

CITY OF CALGARY
CONSULTING ENGINEER'S FIELD SERVICES GUIDELINES

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FIFTH EDITION 2004

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1.0 PREAMBLE AND OBJECTIVES

The Objectives of the parties involved in the construction and inspection of subdivisions (i.e. Developer, Consulting Engineers and the City of Calgary), has always been to produce an economic subdivision that meets the standards and specifications of the City within a reasonable time frame. This document outlines the Field Services to be performed by the Consulting Engineer during the construction of subdivisions.

In order to reduce what private industry perceived in some cases to be a duplication of inspection services provided by the City of Calgary Engineering and Environmental Services Department and the Consulting Engineers, the Urban Development Institute member consultants have established a committee in March 1985 to develop standard guidelines for consultants' services. During the fall of 1986 this document was reviewed and revised by a joint City of Calgary and Urban Development Institute working group. This document is the result of the efforts of this working group.

The objective of this working group was to revise and streamline the existing inspection procedures up to the Construction Completion Certificate (CCC) stage. This was to be accomplished by having the bulk of the CCC inspection responsibility carried out by the Developer's Consulting Engineer and by reducing the amount of documentation.

The current procedures for Final Acceptance Certificate inspections and the processing of Final Acceptance Certificates shall remain in place.

The Standard Development Agreement contains a clause that makes reference to the Consulting Engineer's Field Services Guidelines. The objective of the Consulting Engineer's Field Services Guidelines as defined in the said clause is to detail the minimum level of Field Services to be provided by a Consulting Engineer to a Developer relating to the construction, installation and inspection of subdivisions under all Standard Development Agreements executed between the City and a Developer. Notwithstanding the above, it is understood and agreed that the Developer is and shall remain responsible to the City for full and proper performance of all obligations and work under the Development Agreement.

2.0 DEFINITIONS

- a) "**City**" means the City of Calgary, a municipal corporation in the province of Alberta.
- b) "**Engineer**" means the Manager of Urban Development at the City of Calgary or any member of the City to whom the Manager of Urban Development has duly delegated his authority.
- c) "**Consulting Engineer**" means a Professional Engineer, with a permit to practice from APEGGA and his duly accredited representatives, hired by the Developer and who is a member in good standing of The Association of Professional Engineers, Geologists and Geophysicists of Alberta. The Consulting Engineer is responsible to the Developer for the design and inspection of the construction and the installation of all of the Work to be carried out under a Development Agreement by or at the expense of the Developer. The Consulting Engineer is deemed to be an agent of the Developer for the purposes of the Development Agreement and the Consulting Engineer shall, in accordance with the Guidelines, certify that all materials supplied and the construction, installation and inspection of all Work conforms in respect to the City's specifications and approved designs, or as otherwise required by the Engineer.
- d) "**Contractor**" means the Contractor, hired by the Developer to supply, construct and/or install the Work pursuant to a Development Agreement by or at the expense of the Developer. The Contractor shall supply materials and carry out the construction and installation in accordance with the City's specifications and approved designs or as otherwise required by the Engineer.
- e) "**Construction Completion Certificates**" or "**CCC's**" means documents provided to the Engineer by the Developer and issued by the Consulting Engineer upon the completion of the Work by the Developer.
- f) "**Developer**" means the individual and/or corporation who, subject to the approval of the proper officials of the City, proposes to install and construct the Work as defined in the Development Agreement. The Developer shall ensure that all materials supplied and the construction, installation and inspection of all the Work conforms in all respects to the City's specifications and approved designs, or as otherwise required by the Engineer.
- g) "**Development Agreement**" means that agreement executed between the Developer and the City which details the terms and conditions under which the Developer is to construct or install the Work.
- h) "**Development Permit**" means approval specified within the Land use Bylaw for a specific request. It also outlines the terms and conditions under which the Developer is to perform the work.

- i) “**Field Services**” means those site inspections, supervision and record keeping services provided by the Consulting Engineer to the Developer relating to the construction, installation and inspection of the Work as set forth in the Development Agreement. The minimum level of Field Services to the Developer by the Consulting Engineer is defined in the Consulting Engineer’s Field Services Guidelines.
- j) “**Final Acceptance Certificates**” or “**FAC’s**” means documents provided by the Developer to the Engineer which will be approved and issued by the Engineer upon the final acceptance of the Work, or portions thereof as set forth in the Development Agreement or Development Permit, by the Engineer.
- k) “**Full Time Inspection**” means providing an on-site inspector during the times specifies in the Consulting Engineer’s Field Services Guidelines.
- l) “**Guidelines**” means the document entitled Consulting Engineer’s Field Services Guidelines. The Guidelines specify the minimum levels of field services to be provided by the Developer’s Consulting Engineer during the construction, installation and inspection of the Work pursuant to a Development Agreement or Development Permit.
- m) “**Work**” means the stripping and grading of the site, the installation and construction of utilities, the construction of surface improvements and other such services as set forth in the Development Agreement or Development Permit.

3.0 CONTRACTURAL RELATIONSHIPS

3.1 City / Developer

The Developer, in accordance with the Development Agreement or Development Permit, undertakes to the City to complete the construction of a subdivision to the standards required by and to the satisfaction of the Engineer prior to the acceptance of the completed subdivision by the Engineer.

In order to achieve this, Clauses 3(b), (c), and (d) of the City Standard Development Agreement requires that the Developer employ a Consulting Engineer. The Consulting Engineer designs, inspects, maintains, supervises and certifies that all materials supplied and the construction, installation, inspection of the Work being carried out under the Development Agreement or Development Permit conforms in all respects to the City's specifications, approved reports, guidelines and approved designs or as otherwise required by the Engineer. It being understood and agreed that the Developer is and shall remain responsible to the City for the full and proper performance of all obligations and work under the Development Agreement or Development Permit.

3.2 Developer / Consulting Engineer

The Consulting Engineer is to prepare design drawings, reports and specifications based upon the particular location, ground form, site conditions, and specific information pertaining to the subdivision to be constructed. The Consulting Engineer's designs and specifications are based upon and are to meet or exceed the City specifications, approved designs, Provincial and Federal guidelines or as otherwise required by the Engineer. Furthermore, the Consulting Engineer is professionally responsible to the Developer for the proper design of the subdivision.

The Consulting Engineer's contract with the Developer, shall be defined such that the Consulting Engineer shall be obligated to provide the minimum level of Field Services as specified in the Guidelines. The Consulting Engineer shall, in accordance with the Guidelines, certify that all materials supplied and the construction, installation, inspection and maintenance of all Work conforms in all respects to the City's specifications, reports and approved designs, or as otherwise required by the Engineer.

The Consulting Engineer is responsible to the Developer to provide at least the minimum level of Field Services, specified in the Guidelines in order to monitor the Contractor(s) construction and installation of the Work up to the issuance of the CCC(s). The Consulting Engineer shall certify that all materials supplied and the construction, installation, and inspection of all Work conforms in all respects to the City's specifications and approved designs, or as otherwise required by the Engineer.

The Consulting Engineer retained by the Developer, subsequent to the issuance of the CCC, shall continue to be responsible to the Developer for the Field Services and shall inspect the Contractor(s) maintenance activities and ensure the repair of deficiencies

are in compliance with the City's specifications, approved reports, guidelines and designs, or as otherwise required by the Engineer.

3.3 Developer / Contractor

The Developer shall draft his contract with the Contractor based upon the approved designs and specifications, and contract documents prepared by the Consulting Engineer. The Contractor is responsible to the Developer for the quality of his work. Notwithstanding the above the Developer is responsible to the City for the performance of all obligations, terms and conditions specified in the Development Agreement.

3.4 Consulting Engineering / City

The Consulting Engineer is to liaison with the Engineer at such times as are required to commence construction. The Consulting Engineer shall keep adequate records to satisfy the Engineer that the work is being constructed and installed in an approved and workmanlike fashion. The Consulting Engineer shall issue the CCC's (See Section 7.3 – Page 28) and prepare the FAC's (See Section 7.4 – Page 29) as required and have any maintenance deficiency items dealt with expeditiously.

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 Engineer has the right to request the Developer through the Consulting Engineer to correct deficiencies as they are observed by the Engineer. Any deficiencies observed by the Engineer during the construction are to be brought to the attention of the Developer and the Consulting Engineer as they are observed, in writing, as soon as possible, using the Urban Development Field Order (See Section 7.1 - Page 26) or Subdivision Development Field Order Form (See Section 7.2 - Page 27). When dealing with a Parks related issue a Parks Development Inspection Report (See Section 7.15 - Page 30) will be used. The Consulting Engineer will notify the Engineer when the deficiency is to be corrected. The Consulting Engineer shall direct the Contractor to correct the deficiency and shall advise the Engineer of the correction in writing. A letter of explanation of how the deficiency will be corrected may be required to clear some field orders.

The City may, as specified in Clause 4 of the Standard Development Agreement, stop the construction and installation of the Work. Should the Consulting Engineer not be available on-site the City may issue a Field Order to the Developer, with a copy of the Field Order given to the Contractor to stop the Work. Any Work completed while a Stop Work Field Order is in effect may be deemed to be unacceptable by the Engineer.

3.5 City / Contractor

Any communications from the Engineer regarding the ongoing work will be communicated directly to the Consulting Engineer, unless as otherwise provided for in

Section 3.4. There is no direct contractual relationship between the City and the Contractor.

3.6 Default by the Developer

Should the Developer for any reason not fulfill the obligations of the Development Agreement, abandon the project, not complete the works, or elect not to correct the deficiencies identified by the Engineer or the Consulting Engineer, the Consulting Engineer shall not be held responsible to complete the project.

In order to complete the obligations of the Development Agreement, the City recognizes the advantages of utilizing the same Consulting Engineer and will give priority to the said Consulting Engineer where practical.

4.0 CONSULTING ENGINEER'S FIELD GUIDELINES

4.1 Intent of Services

Definition

On-site Field Services to be carried out by the Consulting Engineer means providing on-site inspections, supervision and record keeping, the minimum level of which is defined in Section 4.3.3.1 and 4.3.4.1 of this document. Field Services are provided by the Consulting Engineer in order for the Consulting Engineer to certify that the Contractor is supplying materials, constructing and installing the Work with respect to and in conformity with the City's specifications, approved reports, guidelines and approved designs or as otherwise required by the Engineer for the subdivision.

The Consulting Engineer shall perform all inspections necessary, and to such a level and extent, as to make the Consulting Engineer familiar with the materials and the Work as constructed and installed. To this end, records of inspection will be maintained to the satisfaction of the Engineer.

