion Certificate"** or **"CCC"** means a document:

(a) signed and sealed by the Consulting Engineer and stamped with their Association of Professional Engineers and Geoscientists of Alberta permit to practice stamp, certifying that the particular piece of Infrastructure identified was constructed in accordance with City Specifications, or as defined in the Development Agreement Standard Terms and Conditions;

(b) that contains the projected earliest maintenance expiry date for a specific piece of Infrastructure; and

(c) is acknowledged and dated by the Manager, Trades and Subdivision Inspections;

(5) **"Construction Drawings"** means those drawings containing the technical details associated with the design, construction and installation of the Infrastructure, including any applicable revisions, as approved by the Manager, Development Engineering, and which form a part of the Agreement;

(6) **"Consulting Engineer"** means a Professional Engineer registered in the Province of Alberta who is a member in good standing of the Association of Professional Engineers and Geoscientists of Alberta and is employed or retained by the Developer in connection with the obligations contained in the Agreement;

(7) **"Consulting Engineer's Field Services Guidelines"** refers to this document, which governs the minimum level of field services to be performed by the Consulting Engineer relating to the construction, installation and inspection of the Infrastructure;

(8) **"Contractor"** means the individual or corporation hired by the Developer to undertake the obligations contained in the Agreement on behalf of the Developer for the installation, construction and maintenance of the Infrastructure;

(9) **"Developer"** has the meaning given in the Development Agreement;

(10) **"Developer of Record"** means the Developer of Record as defined in the Development Agreement;

(11) **"Development Agreement"** means the document that identifies all parts of the Agreement and is signed by all parties to the Agreement, and incorporates the Development Agreement Standard Terms and Conditions;

(12) **"Development Area"** means any portion of the Lands that are the subject of a subdivision or development permit approval, which the Developer intends to immediately develop, and for which the Developer will be obligated to design, construct and install the Infrastructure, which will be more particularly described in the Development Agreement between the Developer and the City;

(13) **"Development Engineer"** means the City employee appointed to the position of Development Engineer or the individual authorized to act in their place generally or for the purpose of administering the Agreement;

(14) **"Erosion and Sediment Control Plan"** means that document, including applications and drawings, prepared in accordance with the City's Instruction Manual for Erosion and Sediment Control Plan Applications, as amended and replaced from time to time. For each stage of work, initialing stripping and grading and then when work is being done under the Construction Drawings, an Erosion and Sediment Control Plan must be approved and ready for implementation prior to soil being disturbed or exposed for that stage of construction. The Erosion and Sediment Control Plan must be adhered to prior to commencement of stripping and grading operations associated with the Development Area and during work associated with the Construction Drawings, until completion of grading, infrastructure installation and site rehabilitation, which may be required until all Final Acceptance Certificates for the Development Area are acknowledged;

(15) **"Final Acceptance Certificate"** or **"FAC"** means a document:

(a) signed and sealed by a registered Professional Engineer and stamped with an Association of Professional Engineers and Geoscientists of Alberta permit to practice stamp, certifying that the particular piece of Infrastructure identified was maintained in accordance with City Specifications;

(b) that identifies that the particular piece of Infrastructure is in order for acceptance by the Manager, Development Engineering; and

(c) is acknowledged and dated by the Manager, Development Engineering;

(16) **"Final Inspection Report"** means a report stating that deficiencies have been corrected and that a specific portion of the Infrastructure is recommended for acceptance by the City;

(17) **"Geotechnical Engineering Consultant"** means a Professional Engineer who is a member in good standing of the Association of Professional Engineers and Geoscientists of Alberta and knowledgeable or certified in the specialization of geotechnical engineering;

(18) **"Growing Season"** means that period of time between the dates that the Park Development Inspector acknowledges the Construction Completion Certificate to:

(a) June 30 of the following year; or

(b) the date when, in the sole opinion of the Manager, Trades and Subdivision Inspections, the irrigation system(s) are operating and the vegetation is in full leaf, whichever event occurs last;

(19) **"Infrastructure"** means those utilities (including but not limited to sanitary sewers, storm sewers, Storm Water Pond Facilities, water mains and hydrants, sewer and water service connections), improvements (including but not limited to sidewalks, curbs and gutters, paved roads, paved walkways, paved and/or gravelled lanes, Surface Drainage Facilities, bridges, culverts, retaining walls, stairways and landscaping), street lights, Boulevards, public utility lots and reserve parcels (including landscaping) and other services, as shown in the Construction Drawings, designed and intended to service the Development Area, and such other lands as the Manager, Development Engineering determines appropriate;

(20) **"Inspection and Testing Company"** means a consulting engineering firm certified by the Association of Professional Engineers and Geoscientists of Alberta as evidenced by a permit to practice to undertake geotechnical engineering analysis;

(21) **"Joint Inspection Certificate"** means a document that is submitted to the City with the relevant Construction Completion Certificate, and is signed by both the relevant City inspector for the specific Infrastructure and

(a) a Landscape Architect or the Consulting Engineer in the case of a Joint Inspection Certificate for Parks

(b) signed and sealed by the Consulting Engineer in all other cases stating that the Infrastructure identified has been completed with the exception of the noted deficiencies;

(22) **"Lands"** means those lands situated in The City of Calgary, Province of Alberta, which the Developer is the owner or will become the owner, and for which the Developer intends to receive subdivision or development permit approval;

(23) **"Landscape Architect"** means an individual with membership in good standing with the Alberta Association of Landscape Architects;

(24) **"Manager, Trades and Subdivision Inspections"** means the City employee appointed to the position of Manager, Trades and Subdivision Inspections, or the individual authorized to act in their place generally or for the purpose of administering decisions related to inspections tied to the Development Agreement.

(25) **"Municipal Government Act"** means the Municipal Government Act, R.S.A. 2000, c.M-26, as amended and replaced from time to time;

(26) **"Optional Subdivision Amenities"** means facilities constructed by the Developer on public lands, at its choice, above the minimum requirements of the City, including but not limited to entrance signage and gates, walls and flower beds of generally high quality material, park features such as benches, gazebos, water features or other high maintenance cost features, all of which require a perpetual maintenance solution as a condition of approval, which are usually in the form of deposit or payment by the developer sufficient to remove the facility or assumption of the maintenance and repair obligations by either a homeowner, resident or community association;

(27) **"Park Development Inspector"** means the City employee appointed to and holding the position of Park Development Inspector who performs landscape construction inspections in accordance with the Park Specifications;

(28) **"Storm Drainage"** means runoff that is the result of precipitation;

(29) **"Storm Drainage System"** means the system for collecting, storing and disposing of Storm Drainage, and includes:

(a) the catch basins, sewers and pumping stations that make up the storm drainage collection system;

(b) the storm drainage facilities, structures or things used for storage, management and treatment to buffer the effects of the peak runoff or improve the quality of the storm water;

(c) the sewers and pumping stations that transport Storm Drainage to the location where it is treated or disposed of;

(d) the storm drainage outfall structures; and

(e) the Surface Drainage Facilities; but

(f) does not include plumbing or service connections in buildings;

(30) **"Storm Water Pond Facilities"** means facilities, either constructed or naturally existing, for the purpose of collecting; retaining, treating and ultimately discharging storm water, including the storm water reuse infrastructure;

(31) **"Surface Drainage Facilities"** means any facility or facilities associates with drainage or control of Storm Drainage that is ultimately directed to a Street or Storm Drainage System, and includes, but is not limited to:

(a) a grass swale;

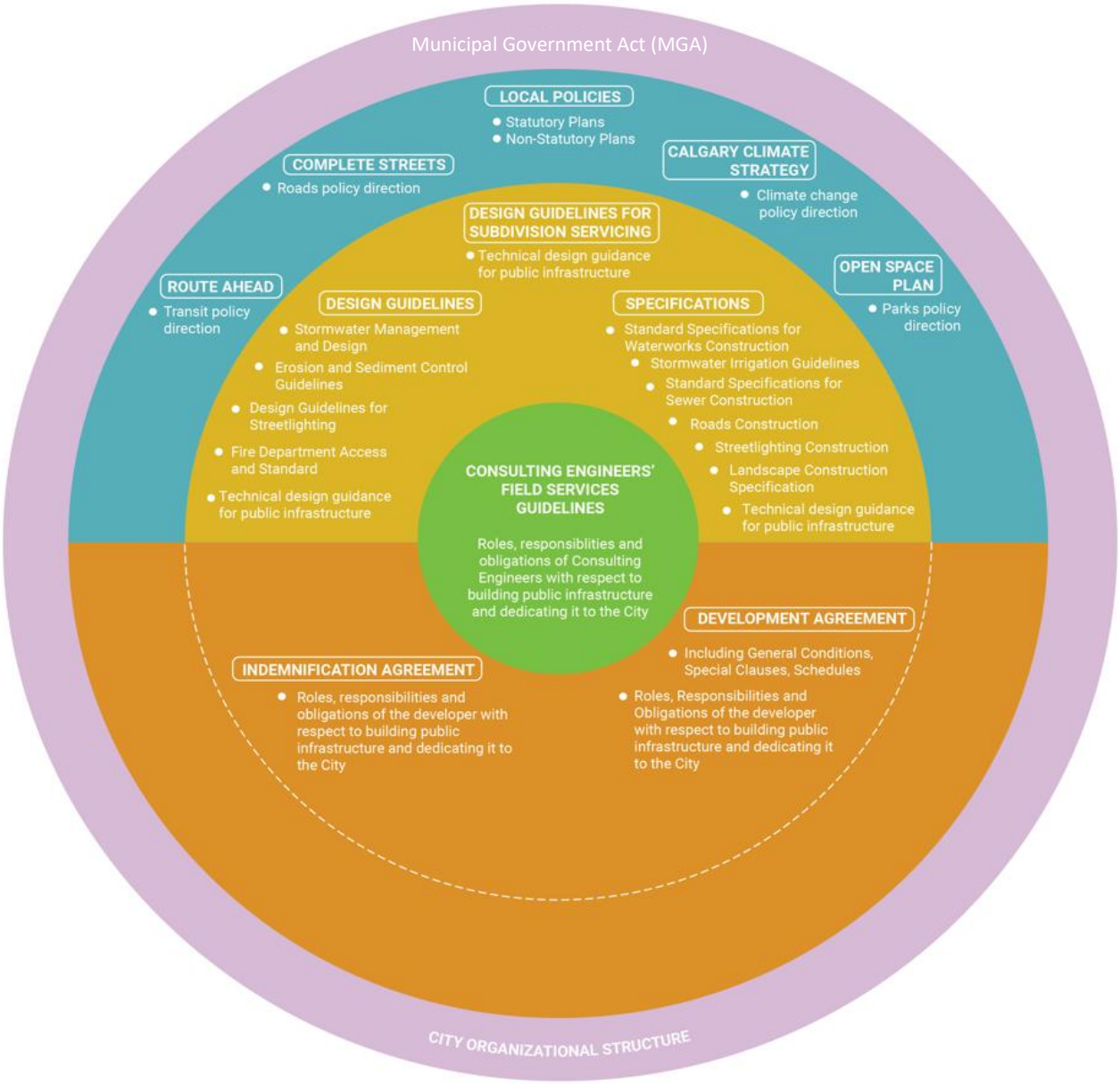
(b) a concrete or asphalt walkway, gutter or swale;

(c) a drainage control fence or structure; or

(d) the sloping and contouring of land to facilitate or control Storm Drainage;

1. Introduction and Objective

All lands – whether residential, commercial, or industrial – developed within The City of Calgary are done so under the *Development Agreement Standard Terms and Conditions* (DA T&C). The DA T&C ensures that all land development within city limits occurs in accordance with City policies, standards, and specifications. The DA T&C references the *Consulting Engineer's Field Services Guidelines* (hereafter referred to as 'these Guidelines') under Part II General Construction Obligations and Part XII – Stripping and Rough Grading.



As defined in the DA T&C, the objective of the *Consulting Engineer's Field Services Guidelines* is to govern the **minimum** level of field services to be performed by the consulting engineer relating to the construction, installation, and inspection of infrastructure.

Infrastructure, as referred to in these Guidelines, includes, but is not limited to, the following:

- Utilities (Sanitary Sewers, Storm Sewers, Watermains and Hydrants, Sewer & Water Connections)
- Surface Drainage Facilities
- Stormwater Storage Facilities
- Surface Improvements (Sidewalks, Curbs & Gutters, Catch Basins, Paved Roads, Paved Walkways, Regional/Multi-use Pathways, Paved and / or Graveled Lanes, Bridges, Culverts, Retaining Walls, Stairways, Sound Attenuation/Screen Fencing)
- Street lights
- Boulevards
- Public Utility Lots
- Reserve Parcels
- Parks Infrastructure (Trees, Sod, Irrigation, Playground equipment, etc.)
- Lift Stations
- Other elements designed and intended to service the development area

The term infrastructure also includes any such other lands and items as the *Manager of Trades and Subdivision Inspections* determines appropriate. Unless otherwise specified, the term *Manager* refers to the *Manager of Trades and Subdivision Inspections* or the individual authorized to act in their place.

These Guidelines are intended to ensure that the construction and installation of infrastructure during subdivision development are in compliance and in accordance with City of Calgary specifications and standards. The requirements, procedures and processes for the various inspections and documentations that are required for the *Construction Completion Certificate* (CCC) and the *Final Acceptance Certificate* (FAC) are outlined in detail.