It shall be the responsibility of the Consulting Engineer to determine in any particular circumstance whether Field Services in excess of the levels specified in the Guidelines are necessary, and to so advise the Developer and the City.

Environmental compliance, soil compaction, material compliance and other testing services are for the protection of the Developer in the performance of its obligations to the City or any other Regulatory Agencies. The responsibility for recommending testing levels in excess of levels specified in the Guidelines shall therefore rest with the Developer's Consulting Engineer. The Developer is and shall remain responsible to the City or any other Regulatory Agencies for full and proper performance of all obligations and Work under the Development Agreement.

4.2 Level of Site Service

In order to certify the conformity in all respects of the materials supplied and the construction, installation, inspection and maintenance of the Work with the City's specifications, approved reports, guidelines and approved designs or as otherwise required by the Engineer, the Consulting Engineer shall determine and conduct the necessary inspections for that purpose including such inspections as may be required for that purpose in excess of the minimum level of inspection services set out in the Guidelines.

In order to perform the inspection, supervision and record keeping obligations, the Consulting Engineer shall retain inspectors.

There are two levels of Consulting Engineer's inspectors, junior and senior inspectors. Junior inspectors are responsible for all activities within a particular site. Senior inspectors are responsible for the supervision of more than one junior inspector.

- 1) The Consulting Engineer's Senior Inspector shall have one of the following qualifications:
 - a. be a Certified Engineering Technologist or a Registered Engineering Technologist registered with the Alberta Society of Engineering Technologists and have a minimum of three year's experience in municipal construction; or
 - b. have a minimum of five years' experience in municipal construction; or
 - c. be a Member-In-Training registered with the Association of Professional Engineers, Geologists and Geophysicists of Alberta with a minimum of two construction seasons experience in municipal construction.

- 2) The Consulting Engineer's Junior Inspector shall have one of the following qualifications:
 - a. be a Certified Engineer Technologist registered with the Alberta Society of Engineering Technologists;
 - b. be an employee with a Grade 12 or equivalent education and a minimum of three years' experience in municipal construction; or
 - c. be an employee of the Consulting Engineer's having completed at least two years of a recognized University Engineering undergraduate program with applicable municipal experience.
 - d. post-secondary enrolment in a "related field" (Engineering Technology, Geomatics, etc.) plus one year of municipal construction experience.

The Consulting Engineer shall provide and keep up-to-date all documentation required by the Engineer. The Consulting Engineer shall issue, to the Engineer, all documents and records in a timely fashion as requested by the Engineer.

In order to maintain the relationship of the Consulting Engineer to the Contractor, all instructions issued by the Engineer shall be given to the Consulting Engineer unless as otherwise provided for in Section 3.4 of document.

It is understood and agreed that notwithstanding conformance with the qualifications, procedures, and working relationships described in this section, the Developer is and shall remain responsible to the City for full and proper performance of all obligations and Work under the Development Agreement or Development Permit.

4.3 Typical Site Inspection Duties

4.3.1 Preconstruction Duties

The Consulting Engineer, prior to commencement of construction, shall be completely familiar with:

- The approved engineering plans of the specific subdivision.
- The Consulting Engineer's Field Services Guidelines.
- The City Engineering Department approved specifications, standards, procedures, and design guidelines.
- The Development Agreement and the conditions of Tentative Plan approval for the subdivision.
- The proposed work schedule of the Contractor(s) and the equipment to be used, and
- Shall attend a pre-construction site meeting with the Contractor(s) and the appropriate City personnel.

4.3.2 Stripping and Grading

Prior to commencing stripping and grading, permission must be obtained through either the Release of the Development Permit or by a Letter of Permission if the lands are included under a Development Agreement.

The Consulting Engineer shall submit a 'Cut and Fill Plan' and an 'Erosion and Sedimentation Report' and shall utilize the most recent edition of the Urban Development and Wastewater and Drainage Departments' 'Guidelines for Erosion and Sedimentation Control'. The Consulting Engineer shall exercise the mitigative controls recommended therein during stripping and grading operations and any other construction activities.

The Consulting Engineer shall ensure where stripping and grading abuts an environmental reserve, a Calgary Parks and Recreation Landscape Development Inspector is notified to review the method of protection.

Once the operation commences, the Consulting Engineer shall deal with any unexpected soil conditions that could affect construction or the development ability of the subdivision, inspect the sub-grade prior to placing any fill and take compaction tests on all fill placed.

The Consulting Engineer shall inspect the stripping and grading operation to certify that both the City's and any other applicable Regulatory Agencies' specifications, approved reports, guidelines and approved designs are complied with.

The Consulting Engineer shall certify that the approved loam stockpile location(s) are utilized.

Compaction test results shall be provided to the Engineer by the Consulting Engineer.

During stripping and grading, the Consulting Engineer's on-site representative may be limited to survey crews and/or soils technicians as required in order to meet the City's minimum requirements. The provision of spot inspections by the Consulting Engineer during stripping and grading shall be left up to the discretion of the Consulting Engineer.

The Consulting Engineer shall advise Urban Development and Calgary Parks a minimum 24 hours prior to the initiation of any stripping and rough grading.

A stripping and grading report shall be submitted to the Urban Development Division by the Consulting Engineer prior to the submission of any CCC's to the Engineer. The stripping and grading report is to outline the site preparation, quality control and compaction testing and shall detail the site conditions and the conditions of the building envelopes at the time the stripping, grading, backfilling and compaction was completed. In the report the Consulting Engineer shall certify that the stripping, grading, backfilling and compaction for:

- 1) All road rights-of-way and public lands to be in compliance with the City of Calgary Standard Specifications Roads Construction.
- 2) All areas not included in Item 1, are in compliance with current engineering standards.

Should the developer require the release of any building permits prior to the submission of the stripping and grading report, the Consulting Engineer shall submit a letter of intent to the Engineer. This letter of intent should include a report certifying the stripping, grading, compaction and backfill used for the area in which building permits are requested.

4.3.3 Underground Utilities

Underground Utilities include but are not limited to the following: watermains and hydrants, sanitary sewers, storm sewers, sewer and water service connections and catch basin leads.

4.3.3.1 Site Inspection

The Consulting Engineer or appointed Contractor shall notify when and where all work, construction, maintenance, on ground utilities and

overland drainage facilities are to be performed and shall advise the Engineer of all changes to the work schedule.

The following personnel shall be notified by the Consulting Engineer or appointed Contractor prior to work beginning on any construction of the respective utilities for which approved drawings and permission to construct has been granted in writing.

Waterworks & Wastewater Shared Services
Subdivision Inspection (including overland drainage)
Telephone: 268-1203
Fax: 537-3050

Notification by the Consulting Engineer or appointed Contractor shall be by letter or fax 48 hours prior to commencing construction, using the Construction Commencement Notification (Page 27) form shall include the following information:

Renotification for inspection is required after 48 hours of Construction Inactivity, excluding Saturdays, Sundays and Holidays.

Full time inspection on the project by the Consulting Engineer shall be provided during the construction and maintenance Water and Wastewater utilities with the exception of the following items:

- 1) Repairs to the top box, bottom box, rod and casing for water service connections;
- 2) All repairs where exposure of contaminants to the water supply would not occur;
- 3) Valve rods and casing repairs for watermains;
- 4) Cathodic protection repairs;
- 5) Cleaning and flushing both sanitary and storm sewer systems;
- 6) Thawing of services;
- 7) Manhole adjustments and repairs;
- 8) Catch basin and lead repairs.

Although full time inspection may not be required in the opinion of the Consulting Engineer, spot inspections are required by the Consulting Engineer during the performance of the above-noted expectations unless the Consulting Engineer sees a need for full time inspection.

The extent of inspection by the Consulting Engineer during the reinstallation of sewer services, sewer mains and sewer surface appurtenances repairs will be determined by the Consulting Engineer. The Consulting Engineer shall arrange for the Engineer to be notified of all Work.

For Parks related projects, satisfactory construction inspections will be recorded on a "Construction Inspection Checklist & CCC Report" (See Page 33).

4.3.3.2 Materials Compliance

Notwithstanding the above the Consulting Engineer shall also be responsible for the following:

Waterworks and Wastewater

The Consulting Engineer shall certify that the contractor is using only approved materials, construction and installation procedures. All materials supplied and the construction and installation procedures shall comply with all respects of both the City of Calgary Waterworks Construction Specifications and the City of Calgary Sewer Construction Specifications.

The Consulting Engineer shall request submission of all compaction tests from the Engineer.

The Consulting Engineer shall obtain the certified results of tests conducted by each material manufacturer as outlined in Section 8.0 of this document. If the manufacturers' test results are not available, the Consulting Engineer shall arrange for all material testing and certification

to satisfy City of Calgary Waterworks Construction Specifications and the City of Calgary Sewer Construction Specifications.

The testing reports as identified in the specifications shall be forwarded by the Consultant to the Engineer prior to issuance of respective CCC

The material testing performed by local concrete pipe manufactures shall be witnessed by the Engineer. The Consulting Engineer is not required to forward documentation related to the tests performed by the local manufacturers unless the Engineer requests additional tests.

4.3.3.3 Documentation

The Consulting Engineer shall provide the following documentation to the Engineer, completed in legible and professional manner, using the current format and standard form.

Waterworks and Wastewater

Prior to beginning the Work the Consulting Engineer shall supply the following Documentation to the Engineer:

1. Two (2) copies of the final approved cover sheets – supplied to the Urban Development Division prior to construction.
2. One (1) copy of the final approved Block Profile Drawings – supplied to the Urban Development Division prior to construction.
3. Two (2) copies of the final approved Surface Cover Sheet (overland drainage and catch basins) – supplied to Urban Development prior to construction.

During the Work, the Consulting Engineer shall provide as specified below, the following documentation to the satisfaction of the Engineer:

4. One (1) copy of the grades sheets for all sanitary, storm and watermains, hydrants and services – supplied to the Waterworks & Wastewater Subdivision Inspector prior to construction.

After the Work is completed, the Consulting Engineer shall forward the following documentation to the Engineer.

5. Service Cards (Page 29) shall be completed and supplied to the Engineer by the Consulting Engineer prior to the issuance of both the Sanitary Sewer and Water Connections FAC (See also Page 29).