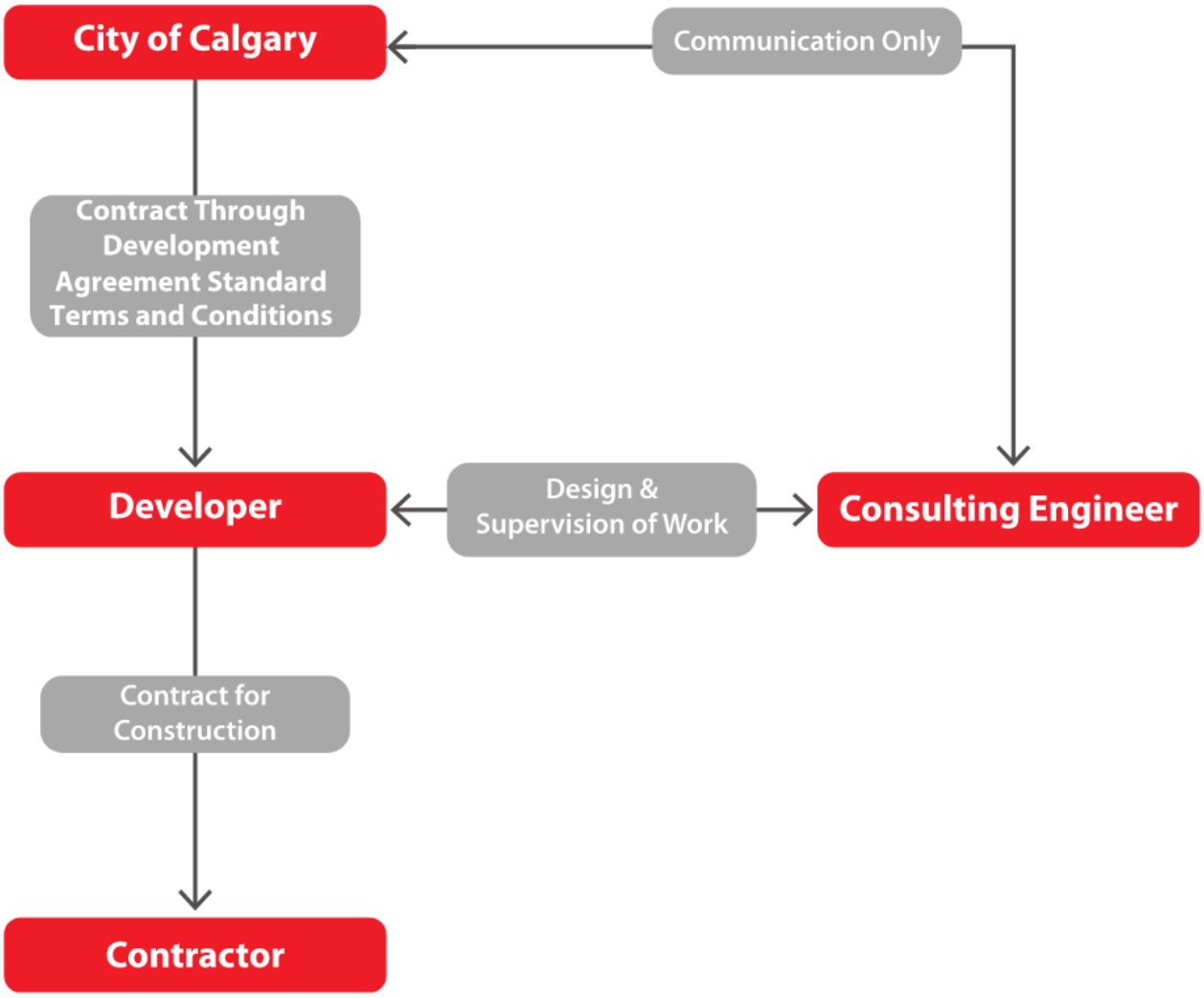
These Guidelines contain the following sections:

- Contractual Relationships
- The Role of the Consulting Engineer
- Stripping & Rough Grading
- Underground Utilities
- Surface Drainage Facilities
- Stormwater Storage Facilities
- Surface Improvements
- Parks Infrastructure

Note that this manual does not detail the technical specifications for subdivision construction drawings, which are available in *The City of Calgary Design Guidelines for Subdivision Servicing (DGSS)*. Most technical and design standards referenced in these Guidelines are available on *The City of Calgary's Planning & Development resource library* website, or otherwise as noted.

Additionally, the form templates referenced within the Guidelines are located on the City of Calgary's website. Please visit www.calgary.ca/cefsg to access the most up-to-date versions of the forms.

Contractual Relationship Process Map



2. Contractual Relationships

2.1. City / Developer

The contractual relationship between the City and the Developer is defined through the DA T&C, the Special Clauses Agreement, and/or the Development Permit, through which the developer agrees to complete the construction of the infrastructure to the standards required by the City. Notwithstanding the specific circumstances set out below, the developer is ultimately responsible for the performance of all obligations, terms and conditions specified in the DA T&C.

2.2. Developer / Consulting Engineer

Part II, clause 2.04 (1) of the DA T&C states that the developer shall employ a consulting engineer to design and supervise all work to be carried out under the agreement. The developer remains responsible for the full and proper performance of all obligations, terms, and conditions under the DA T&C, Special Clauses Agreement, or the Development Permit.

The role of the consulting engineer, retained by and acting on behalf of the developer, is to prepare design drawings, reports, and specifications based on the specific location, ground form, site conditions, and other relevant details of the subdivision to be constructed. The consulting engineer's designs and specifications must meet or exceed City specifications, approved designs, and applicable provincial and federal regulations, or as otherwise directed by the Manager.

The consulting engineer's contract with the developer shall be defined such that the consulting engineer is obligated and responsible to provide at least the minimum level of field services as specified in each section of these Guidelines.

Subsequent to the issuance of the CCC(s), the consulting engineer, acting on behalf of the developer, shall continue to ensure the repair of deficiencies until the FAC for that specific infrastructure is accepted by the City.

Should the developer not fulfill their obligations, as set out in the Special Clauses Agreement being performed under the terms and conditions of the DA T&C, by abandoning the project, not completing the work, or electing not to correct the deficiencies identified by the Manager or the consulting engineer, the consulting engineer shall not be held responsible to complete the construction of the infrastructure.

2.3. Developer / Contractor

The developer shall draft its contract with the contractor based upon the approved construction drawing design and contract documents prepared by the consulting engineer. The contractor is responsible for the quality of work. Notwithstanding the above, the developer is ultimately responsible for the performance of all obligations, term and conditions specified in the DA T&C.

2.4. Consulting Engineer / City

There is no direct contractual relationship between the consulting engineer and the City. However, as the consulting engineer is the representative of the developer, the Manager has the right to request that the developer, through the consulting engineer, correct any deficiencies as they are observed.

The consulting engineer shall keep detailed construction records of communications and site observations to satisfy the City that the work is being constructed and installed in a safe and approved manner and meeting the applicable specifications. The consulting engineer shall submit the CCC(s), prepare the FAC(s), and have any maintenance deficiency items dealt with expeditiously.

The City may, as specified in Part II, clause 2.06 of the DA T&C, stop the construction and installation of the infrastructure. Should the consulting engineer not be available on site, the City may issue a development field order (DFO) to the developer, with a copy of the DFO given to the contractor to stop the work. DFOs are described further in Section 3.5 of these Guidelines.

2.5. City / Contractor

There is no direct contractual relationship between the City and the contractor. Any communications from the city regarding the ongoing work will be addressed directly to the consulting engineer, unless as otherwise provided for in Section 2.4 of these Guidelines.

3. Roles and Responsibilities

3.1. Developer

The Developer is the entity as defined in the Development Agreement and is responsible for completing all work in compliance with the Development Agreement, DA T&C and these guidelines. More information of the Developers Responsibilities and general construction obligations can be found on the Development Agreements website.

3.2. Consulting Engineer Field Services

The Consulting Engineer is the entity which is employed or retained by the Developer in connection with the requirements of the Development Agreement, the DA T&C and these guidelines.

In order to perform the required field services, the consulting engineer shall retain consulting field inspectors to perform the necessary inspections and maintain current record keeping. The consulting field inspectors shall have the necessary qualifications and municipal construction experience as recommended by the development industry or the City to perform such duties.

Field services are provided to certify that the contractor is supplying materials, constructing, and installing infrastructure in accordance with the City's standards and specifications, the approved reports, plans, and design or as otherwise required by the Manager.

There are two levels of consulting engineer field inspectors, junior and senior. Junior field inspectors are responsible for all activities within a particular site, and senior field inspectors are responsible for the supervision of more than one junior inspector.

3.2.1 Senior Field Inspector

The consulting engineer's senior field inspector shall have **one** of the following qualifications:

a) Be a Certified Engineering Technologist (C.E.T.), Professional Technologist (P. Tech.), or Registered Engineering Technologist (R.E.T.) registered with the Association of Science and Engineering Technology Professionals of Alberta (ASET), and have a minimum of three years experience in municipal construction,

b) Have a minimum five years experience in related municipal construction, or

c) Be a Member-in-training registered with APEGGA, and have a minimum of two construction seasons experience in municipal construction.

3.2.2 Junior Field Inspector

The consulting engineers' junior field inspector shall have **one** of the following qualifications:

a) Be a Certified Engineering Technologist registered with ASET,

b) Be an employee of the consulting engineer with a grade 12 or equivalent education and a minimum of three years experience in municipal construction,

c) Be an employee of the consulting engineer and have completed at least two years of recognized post-secondary engineering undergraduate degree / certificate program with applicable municipal experience, or

d) Post-secondary enrolment in a related field (engineering technology, geomatics, etc.) plus one year of municipal construction experience.

The consulting engineer's field inspector shall be completely familiar with the following:

a) The approved construction drawings of the specific subdivision.

b) The approved erosion and sediment control (ESC) report and plan for the site.

c) The Consulting Engineer Field Services Guidelines.

d) The City's applicable specifications, standards, and procedures for all infrastructure proposed on the construction drawings.

e) The proposed work schedule of the contractor(s) and the equipment to be used.

f) The requirements to obtain permission to construct infrastructure, clearance for the development permit, or authorization for stripping and rough grading.

g) Applicable municipal bylaws, provincial regulations, and federal legislation.

h) The Eco-Plan, if applicable (required for all City projects or work being done for City business units).

i) The City's procedures for field orders, stop work orders, and appeal procedures.

Environmental compliance, soil compaction, slope stability, material compliance, and other testing services are to be performed by the consulting engineer, or contracted engineering firms, to ensure and certify that the obligations to the city and any other regulatory agencies are met.

It shall be the responsibility of the consulting engineer to determine whether field services and testing levels exceeding the levels specified in these Guidelines are necessary, and to advise the developer and the City accordingly.

3.3. Contractor

The Contractor is the individual or corporation which is hired by the Developer to undertake the obligations contained in the Development Agreement and DA T&C on behalf of the Developer for the construction, installation and maintenance of the infrastructure.

3.4. City of Calgary

3.4.1 Community Planning

The City of Calgary's Community Planning group facilitates the execution of the Development Agreement, reviews and approves the infrastructure design, provides permission to construct and close out of the agreement when all condition have been met.

Information on the Development Agreement process can be found on the Development Agreements webpage.

Information on the construction drawing submission process can be found on the Construction Drawing webpage.

3.4.2 Trades and Subdivision Inspections

Trades and Subdivision Inspections is the group within the City which is responsible for the inspection of infrastructure installed as per the Development Agreement, DA T&C and these guidelines.

Subdivision Inspections performs active site quality control inspections, CCC Inspections and FAC inspections.

3.5. Development Field Orders and Appeal Procedures

Development Field Orders (DFOs) are issued to the Consultant when, in the opinion of the Subdivision Inspector, any materials, design, construction, installation, or inspection of the work does not meet or conform to City specifications, approved reports, guidelines, or standards. The *Development Field Order* form is used by *Trades and Subdivision Inspections* (hereafter referred to *"Subdivision Inspections"*), which include Utility Inspectors, Surface Subdivision Officers and Parks Development Inspectors.

The DFO, issued by Subdivision Inspections, will detail the deficiency and the required action. The consulting engineer shall describe in the field order the corrective action that was taken to correct the deficiency. The consulting engineer shall return one copy of the completed field order to the subdivision inspector who issued the order or provide to an appropriate alternate City contact (i.e. inspector's supervisor), to confirm the correction of the deficiency.

All DFOs issued that are applicable to a specific infrastructure must be addressed and approved by Subdivision Inspections prior to issuance of certification (CCC or FAC) for the identified infrastructure.

Should the consulting engineer be aware of any design revisions, as prescribed by the City circulation comments or other engineering considerations, it is recommended that these be communicated to the City during a pre-construction meeting. While this may not necessarily negate the issuance of a field order, it will allow the City inspector the appropriate time to review as necessary.

3.5.1 Stop Work Order

Should a DFO be issued for a change or deficiency resulting in significant risk to the City and corrective action is not taken by the consulting engineer, the City inspector, on behalf of the Manager, may immediately stop any work, as provided for under Part II, clause 2.06 of the DA T&C. In addition, if it is the opinion of the City inspector that unsatisfactory materials have been or will be used, the City inspector may order the removal of the material from the work area.

In accordance with established procedures, the developer or the consulting engineer may appeal the City inspector's decision to that inspector's supervisor. The consulting engineer may appeal any decision to the next level of supervision until the Manager is reached. Any decision taken by the Manager on a matter related to subdivision development will be considered final and binding.

4. Stripping and Rough Grading

As per The City of Calgary *Land Use Bylaw 1P2007*, any area of land to be excavated, stripped, or graded over 1,000 m^2 requires the developer or landowner to obtain permission from the City. Permission for stripping and rough grading can be obtained either through a *Development Permit*, or at the discretion of the City through the authority of the *DA T&C*.

If a developer will be performing stripping and grading operations over multiple phases of development, a *Development Permit* for stripping and grading will be required. If the stripping and grading operations are limited to one phase of development, the stripping and grading can be performed under the authority of the *DA T&C*.

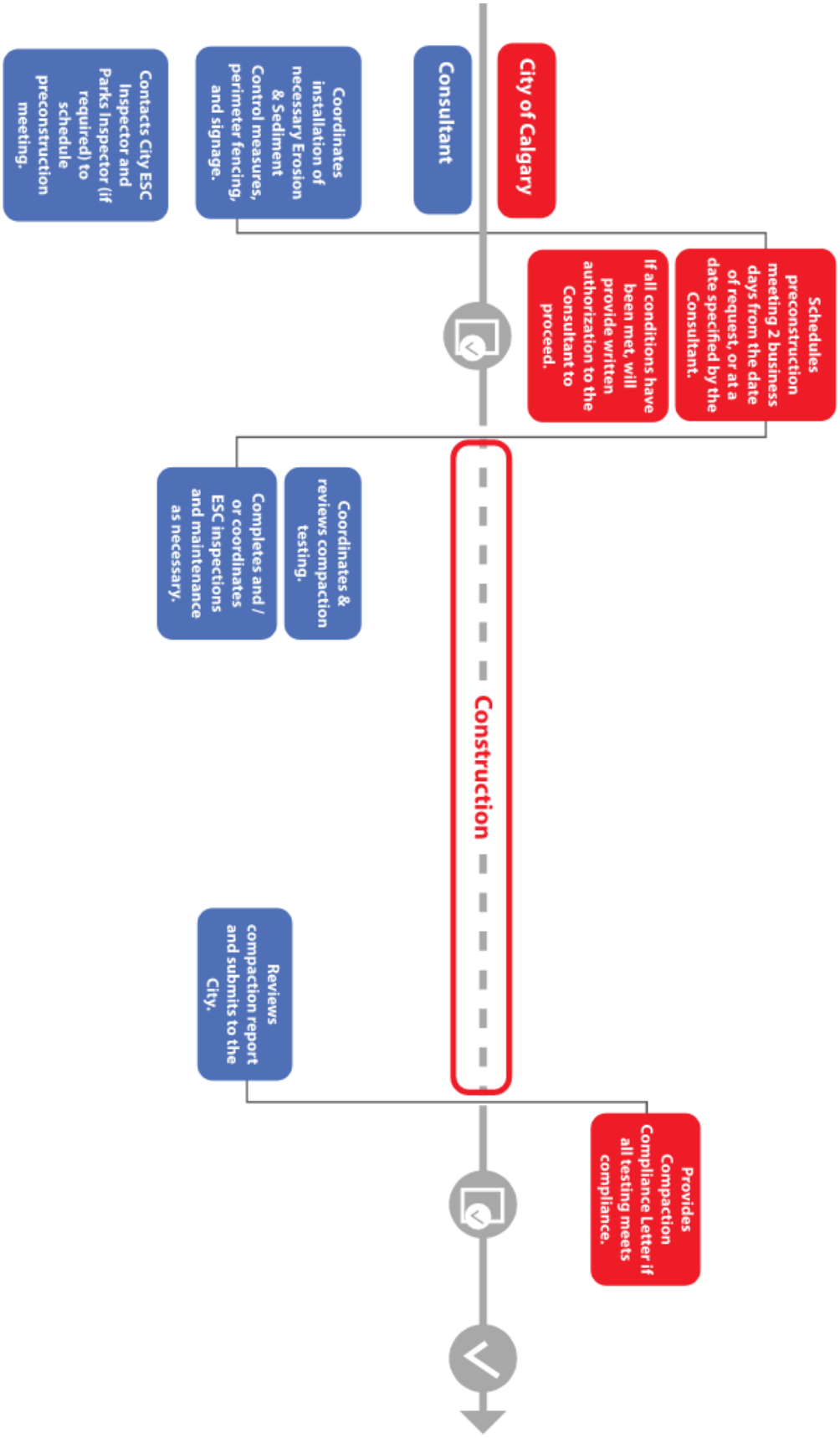
With both options, the required documents must be submitted to ESC@calgary.ca and reviewed and approved prior issuance of permission for stripping and rough grading. The process requirements can be found on the City of Calgary *Erosion and Sediment Control (ESC) Authorizations* page. The requirements for stripping and grading permissions under the DA T&C are also outlined in the *Design Guidelines for Subdivision Servicing (DGSS).*

The main component of a stripping and rough grading application is the review of the *Erosion and Sediment Control* (ESC) application and drawings. The ESC plans and approvals shall outline measures to protect watercourses and adjacent lands from erosion and sediment pollution arising from the development of the subject area. These measures must be followed throughout the project; from prior to the commencement of initial stripping and grading operations, through to the completion of grading and site rehabilitation. These measures may be required until all FACs for the development are acknowledged by the City. The developer or land owner and the consulting engineer shall ensure that the planning and implementation responsibilities outlined in the ESC process are being fulfilled.

You are required to obtain approval from The City of Calgary to release water into the stormwater system. Please note that all drainage activities must adhere to the Code of Practice for Drainage Activities which is available from *www.calgary.ca/stmpp*.

Stripping & Rough Grading

Notification & Construction Steps



4.1. Commencement of Work

After receiving The City of Calgary's approval to strip and rough grade under a Development Permit or a Development Agreement, the Consulting Engineer, prior to the commencement of stripping and rough grading work, shall:

- Ensure that all sediment and erosion controls are in place as per the approved ESC Plan Approval,
- Ensure that all required fencing has been erected,
- Ensure that all required "Private Property"/ "No Trespassing" signs have been posted, and
- Contact the *Environmental Compliance Specialist – ESC Inspector*, if required as part of the conditions of approval, at least 48 hours in advance of commencing the work to arrange for a pre-construction site meeting.

Note – as noted in section 9 of these guidelines, if the stripping and rough grading is connected to a Parks Infrastructure Improvement, the *Subdivision Surface - Parks Development Inspector* should also attend the pre-construction meeting.

Following this pre-construction meeting, if all conditions noted above have been completed to the satisfaction of the City inspector, written permission to commence stripping and rough grading will be given.

Stop work orders may be issued using the *Development Field Order* if at any stage it is considered the work on site is not compliant with the Development Agreement, Development Permit or ESC Plan Approval.

4.2. Compaction

The Consulting Engineer shall ensure that the compaction tests taken are in compliance with the City's *Standard Specifications Waterworks / Sewer Construction* and *Road Construction Standard Specifications*. Lab-testing results for Proctor testing, sieve analysis for granular soil, and soil sampling results for each subdivision are also required.

The Consulting Engineer, prior to submission of the compaction reports, shall review the compaction reports to ensure that all tests submitted have met the City compaction specifications and requirements. Test locations not meeting the City compaction specifications are to be re-compacted and re-tested. All testing results must be included in the final compaction report.

All compaction reports shall be forwarded to the attention of the *Senior Pavement and Materials Engineer*. In the case of stripping and rough grading completed under a *Development Permit* where phase / stage is not consistent with the *Development Agreement*, information shall be included to identify the appropriate *Development Agreement(s)* that the subject area includes.

The CCC's for Underground Utilities, Surface Drainage Facilities, Stormwater Storage Facilities, and Surface Improvements will not be issued until a *Compaction Compliance Letter* has been issued by the *Senior Pavement and Materials Engineer* for all stripping and rough grading work.

4.3. Maintenance and Inspection

The consulting field inspector who is inspecting the stripping and rough grading operations must be a qualified ESC inspector. This person is a person who has training in ESC inspections or is directly supervised by someone with ESC training.

Inspection of all ESC practices must be completed and documented at least every seven(7) days and at critical times when erosion or sediment releases could occur, including:

- Windy weather
- Significant precipitation events
- Melt events

At a minimum, significant precipitation events are defined as greater than 12 millimetres (mm) of precipitation within any 24-hour period, or precipitation or snowmelt on wet or thawing soil. Shorter duration, but more intense events may also be deemed as "significant".

Deficiencies documented during inspection of erosion controls and sediment practices must be corrected promptly, and the maintenance documented. Corrective actions, identified by the qualified inspector, must be taken as soon as possible and not longer than 72 hours after the identification of the deficiency (as long as the corrective timelines do not risk public health or safety).

Should site conditions warrant an amendment to the ESC drawings, a revision must be submitted to *Stormwater Pollution Prevention* at ESC@calgary.ca for approval.

4.4. Drainage and Dewatering Permits

As per The *City of Calgary Stormwater Bylaw 37M2005*, the developer and those under their control are responsible for ensuring that approval, in the form of a permit or notification, is obtained from the *Stormwater Pollution Prevention team*, *prior* to directly or indirectly releasing water into the stormwater system (including roadways and swales). You may need a Drainage Permit or notification for, but not limited to:

- Water that has collected in an excavation or trench which must be removed to continue work.
- Surface rainwater runoff that has collected on your construction site which needs to be removed.
- Pumping any potable drinking water (must be de-chlorinated).
- Fire flow or hydrant testing (must be de-chlorinated).
- Any other activity that requires the release of water into the stormwater system.

To apply for a Drainage or Dewatering Permit, visit the Stormwater Pollution Prevention website.

Under The *City of Calgary Wastewater Bylaw 14M2012*, permission is required to dispose of groundwater or impounded surface water to the City's wastewater sewer system. To apply for a Wastewater Disposal Permit, visit the Wastewater Disposal Permit website.

5. Underground Utilities

Underground utilities include, but are not limited to, sanitary sewers, storm sewers, stormwater storage facilities, water mains, irrigation mains, PRV chambers, hydrants, and sewer and water service connections. Also included are sewer lift stations and water booster pump stations. The City of Calgary Utilities Delivery group defines the specifications and standards for design, materials, and installation of the infrastructure, while Trades and Subdivision Inspections oversee inspection and acceptance of underground utilities.

All stormwater storage facilities (wet ponds, dry ponds, and/or engineered wetlands) constructed on a site will require separate CCCs and FACs, since each stormwater facility has its own set of inspection requirements and procedures. Instructions pertaining to the construction and approvals of stormwater storage facilities are located in the Stormwater Storage Facilities section of this document.

5.1. Notification to Install Underground Utilities

After receiving City approval for permission to install underground utilities, including stormwater storage facilities, the Consulting Engineer shall notify *Trades and Subdivision Inspections – Subdivision Utility* (hereafter referred to as *"Subdivision Utility Inspections"*) via the *Construction Commencement Notification Form* for *Subdivision Utility Inspections*.

Notification shall be made at least 48 hours prior to the start of construction. If construction commences prior to obtaining construction permission from the City, a stop work order (as outlined in Section 3.5 of these guidelines) will be issued. Re-notification for inspection is required after 48 hours of construction inactivity, excluding Saturdays, Sundays, and statutory holidays.

5.2. Pre-Construction Meeting (Optional)

Following submission of the *Construction Commencement Notification*, the Consulting Engineer may request a pre-construction meeting with *Subdivision Utility Inspections* to discuss and address items of importance, including:

- Project schedule and scope, including potential split construction.
- Project staging, including planning for chlorination and pressure testing.
- Project staffing (City, consultant & contractors) and chain of command.
- Potential drawing revisions, as prescribed by City circulation comments.

5.3. Active Construction Site Inspection for Underground Utilities

The *Subdivision Utility Inspections* areas and contact information can be found on the Subdivision Utility map.

The Consulting Engineer shall supply to the area *Subdivision Utility Inspector* a copy of the grade sheets for all sanitary sewers, storm sewers, water mains, irrigation mains, hydrants, and sewer and water service connections prior to constructing the section of utility contained on the grade sheet. Provision of the grade sheets shall be done via email with the following information included:

Subject Line Includes: Development Agreement Number, Construction Drawing Number, Subdivision Name, Phase Number, Developer

Example: DA2023-0009 – CD2024-0001 – Westville – 06 – ABC Developments Ltd.

File Name: Includes Development Agreement Number, Construction Drawing Number, Subdivision Name, Phase Number, Utility Type, Plan Profile Number, Grade Sheet Number (in sequential form)

Example: DA2023-0009_CD2024-0001_Westville_06_Sanitary_PP200_GS03.pdf

Full-time inspection of the infrastructure for each Development Agreement phase must be conducted by the Consulting Engineer's field inspector. This includes inspections during the installation, maintenance and deficiency work of the underground utilities.

Spot inspections are required by the Consulting Engineer's field inspector for the following items:

- Repairs to the top box, bottom box, rod, and casing for water service connections
- Repairs where there's no risk of contamination to the water supply and downstream infrastructure
- Valve rods and casing repairs for water mains
- Cathodic protection repairs
- Cleaning and flushing of both sanitary and storm systems
- Thawing of services
- Manhole adjustments and repairs
- Catch basin and lead repairs.

For inspection of water services for a park related project, the *Subdivision Utility Inspector* shall only inspect from the water main to the flange at the water meter pit. The inspection of the water meter pit and beyond shall be carried out by the Parks Development Inspector.

5.4. Site Inspection Requirements for Private Site Development

Should utility installation be required within the road right of way and is within the subdivision development boundary as per an approved Development Agreement or Development Site Servicing Permit (DSSP) (often independent from the approved subdivision drawings and often under the

direction of another consultant and developer) occur prior to the underground utilities final acceptance being secured, it is the responsibility of the developer of record and their associated subdivision consultant to provide inspection to ensure that any tie-ins and installations within the road right of way meet standard specifications. Inspection obligations are however limited to the scope of work within the road right of way only. Notification to the City and Subdivision Engineering Consultant must be at least 48 hours prior to commencement of construction and is the responsibility of the private site developer and their own consultant / representative. This inspection obligation is independent of subdivision design and approval requirements and there is no requirement for the subdivision consultant to update drawings or record information.

If the Underground Utilities related to the Development Agreement have received final acceptance from the city, a Utility Master Indemnification Agreement must be executed prior to commencement of construction/installation.

5.5. Materials Compliance and Compaction Testing

For all materials supplied, the construction and installation procedures shall comply with the current versions of the following *Standards and Specifications documents* (available on The City of Calgary's *Planning Publications site*):

- *Standard Specifications Sewer Construction*
- *Standard Specifications Waterworks Construction*
- *Stormwater Management & Design Manual*
- *Any Industry Bulletin issued after the publication date of the applicable specification*

The Consulting Engineer is responsible for ensuring that the contractor uses only approved materials and follows approved construction and installation procedures. This oversight may be carried out either directly by the Consulting Engineer or managed by the engineering consultant through an accredited materials testing consultant.