6. The Consulting Engineer shall inspect the Work, record any deficiencies and advise the Contractor to repair any deficiencies. After the Contractor repairs the deficiencies, the Consulting Engineer shall carry out a further inspection and, if satisfied with the corrections, shall arrange a joint inspection between the City and the Consulting Engineer (as required by the City Departments). (Systems are to be fully functional, sewers operational, watermains are to be pressure tested and chlorinated, roads to be open, etc.) The City will make inspection staff available with 5 days notice for a joint inspection at the end of the actual construction. Additional joint inspections may be required if it has been determined that Essential Items were not completed at the time of the initial or subsequent joint inspections.
7. The Consulting Engineer shall submit the CCC together with a list of outstanding Non-Essential items. The Consulting Engineer and the City should finalize the list of Essential / Non-Essential items at the time of the inspection and both parties will sign off on the list. The CCC will be acknowledged by the Subdivision Development Coordinator within 30 days. A CCC with outstanding Essential items will be rejected immediately. A copy of the approved CCC and the list of Non-Essential items will be forwarded to the Inspector.

All Non-Essential items are to be completed within 60 days (time of year permitting), by June 30 of the following year or by FAC, whichever is applicable.

Prior to forwarding any CCC's to the Engineer all related outstanding field orders are to be resolved and any omissions to be approved by the division.

8. The Consulting Engineer, upon issuance of the Watermains and Hydrants CCC, shall issue to the Fire Department a letter, with a copy of the letter sent to the Engineer, and a plan certifying the completed and operable hydrants constructed and located within the area covered by the CCC. The letter and the plans shall be sent to:

Strategic Services Division
City of Calgary Fire Department
4124 – 11 Street S.E.
Calgary, AB T2G 3H3

Attention: Assistant Fire Marshall

AND

Strategic Services Division
City of Calgary Fire Department
4124 – 11 Street S.E.
Calgary, AB T2G 3H3

Attention: Response Mapping

Prior to beginning the Parks related portion of the Work, the Consulting Engineer shall supply the following documentation:

9. Two copies of the plan showing electrical services to reserve parcels.
10. One copy of the final approved block profile plan indicating the location of park water service.

4.3.3.4 Activity Subsequent to Issuance of CCC's

During the maintenance period the Consulting Engineer shall:

1. Prepare record drawings for stormwater facilities based upon field survey and field notes showing proper side slopes and bottom slope, pipe inverts, catchbasin rim and invert elevations, spillway elevations and control structure dimensions and elevations (including sensor elevations).
2. Inspect the subdivision 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.

For Park related portions of Work: within 60 days of execution of the CCC the Consulting Engineer shall prepare record drawings of Park Irrigation Systems and submit mylars for verification. The format for record drawings is identified in Calgary Parks and Recreation's Development Guidelines and Standard Construction Specifications.

Upon the submission of the FAC, the Consulting Engineer shall:

1. Request a joint inspection with the Engineer of the Works referred to in the FAC. When agreement has been reached between the City field personnel and the Consulting Engineer, both would sign a document agreeing to submit FAC. In the case of Surface FAC's, the joint inspection would also include sewer and water personnel. The joint inspection would occur after all maintenance has been completed and the materials compliance has been received. The City will make inspection staff available with 5 days notice for a joint inspection when the maintenance has been completed and materials compliance has been received.
2. Submit the FAC together with the above noted agreement and would then be approved by the Subdivision Development Coordinator.

FAC's would not be held up for as-builts. As-built approval would only be required to accept the Development Agreement Area, not individual utilities, roads, etc.

A performance Security in the minimum amount of \$30,000 will be retained until all FAC's have been issued and the As-built drawings have been approved.

4.3.4 Surface Improvements

Surface improvements include but are not limited to the following: sidewalks, curbs, Gutters and Catch Basins, Paved Roads, Paved Lanes, Paved Walkways, Gravelled Lanes Sound Attenuation Fencing and Overland Drainage Control Features.

4.3.4.1 Site Inspection

Prior to proceeding with the construction of the surface improvements the Consulting Engineer, shall provide certification that all underground utility trenches, for streets for which surface improvements are to be constructed, have been backfilled and compacted and comply with all the respects of the Calgary Roads Standard Specifications Roads Construction. Such certification shall be in the form of a letter signed and stamped by a professional engineer.

The Consulting Engineer, or contractor assigned by the developer, shall notify the Engineer by letter or facsimile prior to proceeding with the construction of the surface improvements and shall include the following information using the Standard Construction Commencement Notification form:

- Developer and Phase of the development
- Work Site Location and Subdivision Name
- Type of Inspection
- Start-up Time and Date
- Contractor's Name and Phone number
- Phone Number

Full time inspection by the Consulting Engineer, or contractor assigned by the developer, is required when more than 3m³ of the Portland cement concrete is to be poured for sections of sidewalks and curbs and gutters. The level of when less than 3m³ of Portland cement concrete for sidewalks and curbs and gutters is to be poured shall be determined by the Consulting Engineer. The Engineer shall be notified by the Consulting Engineer or Contractor assigned by the Developer of all pours.

Full time inspection shall be provided when placing more than 15 tonnes of asphaltic materials for roads, lanes, walkways etc.

Full time inspection shall be provided when replacing more than 15 tonnes of granular subgrade materials for roads, lanes, walkways, etc.

Inspection Memo

Regardless of whether or not the Consultant provides full time inspection or issues an Inspection Memo when placing sub-grade, the Consulting Engineer shall nevertheless:

1. Contact the appropriate Calgary Roads Inspector prior to the placement of any granular fill and/or asphalt material.
2. Maintain sufficient spot inspections during the placement of any granular fill materials to ensure that all granular materials placed comply with Calgary Roads Standard Specifications Roads Construction.
3. Perform at all times material testing during the placement of granular fill in compliance with the appropriate Calgary Roads construction specifications.
4. Provide a minimum of 24 hours prior notice for the Calgary Roads Inspector in the event that the Consultant undertakes proof rolling of the sub-grade. This same Calgary Roads Inspector, if not notified of any proof rolling within a subdivision area, shall have the right to direct the Consultant to proof roll any or all portions of the Subdivision area, acting reasonably.

Prior to asphalt level coursing a report shall be prepared by a Consulting Engineer regarding repairs to settlements of utility trenches and other base failures. The extent of the inspection during level coursing will be determined by the Consulting Engineer.

The Engineer shall be notified by the Consulting Engineer or Contractor assigned by the Developer of the placement of all granular material and asphaltic concrete.

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.

All pavement designs shall be done in accordance with the Standard Specifications Roads Construction Clause 308.00.00. The request for approval to proceed shall be accompanied by a report prepared by a qualified Professional Engineer. Prior to Work commencing, approval shall be obtained in writing from the Engineer.

The Consulting Engineer shall check the sub-grade and arrange for soil density tests as necessary to certify adherence to City specifications.

The Consulting Engineer shall arrange for compaction and density tests of fill and embankments during construction.

The amounts of inspection required during replacement or maintenance of sidewalks, curbs and gutters shall be determined by the Consulting Engineer.

The Consulting Engineer shall provide inspection for sound attenuation fencing.

The Consulting Engineer shall provide to the Engineer a manufacturer's/supplier's certificate, certifying that the moisture content of all wood used in sound attenuation fencing and screening fencing on City property is in compliance with City specifications 316.00.00.

Once the Work has been completed, the Consulting Engineer and the Contractor will hold a joint inspection to list any deficiencies, which shall then be corrected. The Consulting Engineer is to provide as built drawings of sound attenuation fencing and screening fencing as required by the Engineer.

4.3.4.2 Material Compliance

On-site material compliance testing will be the responsibility of the Engineer. The material compliance testing will continue to be done by the consultant(s) hired by the Engineer (refer to Section 5.0 entitled Surface Improvements Materials Compliance Testing of this document for an outline of the testing program). Information relating to non-compliant material shall be forwarded to the Consulting Engineer by the Engineer. On written request of the Consulting Engineer in a form complying to the requirements of Section 5.2, a letter verifying asphalt and concrete material's compliance or alternative action required will be provided by the City of Calgary.

4.3.4.3 Documentation

Prior to beginning the Work, the Consulting Engineer shall supply the following documentation to the Engineer:

- 1) Two (2) copies of the final approved cover sheets – supplied to the Urban Development Division prior to construction.
- 2) One (1) copy of the final approved Block Profile Drawings – supplied to the Urban Development Division prior to construction.

After the work is completed, the Consulting Engineer shall forward the following documentation to the Engineer:

- 1) The Consulting Engineer shall inspect the Work, record any deficiencies and advise the Contractor to repair any deficiencies. After the Contractor repairs the deficiencies, the Consulting Engineer shall carry out a further inspection and, if satisfied with the corrections, shall prepare and issue the CCC's including the Date of Issuance (maintenance commencement date) and the Projected Earliest Maintenance Period Expiry Date. Upon the issuance of the CCC by the Consulting Engineer, the Consulting Engineer shall forward the CCC, along with the documentation specified in Section 8.0 of this document, herein to the Engineer within 30 days from the Date of Issuance of the CCC.

Prior to forwarding any CCC's to the Engineer all related outstanding field orders are to be resolved.

4.3.4.4 Activity Subsequent to Issuance of CCC's

During the maintenance period the Consulting Engineer shall:

- Prepare the record drawings based upon field surveys and field notes.
- Inspect the subdivision 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 recommend to the Developer and the Engineer methods for the repair and correction of the failure, settlement or deficiency. Upon approval of the same by the Engineer, the Consulting Engineer shall arrange for the Contractor to undertake the repair or correction.

4.3.4.5 FAC Procedures

- 1) Upon Completion of the work the Consultant is to forward the following requests to the City:
 - a) "Certificate Inspection Request and Appointment Confirmation" for to City Fax 537-3050 to arrange for inspection of catch basins, catch basin leads, manhole frames and covers, watermain and hydrant valves and valve operating systems and water service valves and valve operating mechanism systems.

- 2) Upon the submission of the FAC, the Consulting Engineer shall request a joint inspection with the Engineer of the works referred to in the FAC. For Park related portions of the Work, the Consulting Engineer and a Calgary Parks Landscape Development Inspector will conduct a joint inspection and a "Final Acceptance Inspection Check List and Report" (See Page 34) will be prepared.

If further deficiencies are noted, a list of the deficiencies shall be prepared by the Consulting Engineer and the Engineer. When the deficiencies have been corrected the Consulting Engineer shall then, with a reasonable period of time, request from the Engineer a re-inspection for only the inspection of deficient items.

5.0 SURFACE IMPROVEMENTS MATERIALS COMPLIANCE TESTING

5.1 Procedure for Requesting Compliance Testing

- a. The Consulting Engineer or Contractor assigned by the Developer shall ensure that the Materials and Research Group in the Paving and Sidewalk Section of the Calgary Roads Division is notified of surface work to be done no later than 1500h of the previous working day to permit testing of the work.
- b. On completion of all asphalt and concrete work, the Consulting Engineer shall request in writing a statement of materials compliance from the Materials and Research Group in the Paving and Sidewalk Section of the Calgary Roads Division. The request shall disclose the subdivision name and phase, the Developer, the contractor(s), the last date of construction for concrete and asphalt, a map of the area and a statement from the Consulting Engineer indicating the work is complete.

Materials and research shall reply in writing stating either that:

- i. All materials are compliant, or
- ii. Outlining the areas of non-compliance and the necessary corrective action.

Notwithstanding the above, the Consulting Engineer may contact Materials and Research at any time regarding the compliance of materials used in a specific area.

- c. The Consulting Engineer shall, upon request, provide Materials and Research with dates of placement and quantities of materials placed purposes of assessment regarding non-compliance.
- d. The Consulting Engineer shall ensure that any assessments for non-compliance are deposited with the City prior to the issuance of any CCC.
- e. The cost of the materials compliance testing will be distributed to the appropriate subdivisions on the basis of material placed. The costs for the testing shall be recovered from the Developer's inspection fee.

5.2 Testing Performed by City's Contracted Testing Firm

- a. Concrete – Portland Cement

One test is taken per day per supplier or at a frequency as determined by the Engineer. Each test consists of the 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 may provide for additional testing as deemed appropriate by the Consulting Engineer.

b. Asphaltic Concrete

- i. Prior to the use of any asphaltic hot mix, the Consulting Engineer shall arrange for the Engineer to be provided with a 60 kg sample of the asphaltic hot mix to be used. The Engineer shall arrange for the sample to be tested in order to determine the asphalt cement content, gradation and Marshall properties of the sample. If all of the results of the sample tests comply with the requirements and specifications of the City, the sample test results will be considered as the design mix for purposes of further materials compliance testing.
- ii. Asphalt hot mix is sampled at the site from the mat or hopper as deemed appropriate at the rate of one per week for every major mix. A major mix is defined as one which is produced by a supplier for a day or more per week. 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).
- iii. The sample above is analyzed for aggregate gradation, A.C., and Marshall properties.
- iv. Asphalt Cement content testing with a nuclear A.C. gauge and density testing with a nuclear density gauge is done on a daily basis.

Frequency of testing necessary is determined by the Engineer to ensure compliance to the specifications.

- v. Laboratory verification of results is necessary before action can be taken where noncompliance is indicated for A.C. content.
- vi. Extensive coring is done early in the construction season to calibrate the nuclear density gauges. Occasional coring is done throughout the year to verify results.
- vii. Where the Engineer is not notified by the Consulting Engineer in advance of paving, the pavement is shall be deemed non-compliant until verified by testing at the Developer's expense.
- viii. Additional testing may be done at the discretion of the Developer's Consulting Engineer and at the Developer's expense.

6.0 APPEAL PROCEDURES

When, in the opinion of the City Inspector, any materials, design, construction, installation or inspection of the Work does not conform to the City specifications, approved reports, guidelines and standards, the City Inspector shall issue to the Consulting Engineer, a Field Order. This Field Order is to detail the deficiency as well as the corrective action to be taken.

If the Consulting Engineer directs or causes the Contractor to correct the deficiency as required by the City Inspector in the Field Order, the Consulting Engineer shall indicate the corrective action and the date the corrective action was taken in the space provided on the Field Order. The Consulting Engineer is to notify the Engineer prior to commencing the corrective action. The Consulting Engineer shall return one copy of the completed Field Order to the City Inspector to confirm correction of the deficiency.

If the Consulting Engineer does not take the corrective action as and when required in the Field Order, the City Inspector, on behalf of the Engineer, may immediately stop any work, as provided for under Clause 4 of the Standard Development Agreement. In addition, if in opinion of the City Inspector, unsatisfactory materials have been or will be utilized, the City Inspector may order the removal of the unsatisfactory material from the area.

In accordance with the established procedures endorsed by the Manager of Urban Development, the Developer, or the Consulting Engineer, on behalf of the Developer, may appeal the City Inspector's decision to that employee's supervisor. The Consulting Engineer may appeal any decision to the next level of supervision until the Manager of Urban Development is reached. Any decision taken by the Manager of Urban Development on a matter related to subdivision development will be considered final and binding.

7.0 DOCUMENTS

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7.1 Urban Development Field Order

**CITY OF CALGARY
URBAN DEVELOPMENT
FIELD ORDER**

SUBDIVISION/ADDRESS	DATE OCCURRED	DEVELOPER	
DEVELOPMENT PERMIT#/DEVELOPMENT AGREEMENT#	TIME	CONSULTANT	CONTRACTOR

NATURE OF INSPECTION

Pre-Construction Conference
 Clearing/Stripping and Rough Grading
 Dust Control
 Building Construction
 Tracking
 ESC Maintenance
 ESC Installation
 Utility /Road Construction
 Other

On-site Contact: _____

Erosion Sediment Control Plan Y N On-site Y N

External Involvement:

Aldermanic _____ Alberta Environment _____ DFO _____

Response Follow-up:

Regular _____ Priority _____ Emergency _____ Response Date _____

Pictures:

THIS SECTION TO BE COMPLETED BY THE CITY INSPECTOR			
DEFICIENCY/INFRACTION			
Response: Regular _____ Priority _____ Emergency _____			
ISSUED BY CITY OF CALGARY		ISSUED TO:	
INSPECTOR'S NAME		CONSULTANT	
DIVISION		CONSULTANT'S INSPECTOR	
PHONE NUMBER		PHONE NUMBER	
SIGNATURE	DATE ISSUED	SIGNATURE	DATE RECEIVED

7.2 Subdivision Development Field Order

E 1163 (R92-02)
 THE CITY OF CALGARY
 ENGINEERING AND ENVIRONMENTAL
 SERVICES DEPARTMENT

SUBDIVISION DEVELOPMENT FIELD ORDER

SUBDIVISION	PHASE	DATE OCCURED YY MM DD		
DEVELOPER	DEVELOPMENT AGREEMENT NO.	TIME		
CONSULTANT	CONTRACTOR			

THIS SECTION TO BE COMPLETED BY THE CITY INSPECTOR

DEFICIENCY

SPECIFICATION NO.

DRAWING, BLOCK PROFILE NO.

ACTION TO BE TAKEN

ISSUED BY THE CITY OF CALGARY:		ISSUED TO:	
INSPECTOR'S NAME		CONSULTANT	
DIVISION		CONSULTANT'S INSPECTOR	
PHONE NO.		PHONE NO.	
SIGNATURE	DATE YY MM DD	SIGNATURE	DATE YY MM DD

THIS SECTION TO BE COMPLETED BY THE CONSULTANT AFTER THE ABOVE NOTED DEFICIENCY IS CORRECTED

ACTION TAKEN

DATE DEFICIENCY CORRECTED	CONSULTANT'S SIGNATURE
---------------------------	------------------------

DISTRIBUTION: UPON INSPECTION - PARTS 1 - WHITE, & 2 - CANARY - TO CONSULTANT; PART 3 - PINK - DEVELOPER; PART 4 - GOLDENROD - CITY INSPECTOR
 AFTER DEFICIENCY COMPLETION - PART 1 - WHITE - STAYS WITH CONSULTANT; PART 2 - CANARY - RETURNED TO CITY INSPECTOR

7.3 Construction Completion Certificate

CONSTRUCTION COMPLETION CERTIFICATE

SUBDIVISION _____ PHASE _____ AGREEMENT NUMBER _____
 DEVELOPER: _____
 UTILITY _____
 CONSULTING ENGINEER _____
 CONTRACTOR: _____ Boundary of Area (see Map attached)

CONSULTING ENGINEER'S CERTIFICATE

I, _____, PROFESSIONAL ENGINEER AN EMPLOYEE BY THE CONSULTING ENGINEER, WHO IS EMPLOYED BY THE DEVELOPER IN DESIGN AND INSPECT THE CONSTRUCTION AND INSTALLATION OF UTILITIES AND IMPROVEMENTS. I DO HEREBY CERTIFY THAT THE UTILITIES OR IMPROVEMENTS WITHIN THE AREA SHOWN ON THE ATTACHED PLAN HAS BEEN COMPLETELY INSTALLED AND INSPECTED IN CONFORMANCE WITH ALL DETAILS TO THE CITY'S SPECIFICATIONS AND APPROVED DESIGN, OR AS OTHERWISE REQUIRED BY THE CITY ENGINEER AND THAT ALL DEFECTS AND DEFICIENCIES IN WORK AND MATERIALS HAVE BEEN REPORTED TO THE DEVELOPER AND THE CITY AND HAVE BEEN REMEDIATED BY THE DEVELOPER.

I CONFIRM THAT I HAVE BEEN EMPLOYED BY THE DEVELOPER TO BECOME COMPLY WITH AND PERFORM ALL OF THE CONSULTING ENGINEER'S OBLIGATIONS AND TO PROVIDE ALL OF THE FIELD SERVICES AS SPECIFIED IN THE DOCUMENTS ENTITLED "CONSULTING ENGINEER'S FIELD SERVICES UNDERWRITING".

 Signature of Consulting Engineer's Inspector

PERMIT TO PRACTICE STAMP

 Signature of Consulting Engineer

SEWERAGE PRESSURE TESTS AND WATER SAMPLING CERTIFICATE BY: DATE _____

 Signature of Supervisor of Inspections, Waterworks Division

ACKNOWLEDGEMENT OF RECEIPT OF CONSULTING ENGINEER'S CERTIFICATE DATE _____

 City Inspector

ACKNOWLEDGEMENT OF RECEIPT OF CONSULTING ENGINEER'S CERTIFICATE DATE _____

 City Inspector

Proposed Landfill Maintenance Permit Expiry Date _____

Signature of _____

 City Representative

Cause for objection _____

I hereby certify that the above stated the required items were found correct.