A copy of all concrete test results obtained during the underground utility installation process, as required in the design and construction specifications and standards, shall be included with the CCC inspection request. The concrete test results are required to be submitted in order for the CCC(s) for that underground utility to be acknowledged by the City.

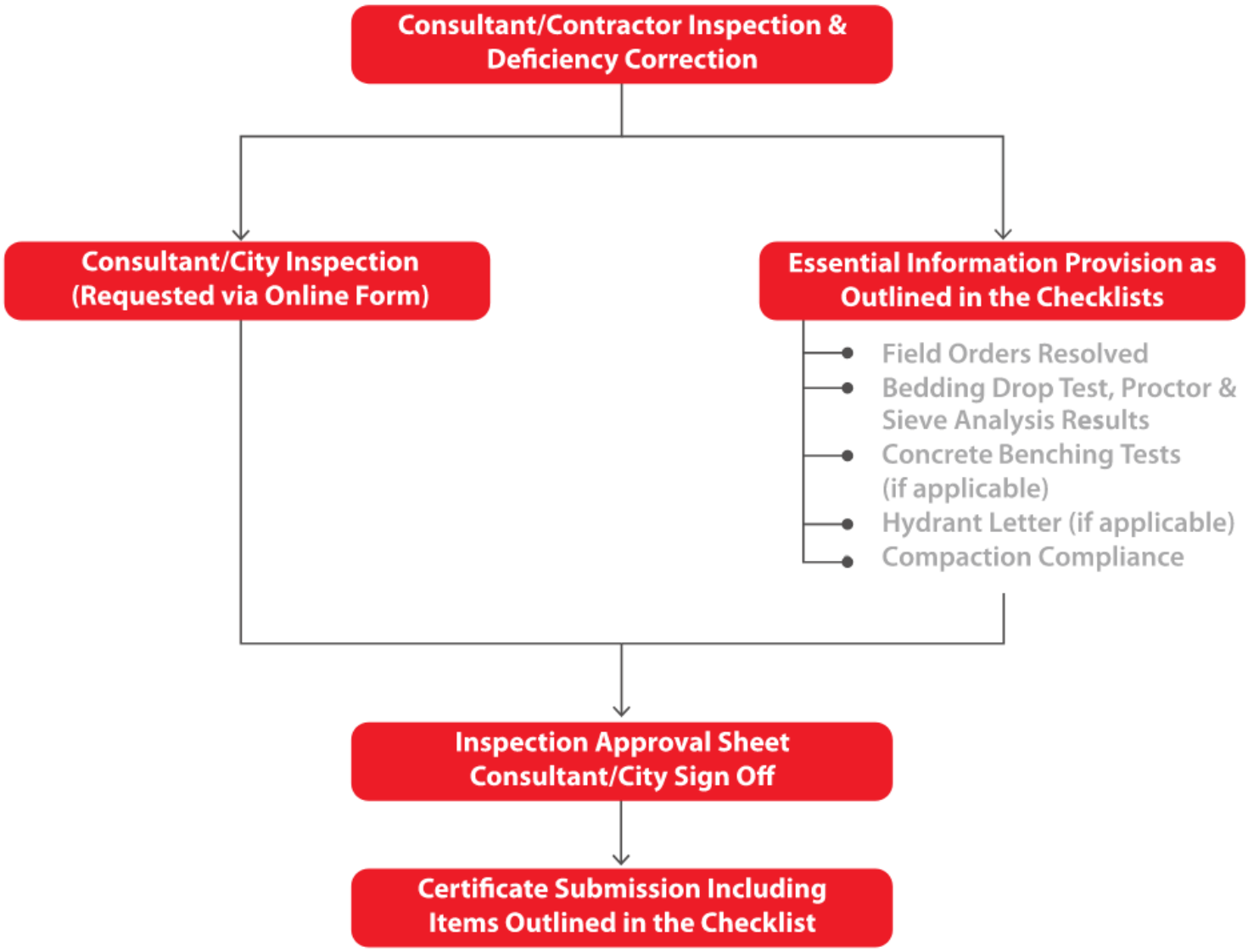
The Consulting Engineer shall ensure that the materials testing consultant retained for compaction testing has been notified and is present on-site during backfilling of the underground utility trenches, and compaction of the base for concrete drainage gutters.

After the completion of installation of all underground utilities, a report of the compaction test(s) taken shall be forwarded by the Consulting Engineer to the *Mobility – Construction and Materials – Pavement and Materials Engineering* (hereafter referred to as *"Pavement and Materials Engineering"*). If the compaction tests (or retests) meet the City's standards and specifications, the *Pavement and Materials Engineering* group will forward a letter to the Consulting Engineer advising that the tests are in compliance.

CCC

Construction Completion Certificate Steps

Sanitary & Storm Sewers, Watermains & Service Connections



5.6. Construction Completion Inspection Procedures for Utilities

After completing the construction of the specific underground utilities, the following tasks must be completed before the Consulting Engineer can submit the CCC(s) to the City:

a) Initial Inspection and deficiency Management

The Consulting Engineer shall inspect the specific underground utilities, record any deficiencies and advise the contractor to repair them. After the contractor repairs the deficiencies, the Consulting Engineer shall carry out a further inspection to ensure they are satisfied with the corrections.

b) Joint Inspection with *Subdivision Utility Inspections*

The Consulting Engineer shall request a joint inspection between the *Subdivision Utility Inspector* and the Consulting Engineer's field inspector. It is the responsibility of the Consulting Engineer to have the Contractor on site for the joint inspection, as it allows all parties to be aware of the outcome. The joint inspection is to ensure that systems are fully functional, sewers are operational, water mains are pressure tested and chlorinated, roads are open, etc. The request for a joint inspection shall be made using the *Certificate Inspection Request and Appointment Confirmation* form.

Note that in some cases (typically reinspection), the *Subdivision Utility Inspector* may determine that a joint inspection is not required and will conduct the inspection alone.

If any deficiencies are found during the joint inspection, a list of deficiencies will be recorded by the *Subdivision Utility Inspector* and a copy will be emailed to the Consulting Engineer. After the contractor has repaired the deficiencies, a further inspection shall be made by the Consulting Engineer on the deficiencies to ensure they have been corrected as required. The Consulting Engineer shall then request another joint inspection.

c) Review of Completion Checklist

Concurrent to the joint inspections, the Consulting Engineer shall obtain and submit to *Subdivision Utility Inspections* the essential and non-essential items for each utility, as prescribed within the *Construction Completion Checklist* Which includes, but not limited to, the following:

i. Resolve any outstanding subdivision development field orders issued by the *Subdivision Development Inspector* that are applicable to the underground utility, to the satisfaction of *Planning and Development Services*.
ii. The bedding material drop test and grain size analysis report.
iii. Any manhole concrete benching tests.

iv. For water mains and hydrants, the Consulting Engineer shall issue to The City of Calgary Fire Department, and copy *Planning and Development Services*, a letter that includes a plan certifying that the completed and operable hydrants constructed and located within the area are covered by the CCC. The letter and plan(s) shall be addressed to:

Community Research and Evaluation

City of Calgary Fire Department

4124 – 11 Street SE

Calgary AB T2G 3H3

Attention: Assistant Fire Marshall, and

Analytics & Mapping

The letter and plans shall be sent via email to CFD_Mapping@calgary.ca.

v. Confirmation of Underground Utilities compaction compliance, as issued by the *Mobility - Materials and Surface Restoration* - Pavement and Materials Engineering group.

After a successful joint inspection has taken place and all essential items listed in the *Construction Completion Checklist Sheet* have been completed, the *Construction Completion Inspection Approvals Sheet* specific to that utility will be completed by the *Subdivision Utility Inspector* and signed by both the inspector and the Consulting Engineer. Note that a separate *Construction Completion Inspection Approvals Sheet* is required for each underground utility.

Any outstanding paperwork, reports, or non-essential items will be noted on the *Construction Completion Inspection Approval Sheet*. All non-essential items listed must be completed within 60 days of the date the *Construction Completion Inspection Approval Sheet* is signed, unless the signing date is after September 15; in that case, the work must be completed by the following June 30, unless otherwise approved by the *Manager, Trades and Subdivision Inspections*. In the event that the non-essential items are not completed and inspected at the times noted above, the maintenance period will be deemed to begin at the actual completion / inspection date of the outstanding nonessential items, or as otherwise approved by the Manager.

5.7. CCC Submission Procedures for Underground Utilities

After the specific underground utility has passed the joint inspection and the appropriate *Construction Completion Inspection Approval Sheet* has been signed off by all parties listed, the developer (through its Consulting Engineer) shall prepare and submit the CCC. A sample of the CCC documents can be found using the **following link**. The CCC shall be duly signed, sealed, and certified by the signing officer of the Consulting Engineer.

The CCC shall be submitted to *the certificate intake e-mail, cccfac@calgary.ca*. The CCC submission package shall include the applicable items noted in the *Construction Completion Certificate Submission Checklist.*

5.8. Maintenance Subsequent to Issuance of CCCs for Underground Utilities

Once *Subdivision Utility Inspections* signs off on the CCC(s) for a specific underground utility, the developer shall be responsible for any and all repairs and replacements to that infrastructure which, in the Manager of *Trades and Subdivision Inspection's* sole opinion, may become necessary from any cause whatsoever, until the FAC for that underground utility has been accepted by the City, as set out in the terms of the DA T&C and the following *City of Calgary Specifications.*

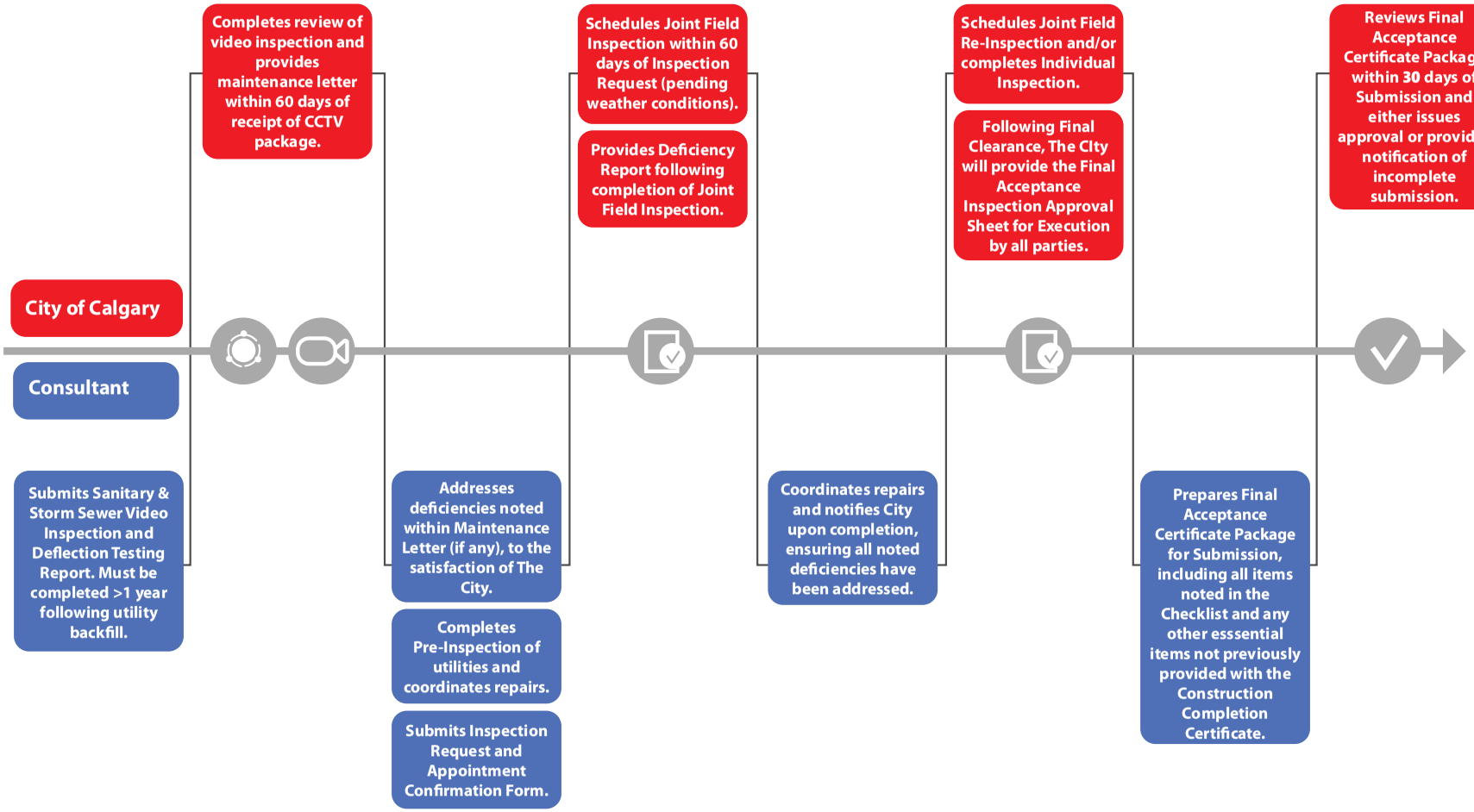
- *Standard Specifications Sewer Construction*.
- *Standard Specifications Waterworks Construction*.
- *Stormwater Management & Design Manual*.

The projected earliest maintenance period expiry date will be entered in reference to the time frame set out in the DA T&C or in the Special Clauses Agreement if the facility has been constructed such that the maintenance period is longer than what is set out in the DA T&C. The maintenance period commences from date of the CCC sign off, which is the date indicated on the *Construction Completion Inspection Approval Sheet* for the said underground utility by *Subdivision Utility Inspections*.