Date: _____ P. Eng.
 Signature of Consulting Engineer

ACKNOWLEDGEMENT OF RECEIPT OF CONSULTING ENGINEER'S CERTIFICATE DATE _____

Date: _____ P. Eng.
 Signature of Consulting Engineer

Proposed Landfill Maintenance Permit Expiry Date _____

7.4 Final Acceptance Certificate

FINAL ACCEPTANCE CERTIFICATE

SUBDIVISION _____ PHASE _____ AGREEMENT NUMBER _____

DEVELOPER: _____

UTILITY _____

CONTRACTOR: _____

BOUNDARY OF AREA: SEE MAP ATTACHED MAINTENANCE EXPIRY DATE: _____

I, _____ OF THE FIRM OF _____

CONSULTING ENGINEERS HEREBY CERTIFY THAT AS OF THE ABOVE DATE THE SAID UTILITY MEETS ALL THE REQUIREMENTS FOR ACCEPTANCE AS SPECIFIED BY THE DEVELOPMENT AGREEMENT, AND I HEREBY RECOMMEND THIS UTILITY FOR FINAL ACCEPTANCE BY THE CITY OF CALGARY

Signature of Consulting Engineer's Inspector

PERMIT TO PRACTICE STAMP

Signature of Consulting Engineer P.Eng

Approved on _____ 20____

City Inspector

Approved on _____ 20____

City Representative

Rejected on _____ 20____

City Representative

Cause for rejection: _____

I hereby certify that the terms listed for rejection have now been corrected

Date: _____

Signature of Developer/Developer's Representative

Approved on _____ 20____

City Representative

7.5 Construction Commencement Notification

The City of Calgary
Waterworks & Wastewater
Inspections
Fax: 537-3050 Ph: 268-1203

CONSTRUCTION COMMENCEMENT NOTIFICATION

Date: _____

Subdivision Information:

Subdivision/Phase _____	Agr. # _____
Developer _____	

Engineering Consultant Information:

Consultant _____	Ph. # _____
Representative _____	

Contractor Information:

Contractor _____	Ph. # _____
Representative _____	

Type of Inspection

<input type="checkbox"/> Storm Mains and Manholes	<input type="checkbox"/> Watermains, Valves and Hydrants
<input type="checkbox"/> Sanitary Mains and Manholes	<input type="checkbox"/> Sewer and Water Connections
<input type="checkbox"/> Catch Basins and Leads	<input type="checkbox"/> Repair
<input type="checkbox"/> Concrete Drainage Gutters	<input type="checkbox"/> Other _____

Construction of the above noted subdivision will commence on:


Date: _____	Time: _____
-------------	-------------

Renotification for inspection is required after 48 hour of Construction Inactivity, excluding Saturdays, Sundays and Holidays.

7.6 Certificate Inspection Request and Appointment Confirmation

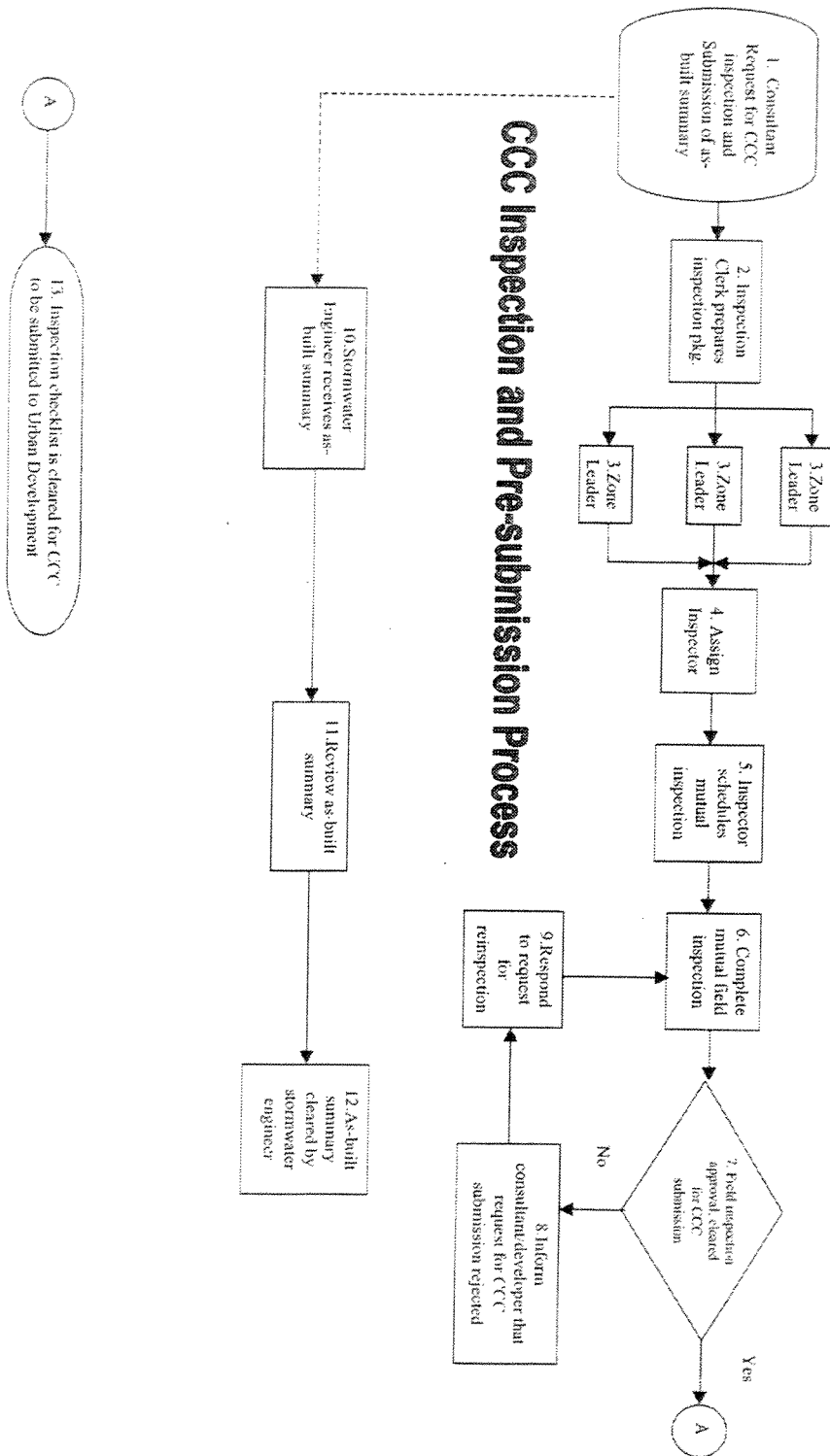
CERTIFICATE INSPECTION REQUEST and APPOINTMENT CONFIRMATION	
Section "A"	Date: _____
Subdivision /Phase /Agr # _____	
Section "B" Engineering Consultant Information:	
Consultant _____	Fax # _____
Representative _____	Ph. # _____
Section "C" Developer Information:	
Developer _____	Fax # _____
Representative _____	Ph. # _____
Section "D"	
<input type="checkbox"/> CCC <input type="checkbox"/> FAC	
<input type="checkbox"/> Storm	<input type="checkbox"/> Watermains and Hydrants
<input type="checkbox"/> Sanitary	<input type="checkbox"/> Sewer and Water Connections
<input type="checkbox"/> Paved Roads (Wastewater)	<input type="checkbox"/> Paved Roads (Waterworks)
<input type="checkbox"/> Overland Drainage	<input type="checkbox"/> Other _____
Section "E" Scheduling Information:	
Date: _____	Time: _____
Inspector: _____	Ph. # _____
Location: _____	
<small>Step 1 - Consultant's Representative completes section A,B,C,D Step 2 - Fax Request and (one corresponding 8 1/2 x 11 cover sheet w/ development boundary per certificate) to 537-3050 Step 3 - Utility Inspector contacts Consultant to set mutually agreed upon inspection date & time Step 4 - Utility Inspector completes section E and faxes completed Inspection Request and Appointment Confirmation Form to Consultant and Developer Representatives</small>	
<small>Revised 2002/12/19</small>	

7.7 Service Cards - Services Installed by Contractor

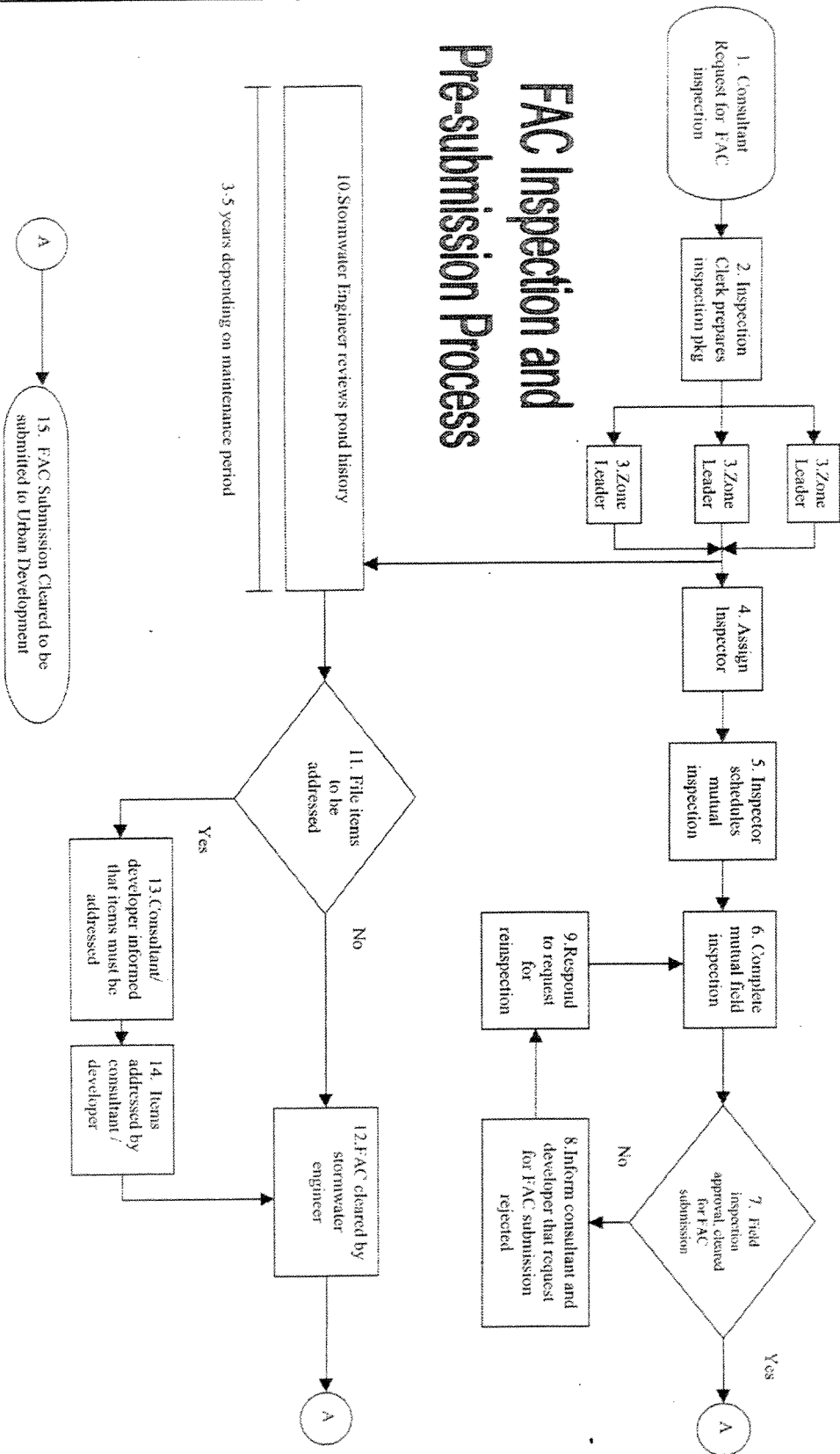
SUB-DIVISION		LOT	BLOCK	PLAN	SEC	ADDRESS OF BUILDING		
DEVELOPER					DESCRIPTION OF BUILDING			
					<input type="checkbox"/> SINGLE	<input type="checkbox"/> DUPLEX	<input type="checkbox"/> APART-MENT	<input type="checkbox"/> OTHER (Specify)
SERVICE	LENGTH OF PIPE	DEPTH OF DITCH	COMPOSITION OF PIPE	SIZE	DATE INSTALLED	ARE WATER AND SEWER IN SAME DITCH?		
WATER						<input type="checkbox"/> YES	<input type="checkbox"/> NO	
SEWER					LOCATION OF SERVICE BOX		APPLICATION NO.	
STORM SEWER							DATE	
I/We the undersigned request an inspection of water and sewer service(s) at the location shown above. Such service(s) to be used for conveying or discharging of waste water supplied by The City of Calgary in accordance with City By-Laws and Specifications. (Completed by Consulting Engineer).					CONTRACTOR			
The above service(s) are in accordance with City By-laws and Specifications. (Water System Inspector's signature)					REMARKS:			
E 553(1990-04)					 THE CITY OF CALGARY WATER SYSTEM SERVICES INSTALLED BY CONTRACTOR		DISTRIBUTION: WHITE - CONTRACTOR BUFF CARD - DISTRIBUTION SECTION	

- Cards may be picked up from the Sewer and Water Applications Clerk, Engineering and Environmental Services Department, Waterworks Division, 6th Floor, Municipal Building.
- The Consulting Engineer is to complete all sections of the form with the following exceptions:
 1. Signature of the Water System Inspector,
 2. Application number, and
 3. Application Date (section below Application Number).
- The "Location of Service Box" section shall contain two dimensions. The first shall be the distance from the centerline of the service box to a sideyard property line. The second will be the offset of the service box from the frontage/rearage property line or back of walk, or back of curb, etc., whichever is appropriate.
- The length of pipe shall be that length from the connection on the surface of the mains to the property line.
- The depth of ditch shall be the depth from the finished road grade or lane grade at property line to the invert of the pipe at property line.
- Cards are to be completed and forwarded to Waterworks Inspections, 651 - 25 Avenue S.E. prior to forwarding the FAC Sewer and Water connections.