FAC

Final Acceptance Certificate Steps

Sanitary & Storm Sewers



5.9. Final Acceptance Inspection Procedures

Following expiry of the noted maintenance period for each utility, or as noted below, the following procedures are required prior to the Consulting Engineer submitting the FAC(s) to the City:

a) Concurrent to submitting the request for the final acceptance inspection for sewer and water connections, Service Cards for the sewer and water services are to be completed by the Consulting Engineer and submitted to *Corporate Analytics and Innovation* for approval. Service Cards are required to be approved by *Corporate Analytics and Innovation* prior to FAC being issued. The city has moved to a fully electronic process for the submission of Subdivision Service Cards, and no longer provides or accepts paper form Service Cards. Further instructions on the Electronic Service Card Submission Customer Notice, as well as the latest electronic Service Card template, can be found through The City of Calgary's website. Completed Service Card documents shall be e-mailed to WAServiceFAC@calgary.ca.

b) At the end of the developer's maintenance period **or** a minimum of one (1) calendar year following backfill of the sanitary and storm sewers, the Consulting Engineer shall submit the video inspection and deflection testing report to *Subdivision Utility Inspections* as outlined within the current *Utilities Delivery, Standards and Specifications*. *Subdivision Utility Inspections* shall complete their full review within a timeline of Sixty (60) working days and provide a maintenance letter of any required repairs and/or maintenance fees. Repairs shall be commenced as per the underground subdivision requirements, and any maintenance fees must be submitted to and processed by Development Commitments.

c) The Consulting Engineer's field inspector shall first inspect the specific underground utility, record any deficiencies, and advise the contractor to repair any noted deficiencies. After the contractor repairs the deficiencies, the Consulting Engineer's field inspector shall carry out an additional inspection, to verify that all corrections have been satisfied.

d) The Consulting Engineer may arrange a joint inspection with the *Subdivision Utility Inspector* no earlier than three months prior to the projected earliest maintenance period expiry date and following *Subdivision Utility Inspections* confirmation of the initial video report submission, using the *Certificate Inspection Request and Appointment Confirmation* form, on which it shall be indicated that the inspection is for Final Acceptance. In some cases, the *Subdivision Utility Inspector* may determine that a joint inspection is not required and will conduct the inspection alone.

e) If any deficiencies are found during the joint inspection, a list of deficiencies will be recorded on the FAC field inspection sheet by the *Subdivision Utility Inspector* and a copy will be sent via email to the Consulting Engineer. After the contractor has repaired the deficiencies, a further inspection shall be made by the Consulting Engineer on the deficiencies to ensure they have been corrected as required. The Consulting Engineer shall then request another joint inspection.

f) Following a successful joint inspection of the specific underground utility, the *Final Acceptance Inspection Approval Sheet* will be completed and signed by the *Subdivision Utility Inspector* and by the Consulting Engineer.

5.10. FAC Submission Procedures for Underground Utilities

After the specific underground utility has passed the joint inspection and the *Final Acceptance Inspection Approval Sheet* has been signed off by all parties listed, the developer, through its Consulting Engineer, shall prepare and submit the FACs. The FAC shall be duly signed, sealed, and certified by the signing officer of the Consulting Engineer. A template of the FAC documents can be found in the CEFSG form library.

The FAC shall be submitted to *the certificate intake e-mail, cccfac@calgary.ca.* The FAC submission package shall include the items noted in the applicable *Final Acceptance Certificate Submission Checklist.*

6. Surface Drainage Facilities

Surface drainage facilities consist of two components, concrete drainage gutters and grass swales.

Pre-Construction, Construction and Final Acceptance (FAC) steps shall follow the guidelines outlined in **Section 5 - UNDERGROUND UTILITIES.**

6.1. Construction Completion Inspection Procedures for Surface Drainage Facilities

The inspection procedure for surface drainage facilities shall follow the same procedure as that for underground utilities as set out in **Section 5.6** of these Guidelines. However, additional items must be inspected during the joint inspection, as follows:

a) Concrete Drainage Gutters:

The joint inspection shall require that all of the concrete drainage gutters must be completed, including all ties to the sidewalk, the sidewalk swale portion, and/or to the curbs and gutters. Water drainage slope tests will be conducted in which water is placed into the swale at the high end and let flow to the low end to identify if any ponding is present. Any ponding areas as determined by the *Subdivision Utility Inspector* are to be replaced. As there will not be an FAC inspection for the concrete drainage gutters, any damage to the concrete drainage gutters must also be replaced at the CCC stage.

It is recommended that the CCC inspections be completed as early as possible, as access will be affected as the development phase is built out.

b) Grass Swales:

The joint inspection of the grass swale portion at the CCC stage ensures that the swales have been sloped and graded in accordance with the approved construction drawings. The inspection of the grass swales will also be made at the FAC inspection stage for surface drainage facilities.

Note also that any required emergency escape routes must be constructed to the approved elevations and grades and must be functional prior to joint inspection.

7. Stormwater Storage Facilities

Stormwater storage facilities include, but are not limited to wet ponds, dry ponds, and/or wetlands. The specifications and standards for design, materials, installation, and inspection of the underground utilities are to follow the DA T&C, the Design Guidelines for Subdivision Servicing, Sewer Specifications and the Stormwater Management and Design Manual.

The CEFSG outlines the Surface Storage Facilities inspection process with the Subdivision Utility Inspections group only. Water Resources, Development Approvals Inspection Approval Sheet is also required. (Water Resources, Development Approvals is now Planning and Development–Development Engineering Utility Specialist (DEUS) For the information on this process as well as to request field inspections please see Pond submission and approval process. For other inquiries please contact wa-resourcesdevelopmentapprovals@calgary.ca.

All required provincial and federal approvals related to stormwater faculties and related outfalls are the responsibility of the consultant.

7.1. Notification to Construct Stormwater Facilities

After receiving City approval for permission to construct stormwater storage facilities, the Consulting Engineer or contractor assigned by the developer shall notify *Subdivision Utility Inspections* using the *Construction Commencement Notification* form.

Notification shall be made at least 48 hours prior to the start of construction. If construction commences prior to obtaining construction permission from the City, a stop work order as outlined in Section 3.5 of these Guidelines will be issued. Re-notification for inspection is required after 48 hours of construction inactivity, excluding Saturdays, Sundays, and statutory holidays.

7.2. Pre-Construction Meeting (Optional)

Following submission of the *Construction Commencement Notification*, the Consulting Engineer may request a pre-construction meeting to discuss and address items of importance, including:

- Project schedule and scope, including potential staged construction
- Project staffing (City, consultant & contractors) and chain of command
- Potential drawing revisions, as prescribed by City circulation comments

7.3. Active Construction Site Inspection of Stormwater Storage Facilitities

The City is divided into utility inspection zones for each *Subdivision Utility Inspector.* The zone boundaries and contact information for the corresponding *Subdivision Utility Inspector* can be found on the Subdivision Utility Inspections Area Map.

The Consulting Engineer shall supply to the appropriate *Subdivision Utility Inspector* one copy of the grade sheets for all storm sewers, irrigation mains, and other utilities if present prior to constructing the section of utility contained on the grade sheet. Provision of the grade sheets shall be done via email to the assigned *Subdivision Utility Inspector* with the following information included:

Subject Line: Includes Development Agreement Number, Construction Drawing Number, Subdivision Name, Phase Number, Developer

Example: DA2023-0009 – CD2024-0001 – Westville – Storm Pond A – ABC Developments Ltd.

File Name: Includes Development Agreement Number, Construction Drawing Number, Subdivision Name, Phase Number, Utility Type, Plan Profile Number, Grade Sheet Number (in sequential form)

Example: DA2023-0009_CD2024-0001_Westville_Storm_Pond_A_Storm_PP200_GS03.pdf

Full-time inspection of the project by the Consulting Engineer's field inspector shall be provided during the installation and maintenance work of the Stormwater Storage Facility Infrastructure. Spot inspections are required by the Consulting Engineer's field inspector for the following items within the surface drainage facility:

- Repairs to the top box, rod, and casing for outlet control structures.
- Cleaning and flushing of storm systems.
- Manhole adjustments and repairs.
- Catch basin and lead repairs.

Inspections over and above the minimum requirements outlined in this manual will be at the discretion of the Consulting Engineer. Full-time inspection is required by the Consulting Engineer during the reinstallation of sewer services, sewer mains, and sewer surface appurtenances repairs.

For inspection of water services for a park related project, the *Subdivision Utility Inspector* shall only inspect from the water main to the flange at the water meter pit. The inspection of the water meter pit and beyond shall be carried out by the Parks Development Inspector.

7.4. Materials Compliance and Compaction Testing

All materials supplied and the construction and installation procedures shall comply with the current versions of the following *Standards and Specifications documents*:

- *Standard Specifications Sewer Construction*
- *Standard Specifications Waterworks Construction*
- *Stormwater Management & Design Manual*
- *Roads Construction Standard Specifications*

The Consulting Engineer shall ensure that the contractor is using only approved materials and employing only approved construction and installation procedures.

A copy of all concrete test results obtained during the underground utility installation process, as required in the design and construction specifications and standards, shall be included with the CCC inspection request. The concrete test results are required to be submitted in order for the CCC(s) for that underground utility to be acknowledged by the City.

The Consulting Engineer shall ensure that the consultant retained for compaction testing has been notified and is on site during backfilling of the underground utility trenches, compaction of the base for concrete drainage gutters, and compaction of stormwater wet ponds.

After the completion of installation of all underground utilities, a report of the compaction test(s) taken shall be forwarded by the Consulting Engineer to the *Mobility – Construction and Materials – Pavement and Materials Engineering* group for review (hereafter referred to as "*Pavement and Materials Engineering*"). If the compaction tests (or retests) meet the City's standards and specifications, the *Pavement and Materials Engineering* group will forward a letter to the Consulting Engineer advising that the tests are in compliance.

7.5. Construction Completion Inspection Procedures for Stormwater Storage Facilities

After completion of construction of the Stormwater Storage Facilities, the consultant will complete the following tasks:

a) Initial Inspection and deficiency Management

The Consulting Engineer shall inspect the specific underground utilities, record any deficiencies and advise the contractor to repair them. After the contractor repairs the deficiencies, the Consulting Engineer shall carry out a further inspection to ensure they are satisfied with the corrections.

b) Inspection with Subdivision Utility

The Consulting Engineer shall arrange a joint inspection between the *Subdivision Utility Inspector* and the Consulting Engineer's field inspector. The joint inspection is to ensure that systems are fully functional, sewers are operational, water mains are pressure tested and chlorinated, roads are open, etc. The request for a joint inspection shall be made using the *Certificate Inspection Request and Appointment Confirmation* form.

Note that in some cases, the *Subdivision Utility Inspector* may determine that a joint inspection is not required and will conduct the inspection alone.

If any deficiencies are found during the joint inspection, a list of deficiencies will be recorded by the *Subdivision Utility Inspector* and a copy will be emailed to the Consulting Engineer. After the contractor has repaired the deficiencies, a further inspection shall be made by the Consulting Engineer on the deficiencies to ensure they have been corrected as required. The Consulting Engineer shall then request another joint inspection.

c) Review of Completion Checklist

Concurrent to the joint inspections, the Consulting Engineer shall obtain and submit to *Subdivision Utility* the essential and non-essential items for each utility, as prescribed within the *Construction Completion Checklist* Which includes, but not limited to, the following:

i. Resolve any outstanding subdivision development field orders issued by the *Subdivision Development Inspector* that are applicable to the underground utility, to the satisfaction of *Planning and Development Services*.
ii. The bedding material drop test and grain size analysis report.
iii. Any manhole concrete benching tests.

7.5.1. Inspection of Stormwater Facility Prior to bringing online

To prevent the need for later pumping / draining of the stormwater storage facility, it is recommended that the Consulting Engineer complete an initial inspection with *Subdivision Utility Inspections* for *Operational performance of submerged elements,* and complete the asbuilt survey **prior** to the CCC inspection stage and **before** water is allowed to enter the stormwater storage facility:

After a successful joint inspection with the *Subdivision Utility Inspector*, the *Construction Completion Inspection Approval Sheet for Stormwater Facilities – Inspection Services* will be signed by the *Subdivision Utility Inspector* and the Consulting Engineer. It should be noted on the form if any paperwork, reports, and non-essential items are outstanding.

7.6. CCC Submission Procedures for Stormwater Storage Facilities

After the specific Stormwater Storage Facility has passed the joint inspection and both *Construction Completion Inspection Approval Sheet for Stormwater Facilities – Inspection Services* as well as *Construction Completion Inspection Approval Sheet for Stormwater Facilities – Development Approvals (DE-US)* have been signed off by all parties listed, the developer (through its Consulting Engineer) shall prepare and submit the CCC. A sample of the CCC documents can be found using the **following link**. The CCC shall be duly signed, sealed, and certified by the Engineer of Record of the Consulting Engineer.

The CCC shall be submitted to *the certificate intake e-mail, cccfac@calgary.ca*. The CCC submission package shall include the applicable items noted in the *Construction Completion Certificate Submission Checklist.*

7.7. Maintenance Subsequent to Issuance of CCCs for Stormwater Storage Facilities

Once the City acknowledges the CCC(s) for the stormwater storage facility, the developer shall be responsible for any and all repairs and replacements to that infrastructure which, in the Manager's sole opinion, may become necessary from any cause whatsoever, until the FAC for the stormwater storage facility has been accepted by the City, as set out in the terms of the DA T&C and the following *Planning and Development Services* specification documents:

- *Standard Specifications Sewer Construction*.
- *Standard Specifications Waterworks Construction*.
- *Stormwater Management & Design Manual*.
- *Roads Construction Standard Specifications.*

The projected earliest maintenance period expiry date will be entered in reference to the time frame set out in the DA T&C or in the Special Clauses Agreement if the facility has been constructed such that the maintenance period is longer than what is set out in the DA T&C. The maintenance period commences from date of CCC being issued by *Subdivision Utility Inspections*, which is the date indicated on the *Construction Completion Inspection Approval Sheet* for the said stormwater storage facility.