7.8 Stormwater Facility CCC Process



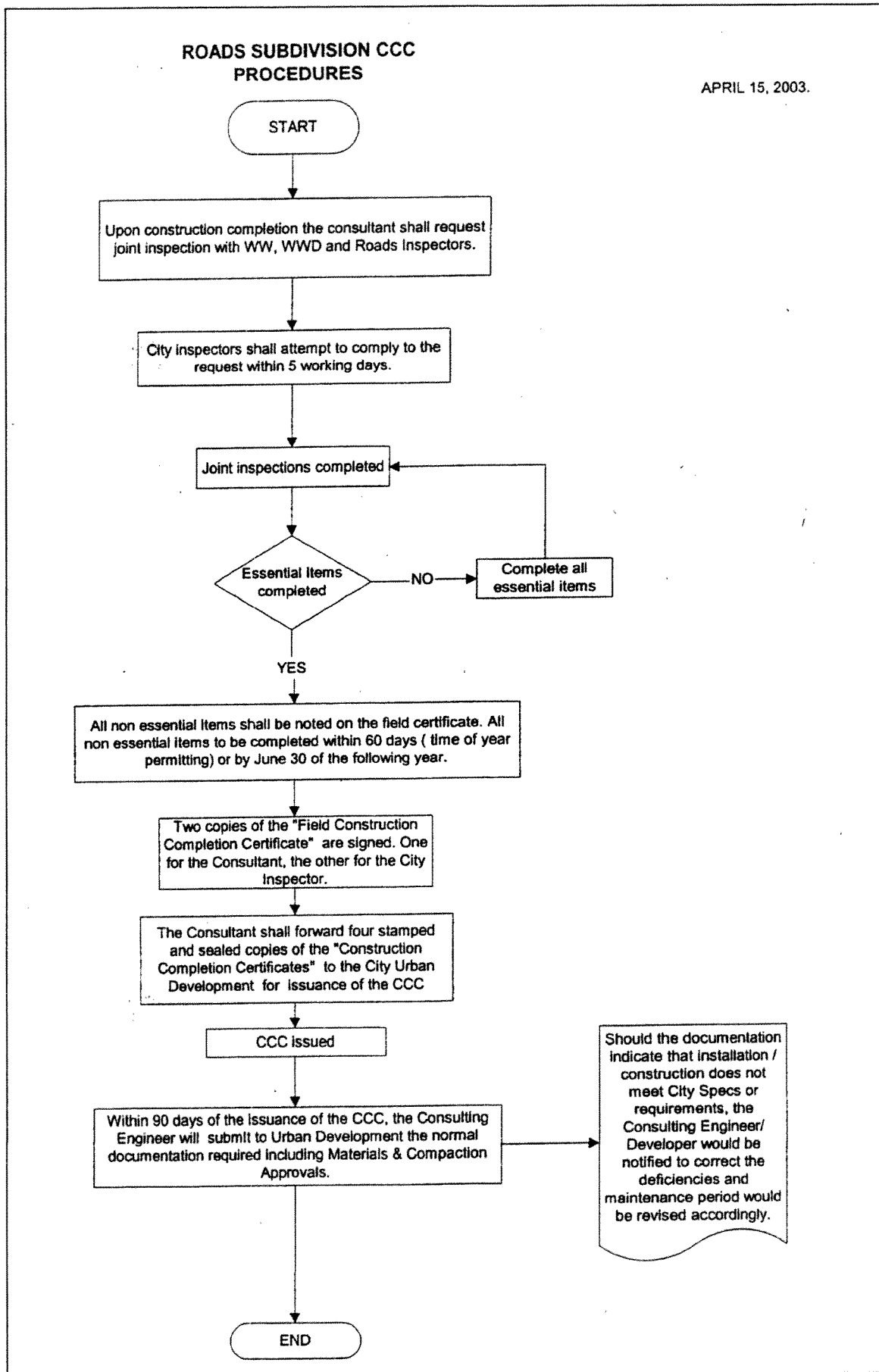
7.9 Stormwater Facility FAC Process



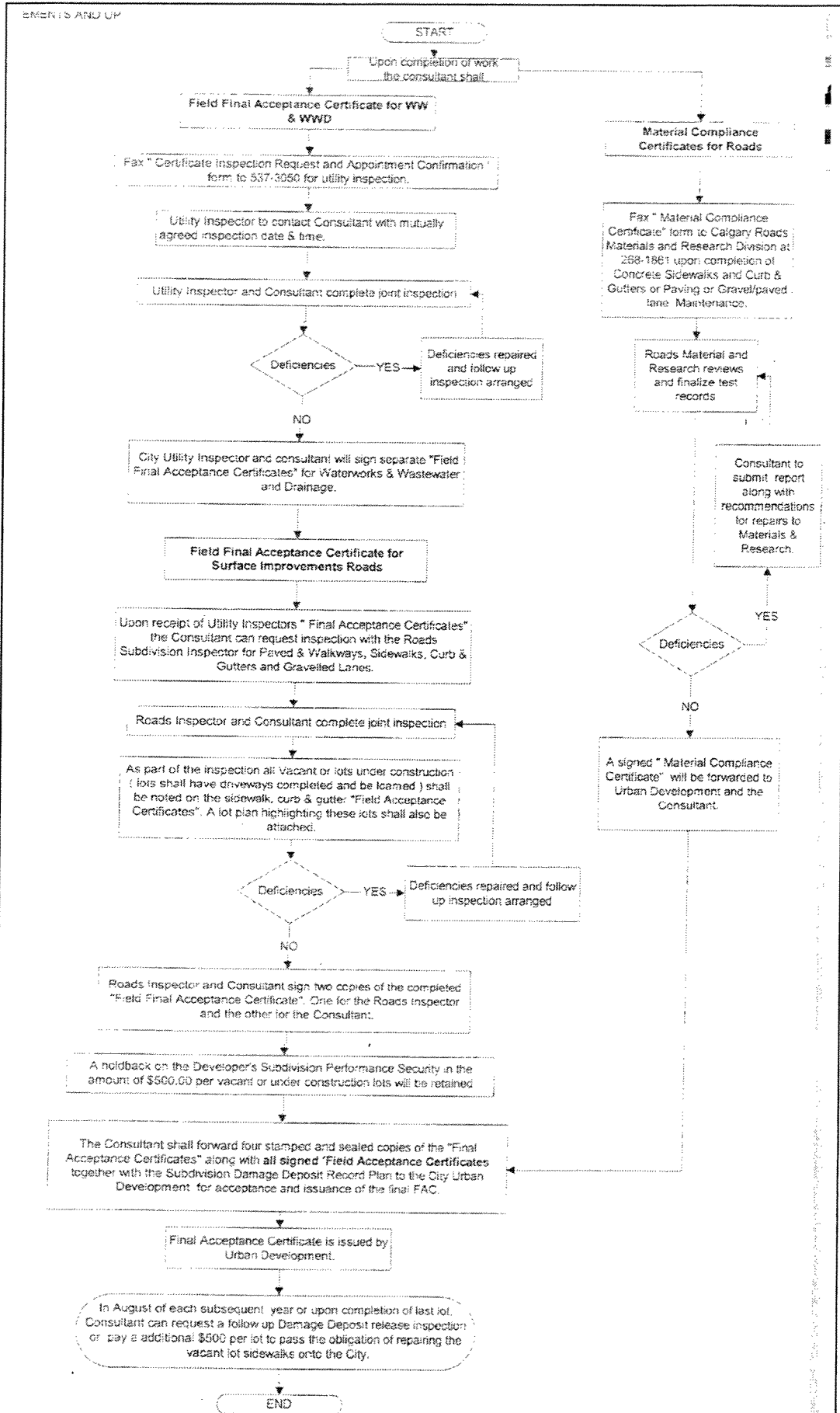
FAC Inspection Process Explanation

1. **Consultant request for FAC inspection** Request for inspection is submitted to inspection group. The request for inspection must include contact information for both the consultant and the developer so that both will be faxed or contacted as to the date of the mutual inspection. Time line starts for the 5 day deadline for the mutual inspection
2. **Inspection Clerk prepares inspection package** The inspection package is then issued to the appropriate zone leader.
3. **Zone Leader** Inspection is reviewed and email is sent to Stormwater Engineer indicating that FAC inspection is being scheduled.
4. **Assign Inspector** Zone leader assigns inspector (if possible it will be the same inspector assigned for the CCC)
5. **Inspector schedules mutual inspection** Inspector contacts consultant/developer contact to arrange mutual inspection. Done within the 5 day time line
6. **Complete mutual field inspection.**
7. **Field inspection Approval and Site cleared for Submission of CCC** provided when all essential items have been addressed as per essential/non-essential list (attached).
8. **Inform consultant and developer that FAC inspection rejected** The inspector will inform the parties present at the inspection of the status of the approval. It is the responsibility of the interested parties to find out the status if they did not send a representative to the inspection
9. **Respond to request for re-inspection** If the re-inspection is not requested within 30 days (during the construction season) or 60 days (during off-season) the application will be sent back to the consultant and they will have to begin the entire process again consultant and the developer will be informed by email or fax. The entire process will have to start again.
10. **Stormwater Engineer reviews pond history** Ideally this should be continuously reviewed over the course of the maintenance period (3-5 years depending on the type of facility) but if there has been any hold up the issues should be resolved immediately
11. **File items to be resolved** Stormwater Engineer would notify consultant/developer of any issues that are yet unresolved
12. **Consultant/ developer informed that items must be addressed**
13. **Items addressed**
14. **FAC cleared by Stormwater Engineer**
15. **Inspection checklist is cleared for FAC to be submitted to Urban Development** To be completed within 30 – 60 days depending on the time of the year

7.10 Roads Construction Completion Certificate Procedures



7.11 Roads FAC Procedures



7.12 Roads Construction Completion Certificate

CONSTRUCTION COMPLETION CERTIFICATE

DATE: _____

SUBDIVISION: _____ PHASE: _____

DEVELOPER: _____ AGREEMENT NO.: _____

UTILITY: _____

CONSULTING ENGINEER: _____

BOUNDARY OF AREA: See map attached

I, _____, of the firm _____ have been engaged by the Developer to design and inspect the construction of the noted development. I do hereby certify that the development noted within the area shown on the attached plan has been constructed and inspected in conformance with all respects to the City's specifications and approved designs, or as otherwise required by the Director of Parks, and that all defects and deficiencies in work and materials have been reported to the Developer and the City and have been remedied by the Developer.

Signature of Consulting Engineer

Approved on: _____ Date

City Inspector

Approved on: _____ Date

Urban Development Representative

Project Earliest Maintenance
Expiry Period Date

Rejected on: _____ Date

Urban Development Representative

Cause for Rejection: _____

I HEREBY CERTIFY THAT THE ITEMS LISTED AS REASONS FOR REJECTION HAVE NOW BEEN CORRECTED.

Approved on: _____ Date

Consulting Engineer

Approved on: _____ Date

Urban Development Representative

7.13 Roads Final Acceptance Certificate

LAND USE & MOBILITY – ROADS

FINAL ACCEPTANCE CERTIFICATE

Subdivision: _____
 Dev. Agree. #: _____
 Developer: _____
 Consulting Eng.: _____
 Utility: _____
 Contractor: _____
 Date Completed: _____

Essential:

- Sewers and Waterworks clearances shall be attached prior to Roads approval.
 - Toplift Bonding required for Major Roads or Roads paved after September 15. YES__ NO__
 - Undeveloped lots and damaged Sidewalks or C&G subject to \$500.00 deposit per lot. YES__ NO__

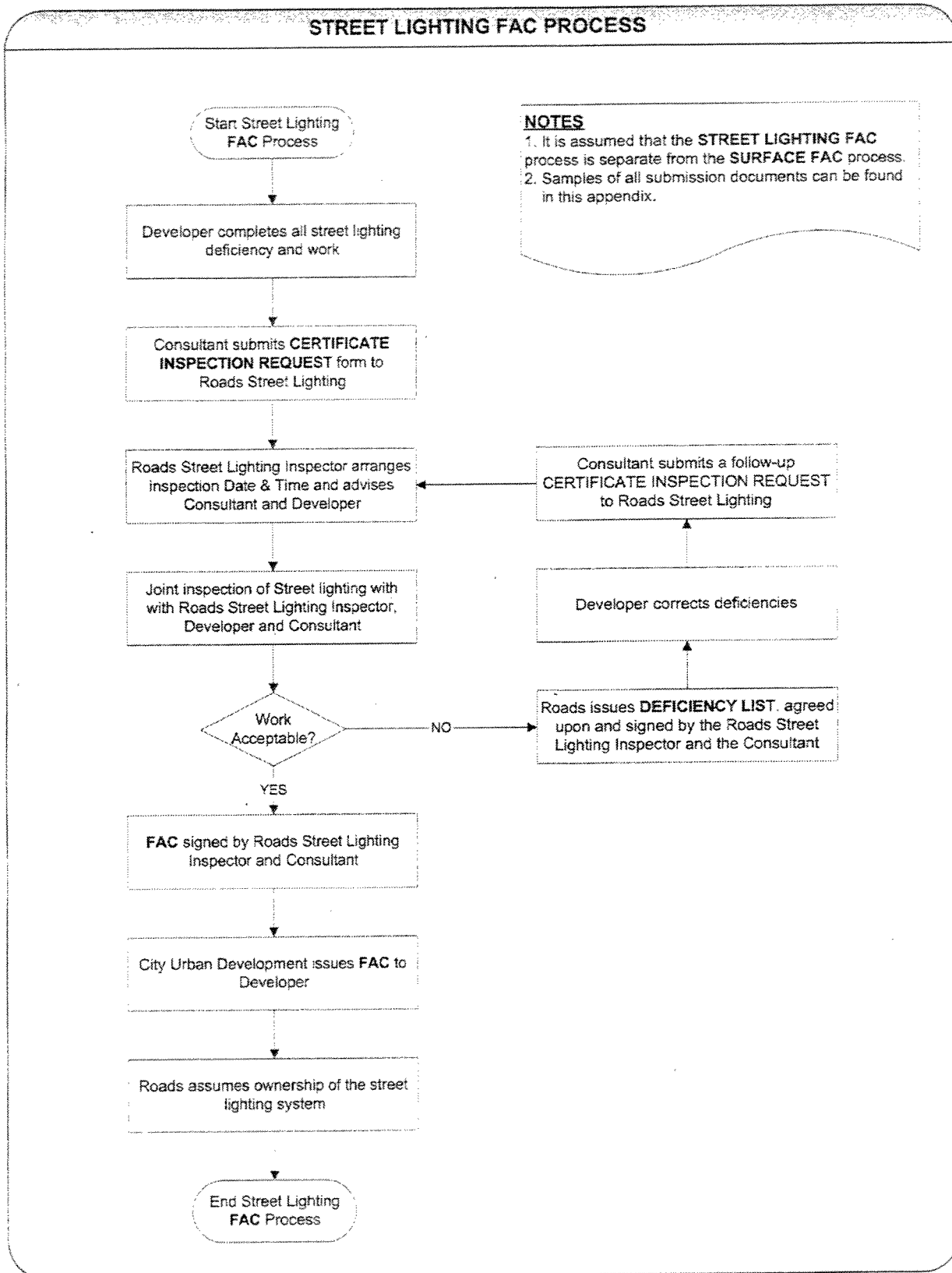
Legal Description: LOT _____ & BLOCK _____

City of Calgary Roads Inspector:	Consultant:
Signed: _____	Signed: _____
Printed: _____	Printed: _____
Date: _____	Date: _____

Notes:

1. Original Copy to Roads Inspector with copy to consulting engineer or two original copies.
2. Attach copy of 8½ x 11" surface improvement cover sheet and Legal Lot Plan.