7.8. Final Acceptance Inspection Procedures for Stormwater Storage Facilities

The FAC inspection procedure for storm water storage facilities shall be made in the same manner as the CCC inspection procedure for storm water storage facilities as set out in Section 7.5. of these Guidelines.

In line with *Section 5.9, bullet C*, the video inspection and deflection testing report is required for Stormwater Storage Facilities. For runs of pipe that are submerged (by design) at the FAC stage, video captured prior to the Storm Storage Facility becoming operational will be accepted.

7.9. Final Submission Procedures for Stormwater Storage Facilities

After the specific Stormwater Storage Facility has passed the joint inspection and both *Construction Completion Inspection Approval Sheet for Stormwater Facilities – Inspection Services as well as Construction Completion Inspection Approval Sheet for Stormwater Facilities – Development Approvals (DE-US)* signed off by all parties listed, the developer, through its Consulting Engineer, shall prepare and submit the FACs. The FAC shall be duly signed, sealed, and certified by the signing officer of the Consulting Engineer. A template of the FAC documents can be found on the CEFSG page.

The FAC shall be submitted to *the certificate intake e-mail, cccfac@calgary.ca*. The FAC submission package shall include the items noted in the applicable *Final Acceptance Certificate Submission Checklist.*

8. Surface Improvements

Surface Improvements include, but are not limited to, sidewalks, curbs, gutters, catch basins and leads, regional pathways, paved roads, paved lanes, paved walkways, multi-use pathways, graveled lanes, sound attenuation, and screening fencing.

8.1. Notification to Construct Surface Improvements

After receiving City approval for permission to construct the surface improvements, the Consulting Engineer shall notify the Trades and *Subdivision Inspections – Subdivision Surface* group (hereafter referred to as '*Subdivision Surface*') using the *Construction Commencement Notification* form, which is available on the CEFSG website.

Notification to the Subdivision Surface *Subdivision Officer* (hereafter referred to as "Subdivision Officer") shall be made at least 48 hours prior to the start of construction of each surface improvement. If construction commences prior to obtaining construction permission from the City, a stop work order as outlined in Section 3.5 of these Guidelines will be issued. Re-notification for inspection is required after 48 hours of construction inactivity, excluding Saturdays, Sundays, and statutory holidays.

8.2. Pre-Construction Meeting (Optional)

Following submission of the Construction Commencement Notification, the Consulting Engineer may request a pre-construction meeting with the *Subdivision Officer* to discuss and address items of importance, including:

- Project schedule and scope, including potential split construction.
- Project staffing (City, consultant & contractors) and chain of command.
- Potential drawing revisions, as prescribed by City circulation comments.

8.3. Active Construction Site Inspection of Surface Improvements

The City is divided into zones for *Subdivision Surface* inspection purposes. The zone boundaries and contact information for the corresponding *Subdivision Officer* can be found using the **following link**.

The inspection of the catch basins and leads is under the jurisdiction of *Subdivision Utility Inspections.* When catch basins and leads are to be installed, construction notification must also be forwarded to the *Subdivision Utility Inspections* group using the same process as outlined in Section 5.1 of these Guidelines. Please note that *Subdivision Utility Inspections* requires notification a minimum 48 hours in advance of construction.

Full-time Inspection by the Consulting Engineer and/or the Consulting Engineer's field inspector is required when more than 3 m^3 of Portland cement concrete is to be poured for sections of sidewalk, curbs, and gutters, including replacement or maintenance, to the extent that it can be confirmed

that it matches the approved drawings and standard specifications. The level of inspection required when less than 3 m^3 of Portland cement concrete is to be poured for sidewalks, curbs, and gutters shall be determined by the Consulting Engineer.

Full-time Inspection by the Consulting Engineer shall also be provided when placing more than 15 tonnes of asphaltic materials for roads, lanes, and walkways, to the extent that it can be confirmed that it matches the approved drawings, standard specifications and approved road structure.

The Consulting Engineer is advised of the following requirements:

- Material testing required during the placement of any granular fill – including areas beneath the sidewalks, curbs and gutters, walkways, and roadways – shall be in compliance with the latest *Roads Construction Standard Specifications*.
- Prior to asphalt level coursing, the Consulting Engineer shall prepare a report regarding repairs to settlement of utility trenches and other base failures. The extent of the inspection during level coursing will be determined by the Consulting Engineer.
- Inspection and quality control reports for roads, lanes, and walkways shall consist of compaction certificates and, where required by the Consulting Engineer, asphalt pavement core logs for thickness determination.
- The Consulting Engineer shall check the base, subbase, and subgrade and arrange for soil density tests as necessary to certify adherence to *Roads Construction Standard Specifications*, and approved road structure to include subdrains.
- The Consulting Engineer shall arrange for compaction and density tests of fills and embankments during construction.
- The Consulting Engineer shall provide spot inspection for sound attenuation and screening fencing, to ensure the installation and materials conform to the City standards, and specifications are being adhered to.

8.4. Material Compliance and Compaction Testing

Concrete and asphalt material compliance testing will be completed by the testing consultant(s) hired by the City's *Senior Pavement and Materials Engineer* in the *Mobility Construction and Materials – Pavement and Materials Engineering* (Hereafter referred to as *"Pavement and Materials Engineering"*) group. *Pavement and Materials Engineering* will forward any information relating to non-compliant materials and required corrective action to the Consulting Engineer.

Standard Proctor density compaction compliance testing of backfill and pavement structure materials shall be conducted by an accredited testing company as required under the DA T&C and in compliance with The City of Calgary *Standard Specifications Waterworks / Sewer Construction*, and *Roads Construction Standard Specifications*.

8.4.1. Request for Compliance Testing

The Consulting Engineer (or the contractor assigned by the developer) shall notify *Pavement and Materials Engineering* through the Online Submission Form for any upcoming surface work that requires compliance testing. Notification shall be made no later than 3:00 PM of the preceding working day.

The cost of the materials compliance testing will be distributed to the appropriate subdivisions on the basis of materials placed. A portion of these costs for the testing is recovered from the developer's assessments inspection fee.

Upon completion of all asphalt and concrete work, the Consulting Engineer shall request in writing a statement of the findings of the materials compliance testing from *Pavement and Materials Engineering*. The request shall include the subdivision name and phase, developer and contractor names, the last date of construction for concrete and asphalt, a map of the area, and a statement from the Consulting Engineer indicating that the work is complete.

Pavement and Materials Engineering shall reply in writing to the Consulting Engineer that either all materials are compliant or indicate the areas of non-compliance and the necessary corrective actions.

Notwithstanding the above, the Consulting Engineer may contact the *Pavement and Materials Engineering* group at any time regarding the compliance of materials used in a specific area. The Consulting Engineer shall, upon request, provide the *Pavement and Materials Engineering* group with dates of placement and quantities of materials placed for the purpose of assessment of material compliance.

The Consulting Engineer shall ensure that all necessary corrective actions for non-compliance are to be completed prior to the issuance of any CCC.

8.4.2. Testing Performed by the City's Contracted Testing Firm

8.4.2.1. Concrete – Portland Cement

One test is taken per day per supplier or at a frequency as determined by the Manager. Each test consists of testing of the concrete for slump, air content, and casting of three cylinders for compressive strength (28 days from casting), subject to cold weather and/or late season requirements. The developer shall provide for additional testing as deemed appropriate by the Consulting Engineer and The City of Calgary.

8.4.2.2. Asphaltic Concrete

Prior to the use of any asphaltic hot mix, the Consulting Engineer (or the contractor assigned by the developer) shall arrange a 60-kg sample of the asphaltic hot mix for the *Pavement and Materials Engineering* group to test. The *Pavement and Materials Engineering* group shall arrange for the sample to be tested in order to determine the asphalt cement content, gradation, and Marshall properties of the sample. If the results of the sample tests comply with the requirements and specifications of the City, the asphalt hot mix will be considered acceptable mix.
Asphaltic hot mix is sampled at the site from the mat or hopper at least once per week for every major mix. A major mix is defined as one that is produced by a supplier for a day or more. The cost of the hot mix analyses is distributed among the users of the particular product on the basis of tonnage (i.e. between developers and City contractors). The sample is analyzed for aggregate gradation, A.C. gauge, and Marshall properties.

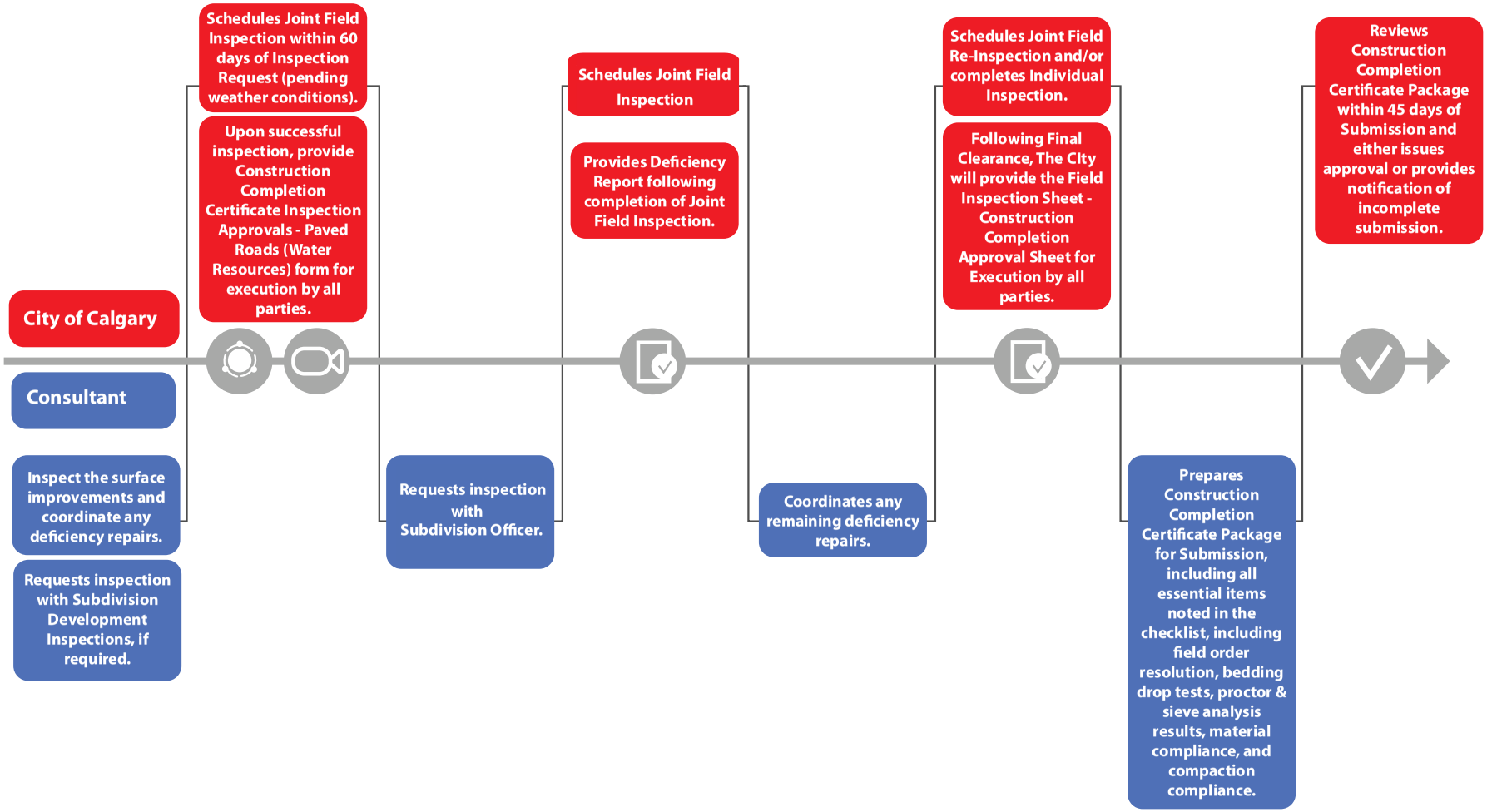
The Consulting Engineer shall note the following:

- Asphaltic cement content testing with a nuclear A.C. gauge and density testing with a nuclear density gauge is done on a daily basis.
- The frequency of testing will be determined by the *Pavement and Materials Engineering* and/or *Subdivision Inspections* Manager to ensure compliance to the specifications.
- Laboratory verification of the results is necessary before action can be taken where non-compliance is indicated for A.C. content.
- Extensive coring is done early in the construction season to calibrate the nuclear density gauges, or as required as per the manufacturer's guidelines. Occasional coring is done throughout the year to verify results.
- If the *Pavement and Materials Engineering* group is not notified by the Consulting Engineer (or the contractor assigned by the developer) in advance of paving, the pavement shall be deemed non-compliant until verified by testing at the developer's expense.
- Additional testing may be done at the discretion of the Consulting Engineer and at the developer's expense.

CCC

Construction Completion Certificate Steps

Sidewalks, Curbs and Gutters, Catch Basins and Leads, Regional Pathways, Paved Roads, Paved Lanes, Paved Walkways, Gravelled Lanes, Sound Attenuation, and Screen Fencing



8.5. Construction Completion Inspection Procedures for Surface Improvements

After completing the construction of the specific surface improvements, the following tasks must be completed before the Consulting Engineer can request a joint inspection with the *Subdivision Officer*:

a) Initial Inspection and Deficiency Management

The Consulting Engineer shall inspect the specific surface improvements, record any deficiencies and advise the contractor to repair them. After the contractor repairs the deficiencies, the Consulting Engineer shall carry out a further inspection to ensure they are satisfied with the corrections.

b) Resolution of Field Orders

All subdivision development field orders issued by *Subdivision Inspections – Subdivision Surface* that are applicable to the surface improvement must be resolved to the satisfaction of the issuing inspector.

c) CCC completion of *Subdivision Utility Inspections - Surface* Items

The engineering consultant shall have the completed *Subdivision Utility – Surface* CCC available to be provided to the *Subdivision Officer*. The *Subdivision Utility – Surface CCC* process is outlined in Section 5.6 of these guidelines.

d) Review of Completion checklists

The Consulting Engineer shall review the applicable *Construction Completion Checklist Sheets,* found using the **following link**. The checklists include the essential and non-essential items for *Subdivision Inspections – Subdivision Surface*. All essential items must be completed prior to submitting the CCC(s), and all non-essential items shall be resolved within 60 days of the CCC, or if installed after September 15, must be resolved prior to June 30 in the year following the date of the CCC application, unless otherwise approved by the *Manager, Trades and Subdivision Inspections*. In the event that the non-essential items are not completed and inspected at the times noted above, the maintenance period will be deemed to begin at the actual completion/inspection date of the outstanding non-essential items, or as otherwise approved by the *Manager, Trades and Subdivision Inspections*.

Once all tasks are completed, the Consulting Engineer shall contact the *Subdivision Officer* to request an inspection for the Subdivision Surface CCC(s) of the specific surface improvements.

After the joint inspection of the specific surface improvements have been completed and the work has been accepted by the *Subdivision Officer*, the *Field Inspection Sheet - Construction Completion* (found using the **following link**) will be completed and signed by the *Subdivision Officer* and the Consulting Engineer.

When construction of a portion of a specific surface improvement is delayed due to conflict with shallow utility installations, the Consulting Engineer may submit a CCC for that specific surface improvement and that portion may be omitted under the conditions contained in the DA T&C. The

Consulting Engineer must first request for an approval from the Manager for the omitted portion. The conditions and time frame to complete the omitted portion(s) shall be specified in the request. If approved, the approval letter and plan showing the location of the omitted section(s) must be attached to the CCC for that specific surface improvement.

8.6. CCC Submission Procedures for Surface Improvements

After the specific surface improvement has passed the joint inspection and the *Field Inspection Sheet – Construction Completion* has been signed off by all parties listed, the developer, through its Consulting Engineer, shall prepare and submit the CCC(s). The CCC shall be duly signed, sealed, and certified by the signing officer of the Consulting Engineer. A sample of the CCC documents can be found using the **following link**.

The CCC shall be submitted to *the certificate intake e-mail, cccfac@calgary.ca.* The CCC submission package shall include the items noted in the applicable *Construction Completion Certificate Submission Checklist*.

8.7. Maintenance of the Surface Improvements Subsequent to Issuance of the CCC

Once the City acknowledges the CCC(s) for a specific surface improvement, the developer shall be responsible for any and all repairs and replacements to the infrastructure, which may, in the *Manager of Trades and Subdivision Inspections* sole opinion, become necessary from any cause whatsoever, until the FAC for that surface improvement has been accepted by the City, as set out in the terms of the DA T&C and *Roads Construction Standard Specifications*.

The maintenance period commences from the date the *Subdivision Officer* signs the *Field Inspection Sheet – Construction Completion* for the said surface improvement.

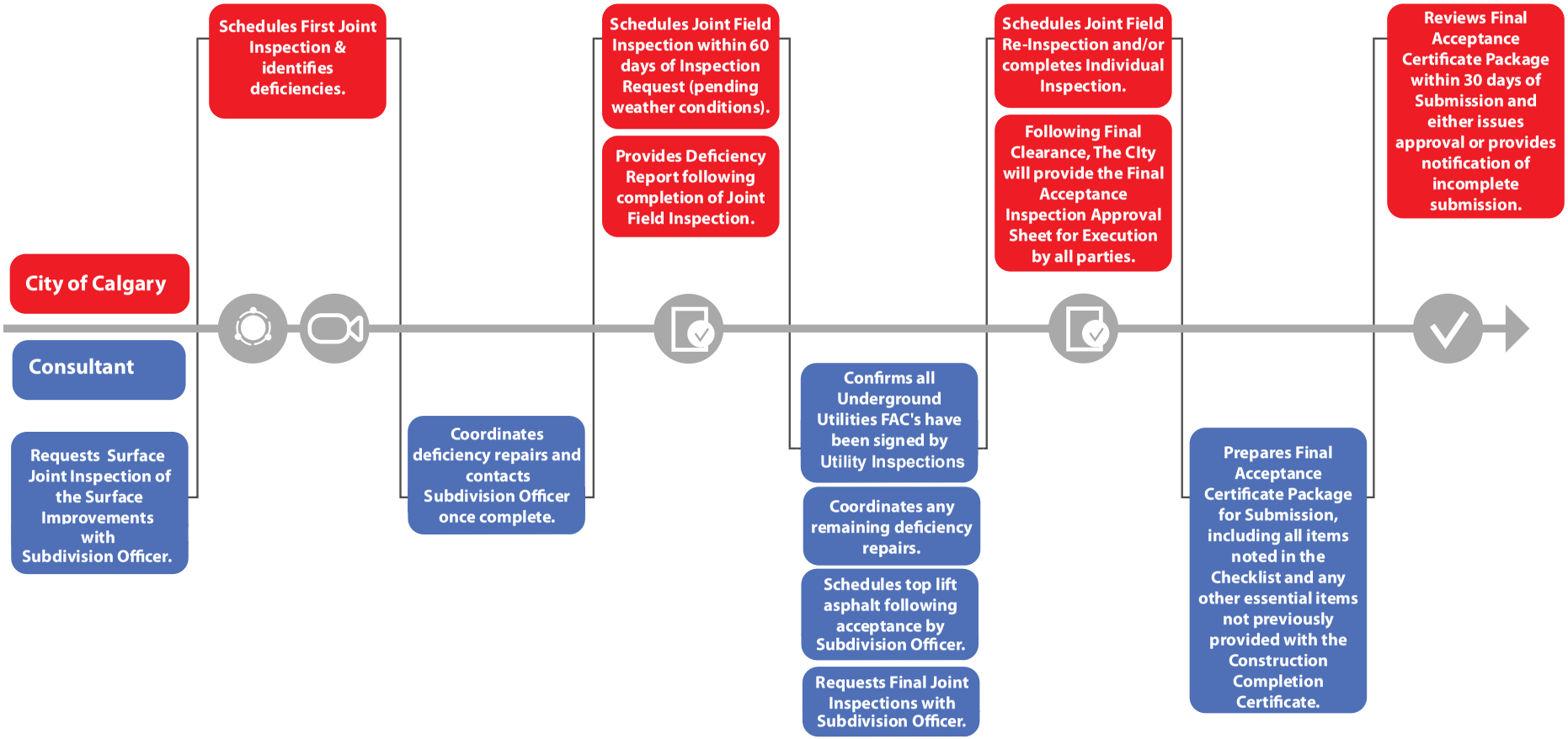
During the maintenance period the Consulting Engineer shall inspect the subdivision on a regular basis and note any failures, settlements or other deficiencies in the work as well as respond to any "complaint" calls forwarded by the City to the Consulting Engineer.

Should there be any major failures, settlements or other deficiencies, the Consulting Engineer shall arrange for the contractor to undertake the repair in an expeditious manner.

FAC

Final Acceptance Certificate Steps

Sidewalks, Curbs and Gutters, Catch Basins and Leads, Regional Pathways, Paved Roads, Paved Lanes, Paved Walkways, Gravelled Lanes, Sound Attenuation, and Screen Fencing



8.8. FAC Inspection Procedure for Surface Improvements

Following the expiry of the noted maintenance period for each surface improvement, or up to three months prior if permitted by the *Subdivision Officer*, the following tasks are required to be completed before the Consulting Engineer submits the FAC(s) to the City:

a) Joint Inspection in Field

The Consulting Engineer shall contact the *Subdivision Officer* to schedule a joint inspection to determine deficiencies that will require the repair or replacement of the surface improvement based on the maintenance standards and specifications of the *Roads Construction Standard Specification*.

There are usually two joint inspections for surface improvements. In the first joint inspection the deficiencies are identified and marked by the *Subdivision Officer*. After the contractor has corrected the deficiencies the Consulting Engineer shall contact the *Subdivision Officer* to request the second joint inspection.

b) Top Lift Installation

After the joint inspections of surface improvements have been completed and the work has been accepted by the *Subdivision Officer*, and all *Subdivision Utility – Underground* FAC's have been signed by *Subdivision Inspections - Utility*, top lift asphalt paving related to the paved roads may be placed.

c) FAC Completion of *Subdivision Utility – Surface* items

The engineering consultant shall have the completed *Subdivision Utility – Surface* FAC available to be provided to the *Subdivision Officer*. The *Subdivision Utility – Surface* FAC process is outlined in Section 5.9 of these Guidelines.

d) Final *Subdivision Surface* joint FAC Inspection

Once all documentation is accounted for, the Consulting Engineer shall then contact the *Subdivision Officer* for a joint inspection.

Following a successful joint inspection with the *Subdivision Officer*, the *Final Acceptance Field Inspection Sheet* (found using the **following link**), with the required attachments, will be signed by both the *Subdivision Officer* and the Consulting Engineer.

8.9. FAC Submission Procedures for Surface Improvements

The FAC shall be submitted to the *certificate intake e-mail,* cccfac@calgary.ca. The FAC submission package shall include the items noted in the applicable *Final Acceptance Certificate Submission Checklist*.

8.9.1. Top Lift Asphalt Security

As per Clause 18.05 of the DA T&C, the developer shall submit to the City additional security after the top lift asphalt is completed for the following roadways:

- Major / Arterial Roads – A performance security bond for a period of two years
- Other Road Categories – A performance security bond for a period of one year if the road is top lift paved after September 15.

Note that as per PART 22 (6)(e)(iii) of the DA T&C, the final top lift asphalt shall be subject to the requirements under PART 18 (Security) and Part 23 (Maintenance).

The amount of the security, as per 18.05 (1) of the DA T&C, shall be equal to the estimated per square meter cost of the top lift asphalt, asphalt planing, and tack coat, all as based on the Unit Rate Schedule in effect at the time the final top lift asphalt is placed, plus a 5% engineering fee and a 5% administration fee.

The performance security bond must be submitted to Development Commitments prior to the approval of the FAC for paved roads.

8.9.2. Builder Damage Security Deposit

In order to provide the information required for the builder damage security performance as set out under Clause 18.06 of the DA T&C, the Consulting Engineer and the *Subdivision Officer* shall, at the final acceptance field inspection stage for sidewalks, curbs, and gutters, undertake an undeveloped or damaged lot inventory. The Consulting Engineer shall indicate in red on the legal plan of the subdivision phase, all the undeveloped or damaged lots located within the boundaries of the subdivision phase. This plan shall be included as part of the sidewalk, curb, and gutter FAC package submitted to the City.

The builder damage performance security posted by the developer may be reduced as the lots are developed. The review for the performance security reduction is made at any time or upon completion of the last documented outstanding lot.

8.10. Street Lighting

Street lighting procedures are not included in these Guidelines but are set out in The City of Calgary *Standard Specifications, Street Lighting Construction* which outlines in detail the processes and requirements that are required from all consultants and contractors to adhere to when performing street lighting work. This also includes the CCC and FAC procedures and process. See also Part 15 (Street Lighting, Walkway Lighting and Reserve Pathway Lighting) in the DA T&C for additional procedures and requirements pertaining to Street Lighting, Walkway Lighting and Reserve Pathway Lighting.

9. Parks Infrastructure Improvements

Parks Infrastructure Improvements include, but are not limited to, trees, shrubs, grass, playground equipment, paved or interlocking stone walkways, hardscaping, fencing and irrigation which would be located in Environmental Reserves (ERs), Municipal Reserves (MRs), Public Utility Lots (PUL), or the road right of way (Boulevards, Medians and traffic circles).

9.1. Notification to Construct Parks Infrastructure

After receiving City approval for permission to construct the Parks Infrastructure, the developer's landscape consultant shall notify the *Trades and Subdivision Inspections – Subdivision Parks* group (hereafter referred to as '*Subdivision Parks'*) using the *Parks Inspection Request* form and select Pre-Construction/Start-Up request. The landscape consultant shall select the appropriate *Parks Development Inspector* based on *Subdivision Park's* Area Map.

Notification to the *Parks Development Inspector* shall be made at least 48 hours prior to the start of any construction activity on site. If construction commences prior to obtaining construction permission from the City, a stop work order as outlined in Section 3.5 of these Guidelines will be issued. Re-notification for inspection is required after 48 hours of construction inactivity, excluding Saturdays, Sundays, and statutory holidays.

9.2. Pre-Construction Meeting

Following submission of the Pre-construction/start-up request, the *Parks Development Inspector* will contact the landscape consultant to schedule a pre-construction meeting. The pre-construction meeting is to discuss and address items of importance, including:

- Project schedule and scope, including potential split construction.
- Provide hard copies of the approved Landscape Construction Drawings (if required).
- Project staffing (City, consultant & contractors) and chain of command.
- Potential drawing revisions, as prescribed by City circulation comments.

9.3. Active Construction Site Inspection of Parks Infrastructure

The City is divided into zones for *Subdivision Parks* inspection purposes. The zone boundaries and contact information for the corresponding *Parks Development Inspector* can be found using the **following link**.

Full-time inspection by the Landscaping Consultant is required during active site construction/installation of parks infrastructure. The *Parks Development Inspector's* availability for active construction, CCC and FAC inspections will be during regular business hours, Monday to Friday each week, excluding holidays.

While the Parks Development Inspector will regularly visit the site during active construction, there are five critical stages of construction which are required to be inspected and cleared by the inspector:

a) Construction Start Up
b) Subgrade and Playground Drainage
c) Tree and Shrub Planting
d) Irrigation
e) Finish Grade, Playgrounds and Amenities

The developers landscaping consultant, contractors and the City's *Parks Development Inspector* shall be in attendance at each of the critical stage inspections.