7.14 Street Lighting FAC Process



7.16 Parks Construction Inspection Checklist



Construction Inspection Checklist
& C.C.C. Report

Community		Subdivision		Report #			
Description		Phase	Developer		Plan	Block	Lot
Legal/Municipal Address							
Consultant		Contact Person			Phone		
Contractor		Contact Person			Phone		
C.C.C. Application Received				Date YYYY MM DD			
___ Yes ___ No							
	Work Inspected	Approved	Date	Parks	Dev.	Def.	Comments & Notes
		Yes	No	Ins.	Rep.	Cor.	
A.	Inspection # 1						
	Approved Plans, Letter						
	Line Assignment						
	Layout P.L. Stakes						
	Erosion/Sediment Controls						
	Restoration/Reclamation Signage						
B.	Inspection # 2						
	Approved Plans & Letter						
	Survey Stakes - Grades						
	Subgrade Preparation						
	Irrigation Layout						
	Plumbing Permit						
	Layout, pathways, trees, furniture						
	Sports Fields, Playgrounds etc.						
C.	Inspection #3						
	Approved Plans & Letter						
	Topsoil Test (after topsoil placed)						
	Tree/Shrub Pits						
D.	Inspection #4						
	Approved Plans & Letter						
	Trees & Shrubs as per Drawing						
	Meter Received By Contractor						
			Tag #		Serial #		
	Open Trench Inspection						
	Trees Planted at Specified Grade						
	Rootball, Caliper Standards Met						
	C.N.L.A. Specifications Met						
Insect/Disease/Damage Free							
Tree Setback Spacing							

7.17 Parks Final Acceptance Inspection Checklist & Report



R 1307(R2001-09)
 THE CITY OF CALGARY
 PARK DEVELOPMENT
 AND OPERATIONS

***FINAL ACCEPTANCE INSPECTION
 CHECK LIST & REPORT**

COMMUNITY		SUBDIVISION	
DESCRIPTION	PHASE	DEVELOPER	
LEGAL/MUNICIPAL ADDRESS			
CONSULTANT		CONTACT PERSON	PHONE
CONTRACTOR		CONTACT PERSON	PHONE
F.A.C. APPLICATION RECEIVED: <input type="checkbox"/> YES <input type="checkbox"/> NO			DATE YYYY MM DD
WORK INSPECTED	DEFICIENCY	INSPECTOR'S REPORT DETAIL	
A. SURFACE CONDITION:			
settlement			
ponding/drainage			
repair required			
B. TURF:			
turf quality acceptable			
bare spots requiring top dressing and overseeding			
weed problems			
others			
C. TREES:			
tree replacement			
pruning required			
strapping removed			
wires removed			
burlap removed			
guying removed			
tree well cultivated			
soil settlement is, tree too low			
others			
D. SHRUBS:			
shrubs replacement			
pruning required			
bed cultivated			
weed free bed			
mulch intact			
others			
E. FENCING			
F. PLAY EQUIPMENT:			
G. PATHWAYS/HARD SURFACE:			
H. AMENITIES:			
benches			
garbage receptacles			
others			
I. GENERAL COMMENTS:			
J. IRRIGATION SYSTEM:			
as-built drawings			
maintenance manuals received			
Annual D.C.V. report			
Irrigation information sheet			
Meter information sheet			

K. EXTENDED WARRANTY REQUIRED:		
L. MAINTENANCE LOG SUBMITTED:		
M. MYLARS RECEIVED (LANDSCAPE & IRRIGATION)		

*NOTE: Contract documents and the Development Guidelines and Standard Specification for Landscape Construction override the Inspection Check List and Report.

<input type="checkbox"/> No deficiencies noted	Parks Area Rep.: _____
<input type="checkbox"/> Application Expiration Date: _____	Industry Rep.: _____
Report Distribution	Park Inspector _____
<input type="checkbox"/> Industry Rep.	Inspection Date _____
<input type="checkbox"/> Area Superintendent	<input type="checkbox"/> Design & Development File

7.18 Construction Completion Certificate – Landscape Development

CONSTRUCTION COMPLETION CERTIFICATE LANDSCAPE DEVELOPMENT	
SUBDIVISION: _____	PHASE: _____ AGREEMENT NUMBER: _____
DEVELOPER: _____	
LANDSCAPE DEVELOPMENT: _____	
DEVELOPER'S REPRESENTATIVE: _____	
CONTRACTOR: _____	
Acting on behalf of the developer, we wish to make application for a construction completion certificate according to the terms outlined in the City of Calgary Residential Subdivision Development Agreement.	
Attached are the appropriate Parks and Recreation Inspection Report(s) correspondence and a copy of the development boundary.	
_____	_____ Landscape Architect
Date _____	_____ Landscape Architect
Approved on _____, 20__	_____ City Inspector
Approved on _____, 20__	_____ City Representative
	_____ Projected earliest maintenance expiry date

Rejected on _____, 20__	_____ City Representative
Cause for rejection: _____	

I hereby certify that the terms listed for rejection have now been corrected.	
_____	_____ Signature of Developer/Developer's Representative
Date _____	_____ City Inspector
Approved on _____, 20__	_____ City Representative
Approved on _____, 20__	_____ City Representative
	_____ Projected earliest maintenance expiry date

7.19 Final Acceptance Certificate – Landscape Development

**FINAL ACCEPTANCE CERTIFICATE
LANDSCAPE DEVELOPMENT**

SUBDIVISION: _____ PHASE: _____ AGREEMENT NUMBER: _____

DEVELOPER: _____

LANDSCAPE DEVELOPMENT: _____

DEVELOPER'S REPRESENTATIVE: _____

CONTRACTOR: _____

I/Acting on behalf of the developer, we wish to make application for a Final Acceptance Certificate according to the terms outlined in the City of Calgary Residential Subdivision Development Agreement.

Attached are the appropriate Parks and Recreation Inspection Reports/Correspondence and a copy of the development boundary.

Date _____ Landscape Architect

Date _____ Landscape Architect

Approved on _____, 20____

City Inspector

Approved on _____, 20____

City Representative

Rejected on _____, 20____

City Representative

Cause for rejection: _____

I hereby certify that the terms listed for rejection have now been corrected.

Date _____ Signature of Developer/Developer's Representative

Approved on _____, 20____

City Inspector

Approved on _____, 20____

City Representative

8.0 CONSTRUCTION COMPLETION CERTIFICATE CHECKLISTS

The following checklists have been provided to indicate the documentation required to be submitted, in conjunction with the submission of CCC's, to the Engineer.

When any item(s) shown on these checklists are, for any reason, not included with the appropriate CCC, the Consulting Engineer must receive prior approval from the Engineer for any items omitted and shall detail in the covering letter the items omitted and an explanation for the omissions.

In conjunction with the submission of any CCC including the documentation identified on the checklists, the Engineer may request the Consulting Engineer to forward copies of the results for all tests required to be taken as identified in the specifications.

All reports, checklists and information submitted must be neat and legible.

8.1 Compaction Reports

8.1.1 Stripping and Grading Report

- a) One (1) copy of a letter of intent to provide a report certifying that the stripping and grading of the relevant portion of the development area was in compliance with the Guidelines is to be submitted to the Engineer should the Developer require the release of building permits for the said portion of the development area prior to the submission of the stripping and grading report, and/or
- b) One (1) copy of a stripping and grading report for the entire development area is to be submitted to the Engineer prior to the submission of any CCC's to the Engineer.

8.1.2 Underground Utilities Compaction Report

- a) One (1) copy of a letter of intent to provide a report certifying underground utility compaction to be submitted to the Engineer prior to the issuance of the permission to construct surface improvement, should the underground utility compaction report be unavailable for submission at that time, and/or
- b) One (1) copy of the underground utility compaction report is to be submitted in the conjunction with the submission of the first CCC. Should the Consulting Engineer submit more than one report (i.e. storm and sanitary sewer in one report and watermains and hydrants and water and sewer service connections in a second report) only one (1) copy of each report is required.

8.2 Waterworks

8.2.1 Watermains and Hydrants

- a) Four (4) copies of the certificates (CCC)
- b) Four (4) copies of 8 1/2 x 11" water cover sheet
- c) One (1) full size water cover sheet
- d) One (1) copy of letter of notification to Fire Department.

8.2.2 Storm, Sanitary and Water Connections

- a) Four (4) copies of the certificates
- b) Four (4) copies of 8 1/2 x 11" Building Grade Plan.

8.3 Wastewater and Drainage

8.3.1 Sanitary Sewer

- a) Four (4) copies of the certificates (CCC)
- b) Four (4) legible copies of 8 1/2 x 11" sanitary sewer cover sheet
- c) One (1) copy of the report which summarizes the results of the material tests taken for each size of P.V.C. sanitary sewer pipe installed
- d) results of all cast-in-place concrete material tests, as per the Current Standard Specifications for Sanitary Sewer Construction.

8.3.2 Storm Sewer

- a) Four (4) copies of the certificate (CCC)
- b) Four (4) legible copies of 8 1/2 x 11" storm sewer cover sheet
- c) One (1) copy of the report which summarizes the results of the material tests taken for each size of P.V.C. storm sewer pipe installed
- d) results of all cast-in-place concrete material tests, as per the Current Standard Specifications for Storm and Sanitary Sewer Construction.

8.3.3 Overland Drainage Control Features

- a) Four (4) copies of the certificate
- b) Four (4) legible copies of 8 1/2 x 11" overland drainage cover sheet
- c) Concrete test results.

8.4 Calgary Roads

8.4.1 Sidewalks, Curbs, Gutters and Catch Basins

- a) Four (4) copies of the certificates
- b) Four (4) legible copies of 8 1/2 x 11" surface improvement cover sheet
- c) One (1) list of omissions, as provided for in Clause 141 of the Residential Development Agreement, if applicable
- d) One (1) copy of the statement of material compliance, issued by the Materials and Research Section of the Calgary Roads Division

8.4.2 Paved Roads, Paved Lanes, and Paved Walkways

- a) Four (4) copies of the certificate, with a copy of the appropriate Inspection Report attached to each certificate, if applicable. See Parks Development Inspection Report (See Page 26).
- b) Four (4) legible copies of 8 1/2 x 11" surface improvement cover sheet
- c) One (1) list of omissions, as provided for in the Residential Development Agreement. Each of the omissions, if any, are to make specific reference to either Clause 156 m (I) or (ii) of the Residential Development Agreement for the maintenance period
- d) One (1) copy of the statement of material compliance, issued by the Materials and Research Section of the Calgary Roads Division
- e) One (1) copy of the statement of design mix approval issued by the Materials and Research Section of the Calgary Roads Division if a non-standard asphalt design mix was utilized.
- f) One (1) copy of the approved pavement design.

The following items are specifically for Catch Basins Leads and/or Catch Basins and all sewer manholes but are to be submitted with the above-noted CCC.

- g) One (1) legible copy of the 81/2 x 11" storm sewer cover sheet

8.4.3 Gravelled Lanes

- a) Four (4) copies of the certificate, with a copy of the appropriate Inspection Memo attached to each certificate, if applicable. Refer to See Roads Inspection Memo (See Page 30).
- b) Four (4) legible copies of 81/2 x 11" surface improvement cover sheet

The following items are specifically for Catch Basins and Leads installed in Gravelled Lanes and are to be submitted with the above-noted CCC.

- c) One (1) copy of the statement of material compliance issued by the Materials and Research Section of the Calgary Roads Division for any asphalt surfacing installed in the lane(s)
- d) One (1) legible copy of the 81/2 x 11" storm sewer cover sheet

8.5 Miscellaneous

The following CCC's are to be accompanied with the documentation as required by the Engineer:

- i) Sound Attenuation Fencing
- ii) Amenities

The following CCC's and FAC's are required for landscaping and irrigation by the Director of Calgary Parks and Recreation Department.

1. Reserve parcels, public utility lots, dry ponds, traffic islands, boulevards, medians and road rights-of-way.
2. Required for disturbed environmental reserves.