As these critical stages of construction are completed and inspected, the *Parks Development Inspector* and landscaping consultant will sign off on the inspection on the construction completion checklist and CCC report. A template of the report can be found in the CEFSG document library.

Essential and non-essential deficiencies will be recorded during each inspection stage. All essential deficiencies are required to be completed prior to the *Parks Development Inspector* signing off on the construction completion checklist and CCC report.

9.4. Construction Inspection Schedules

The following schedules are required to be adhered to prior to sign off of the construction completion checklist by the Parks Development Inspector.

9.4.1 Construction Inspection Schedule 1

This schedule is applicable to:

- Sub-neighborhood, Neighborhood, Community, and Linear Parks
- Employment Centre Open Space
- Community Squares
- Commercial Plazas
- Stormwater Ponds
- R/Ws.

Note: Approved plans required prior to work commencement.

Work Inspected	Seasonal Limits	Timing	% Essential Prior to CCC Approval
Site Layout, Grades, Topsoil, and Turf			
Layout P.L. Stakes	6" frost and/or no snow	Inspection 1	100
Erosion/Sediment Controls	None	Inspection 1	100
Survey Stakes - Grades	6" frost and/or no snow	Inspection 2	100
Sub-grade Preparation	6" frost and/or no snow	Inspection 2	100
Site Layout (i.e. pathways, trails, trees, amenities, sports fields, playgrounds etc.)	6" frost and/or no snow	Inspection 2	100
Topsoil Test	None	Inspection 3	100
Finished Grade to Plan and Spec.	Frost Free	Inspection 5	100
Seeding	Frost Free	Inspection 5	100
Sodding	Frost Free	Inspection 5	100

Work Inspected	Seasonal Limits	Timing	% Essential Prior to CCC
Compaction Reports	None	Inspection 5	Within 60 days of date on *Construction Inspection Checklist & CCC Report*
Trees/Shrubs			
Line Assignment	None	Inspection 1	100
Tree/Shrubs Pits/Beds	None	Inspection 3	100
Correct Number and Species	None	Inspection 4	100
Rootball/Caliper Standards Met	Frost Free	Inspection 4	100
Trees Planted at Specified Grade	Frost Free	Inspection 4	100
CNLA Specifications Met	Frost Free	Inspection 4	100
Insect/Disease/Damage Free	Active Growth	Inspection 4	100
Set back Spacing	No Snow	Inspection 4	100
Burlap Strapping/Wires Removed or Rolled Back	Frost Free	Inspection 5	100
Irrigation			
Plumbing Permit	At irrigation layout	Inspection 2	100
Irrigation Layout	6" frost and/or no snow	Inspection 2	100
Meter Received by Contractor and Meter information sheet is submitted	Sept. 30th or permission from Wastewater	Inspection 4	100
Open Trench Inspection	Frost Free	Inspection 4	100
Two Copies Preliminary As-built	None	Inspection 5	2 weeks prior to CCC Inspection
Annual DCV Report	Within 30 days of start-up	Inspection 5	100
Pathways & Trails			
Pathway Alignment	6" frost and/or no snow	Inspection 2	100
Trail Alignment	6" frost and/or no snow	Inspection 2	100
To Approved Plan and Specification	No snow	Inspection 5	100
Compaction Reports	No snow	Inspection 5	100
Playgrounds			
Pre-Concrete Inspection (Layout)	At Site Layout	Inspection 2	100
Drainage System	No Snow	Inspection 2	100
Surfacing Subgrade and Installation	Frost Free / No Snow	Inspection 3	100
gMax and HIC Triax Testing	No snow	Inspection 5	100
Fall Surface Materials Certificate	Prior to CCC	Inspection 5	100

Work Inspected	Seasonal Limits	Timing	% Essential Prior to CCC
To Approved Plan and Specification	No snow	Inspection 5	100
Certificate of Compliance Letter	Prior to CCC	Inspection 5	100
Prior to Use Inspection	Frost Free	Inspection 5	100
Amenities			
To Approved Plan and Specification	No snow	Inspection 5	Prior to FAC
Executed Maintenance Agreement	Prior to FAC	Inspection 5	Prior to FAC

9.4.2 Construction Inspection Schedule 2

This schedule is applicable to natural environment parks and engineered stormwater wetlands.

Note: Approved biophysical impact assessment, environmental significance assessment, wetland development assessment, and construction & restoration plans required prior to work.

Work Inspected	Seasonal Limits	Timing	% Essential Prior to CCC Approval
Site Layout, Grades, Topsoil, and Native Seed/Sod			
Layout P.L. and Approved Utility/ ROW Encroachments	6" frost and/or no snow	Inspection 1	100
Erosion/Sediment Controls	None	Inspection 1	100
Survey Stakes - Grades	6" frost and/or no snow	Inspection 2	100
Sub-grade Preparation	6" frost and/or no snow	Inspection 2	100
Site Layout (i.e., trees, pathways, trails, amenities, etc.)	6" frost and/or no snow	Inspection 2	100
Pre-development Topsoil Stored	Frost Free	Inspection 2	100
Topsoil Depth & Finished Grade to Pre-existing Native Profile & PreDevelopment Drainage Patterns & Rates	Frost Free	Inspection 5	100
Seeding	Frost Free	Inspection 5	100
Sodding	Frost Free	Inspection 5	100
Compaction Reports	None	Inspection 5	Within 60 days of date on *Construction Inspection Checklist & CCC Report*
Work Inspected	Seasonal Limits	Timing	% Essential Prior to CCC
Native Trees/Shrubs			
Tree/Shrubs Pits/Beds	None	Inspection 3	100
Correct Number and Species	None	Inspection 4	100
Rootball/Caliper Standards Met	Frost Free	Inspection 4	100

Trees Planted at Specified Grade	Frost Free	Inspection 4	100
CNLA Specifications Met	Frost Free	Inspection 4	100
Insect/Disease/Damage Free	Active Growth	Inspection 4	100
Set back Spacing	No Snow	Inspection 4	100
Burlap Strapping/Wires Removed or Rolled Back	Frost Free	Inspection 5	100
Pathways & Trails			
Pathway Alignment	6" frost and/or no snow	Inspection 2	100
Trail Alignment	6" frost and/or no snow	Inspection 2	100
To Approved Plan and Specification	No snow	Inspection 5	100
Compaction Reports	No snow	Inspection 5	100
Amenities			
Restoration/Reclamation Signage	No snow	Inspection 1	100
To Approved Plan and Specification	Prior to CCC	Inspection 5	Prior to FAC

9.5. Construction Completion Inspection Procedures for Parks Inspection

After completing the construction of the specific parks infrastructure, the following tasks must be completed before the Landscaping Consultant or Consulting Engineer submits the CCC for record.

a) Construction Inspection Checklist and CCC Report complete

All applicable items on the construction completion checklist are required to be completed within the parameters of the construction inspection schedule and signed off by the *Parks Development Inspector* and landscape consultant.

b) Resolution of Development Field Orders

All development field orders issued by *Subdivision Parks* that are applicable to the parks infrastructure must be resolved to the satisfaction of the issuing inspector.

c) Preliminary "as constructed" drawings submitted for record.

Once all items are complete, the landscaping consultant can move forward with the CCC submission procedure.

9.6. CCC Submission Procedures for Parks Infrastructure

After all tasks noted in section 9.5 are completed, the landscaping consultant will issue the CCC form (Available on the CEFSG Website). The form shall be duly signed, sealed and certified by the signing officer for the landscaping consultant. The CCC must include the projected earliest maintenance expiry date.

Once signed and returned by the *Parks Development Inspector*, the CCC shall be submitted by the Landscaping Consultant or Consulting Engineer to *the certificate intake e-mail,* *cccfac@calgary.ca.*

The CCC submission package shall include the items noted in the applicable *Construction Completion Certificate Submission Checklist*.

9.7. Maintenance of the Parks Infrastructure Subsequent to Issuance of the CCC

Once the City acknowledges the CCC(s) for a specific parks improvement, the developer shall be responsible for any and all repairs and replacements to the infrastructure, which may, in the *Manager of Trades and Subdivision Inspections* sole opinion, become necessary from any cause whatsoever, until the FAC for that parks infrastructure improvement has been accepted by the City, as set out in the terms of the DA T&C and *Calgary Parks and Open Spaces – Development Guidelines and Standard Specifications: Landscape Construction*.

The maintenance period commences from the date the *Parks Inspector* signs the *CCC* for the said Parks Infrastructure Improvement.

During the maintenance period the landscaping consulting shall inspect the subdivision on a regular basis and note any failures, settlements or other deficiencies in the work as well as respond to any "complaint" calls forwarded by the City to the landscape consultant.

Should there be any major failures, settlements or other deficiencies, the landscape consultant shall arrange for the contractor to undertake the repair in an expeditious manner.

The earliest the FAC can be issued after receiving a CCC is one growing season. One (1) growing season is defined as the period of time between the date that the Parks Development Inspector signs the CCC to June 30 of the following year, or, in the sole opinion of Subdivision Parks, on the date when the irrigation systems are operating and the vegetation is in full leaf, whichever event occurs **last**.

Where Landscaping is to receive a CCC after September 30th, Calgary Parks and Open Spaces may extend the maintenance period to (at the latest) September 30th of the following year. CCC inspections are subject to the seasonal limits identified in **9.4 Construction Inspection Schedules**.

9.8. FAC Inspection Procedure for Park Infrastructure Improvements

No more than three months prior to the maintenance period expiry date, or earlier if weather conditions permit, the following tasks are required to be completed by the landscape consultant:

a) Initial inspection by landscaping consultant

The landscape consultant and contractor must inspect all parks infrastructure improvements that were included on the CCC and record any deficiencies. The landscape consultant must ensure that the contractor corrects all deficiencies due to damage and other causes, except deficiencies caused by the negligence of the City or its agents, employees or servants in the performance of their duties on behalf of the City.

During the site review, the landscaping consultant shall ensure that all plant material and turf is healthy, that the irrigation system is complete (including required paperwork), and that all plans reflect the final product.

Note: The date of the inspection by the landscaping consultant and parties involved must be recorded and provided to the *Parks Development Inspector*.

b) Joint Inspection in Field

After completing the initial inspection and correcting any deficiencies found, and determining the site is **ready for** the joint inspection, the landscaping consultant is to submit the FAC application form, map of the site and the previously completed CCC Report of the site to subdevinspections@calgary.ca as well as request an *Initial FAC Inspection* on the online Parks Inspection Request form.

The *Parks Development Inspector* will respond to the request and schedule an on site inspection with the landscape consultant within 30 days of receipt of the FAC by Subdivision Parks. If no inspection is scheduled within that time, the improvement must be deemed by the City to be complete.

Prior to the inspection with the landscape consultant, the *Parks Development Inspector* will inspect the site internally with City of Calgary shareholders.

c) Deficiency Correction

If deficiencies are noted on the joint inspection, the *Parks Development Inspector* will issue the Final Acceptance Inspection Check List and Report (available in the CEFSG library online) outlining the existing deficiencies. The report will also specify the Application Expiration Date, which will be 4 weeks following the joint inspection date. If the deficiencies are not corrected by the Application Expiry Date, the FAC will be returned unsigned to the landscaping consultant, and the application will need to be resubmitted once the deficiencies are corrected.

Following a successful joint inspection or re-inspection with the *Parks Development Inspector*, the *FAC* will be signed by both the *Parks Development Inspector* and the Landscaping Consultant.

9.8.1 Additional Items Related to FAC Inspection

- Community Parks and District Parks containing Municipal School Reserve (MSR) sites must be fully developed, and FAC Application must be submitted:
    1. No later than 1 full year prior to occupancy of the school
    2. By the time 30% of the lots or projected lots located within the catchment area (1.2km from property line of parcel) are occupied.
    3. No later than September 30 of the year of application. FAC application inspections may be performed after September 30 subject to weather and ground conditions that allow for an effective assessment of the property and at the discretion of the *Manager of Trades and Subdivision Inspections*.
- If weeds are identified in a Final Acceptance Inspections Checklist and Report, and a herbicide is applied to rectify the deficiency, a biocide application report must be submitted prior to signing of the FAC.
- Conditional FAC will be considered if a site was complete and third party damage occurs where time restraints do not permit rehabilitation, or when there are exceptional circumstances (i.e. drought).
- Marketing signs and flags will not interfere with the FAC process providing the Developer submits a letter acknowledging responsibility for continued maintenance and repairs to the parcel, as well as a map outlining where the signs and marketing items are located. It will be the developer's responsibility to ensure that all the marketing signs and flags are compliant with all municipal, provincial and federal regulations that may apply. The developer shall provide to the City 30 days notice of their intent to turn the parcel(s) over to the City. Once the signs and/or marketing items have been removed, the developer shall initiate a re-inspection of the property as per the FAC Procedure.

9.9. FAC Submission Procedures for Parks Infrastructure Improvements

The FAC shall be submitted by the Parks Development Inspector to the *certificate intake e-mail, cccfac@calgary.ca.* The FAC submission package shall include the items noted in the applicable *Final Acceptance Certificate Submission Checklist*.

9.10. Subdivision Parks CCC and FAC Appeal Process

If a CCC or FAC application is rejected by the *Parks Development Inspector*, the landscape consultant may appeal the decision to the Leader of Subdivision Surface Inspections.

Upon receiving an appeal, a review will be conducted based on the contractual obligations outlined in the DA T&C, the *Parks and Open Spaces – Development Guidelines and Standard Specifications: Landscape Construction*, and the *Consulting Engineering Field Services Guidelines*.

If the review outcome does not align with the landscape consultant's position, the consultant may further appeal to the *Manager of Trades and Subdivision Services*. The decision at this stage will be final.