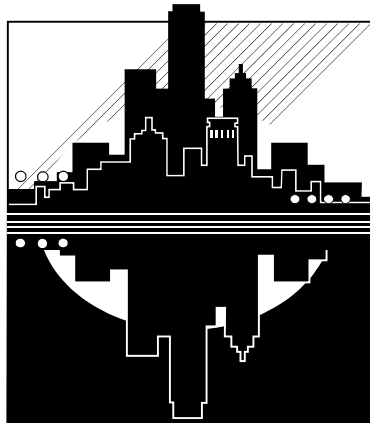




**CITY OF NANAIMO
DEVELOPMENT SERVICES DEPARTMENT
ENGINEERING & ENVIRONMENTAL DIVISION**

**GUIDE FOR
DEVELOPERS AND ENGINEERS**

ENGINEERING REQUIREMENTS FOR SUBDIVISIONS



Prepared by
The Engineering & Environmental Division
of the
Development Services Department
CITY OF NANAIMO
Amended May, 2002

i. PREFACE

The purpose of this guide is to assist individuals with their understanding of the function and requirements of the Engineering & Environmental Division of the Development Services Department in the subdivision process. However, as each project is unique, only the basic information is included in this guide. Therefore, it is recommended that you read the current "Subdivision Control Bylaw."

Where there is a conflict between the Subdivision Control Bylaw and a procedure in this Manual, the Bylaw prevails.

Design and construction methods for all Municipal services shall comply with the current City of Nanaimo Engineering Standards & Specifications, a copy of which can be obtained for a nominal charge from the Engineering Department at 200 Franklyn Street.

Your comments and suggestions for improvement of this guide and Engineering & Environmental Division procedures are most welcome. If you have any questions, please feel free to contact this Division of the Development Services Department.

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1. INTRODUCTION TO THE PROCESS

Applications for review of Engineering designs for subdivision should include a preliminary subdivision layout.

After preliminary layout acceptance (PLA) is issued by the Approving Officer and the conditions of subdivision are identified, the subdivider's consulting engineer should deal directly with the Engineering & Environmental Division regarding the design, construction, etc. of roads, services and utilities.

At each stage where a submission is required, all forms, plans and documents should be submitted simultaneously. In addition, all correspondence should include the City's file number. This will aid in reviewing the submission as quickly as possible.

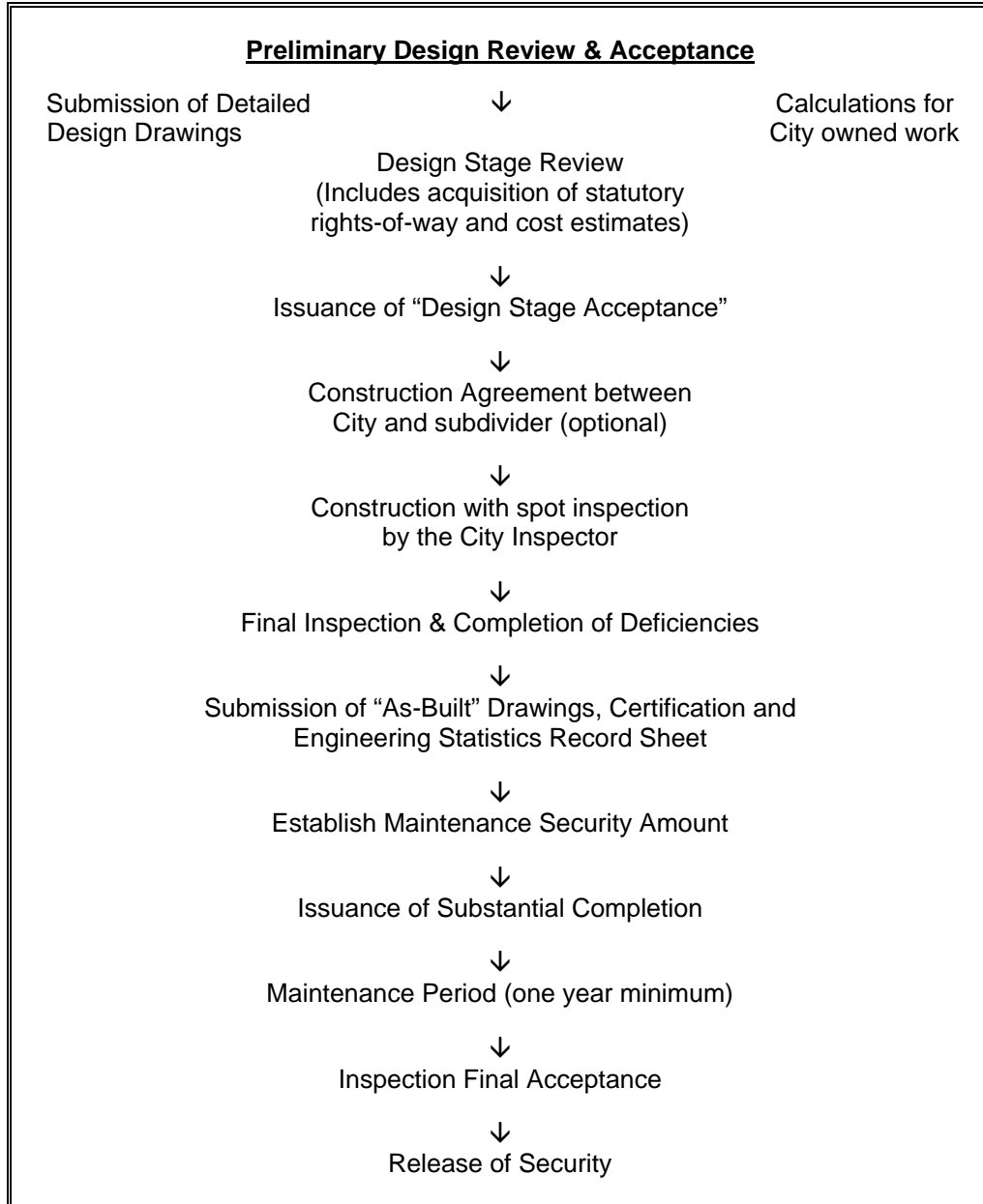
The Engineering & Environmental Division staff review and coordinate the requirements, design, cost estimates, etc. with the developer's engineering consultant, and involve other City departments and other agencies as necessary. The coordination also involves research and review of policies, guidelines, and various studies and historical records.

The Staff try to make themselves as available as possible to the public. Subdividers and their consulting engineers are encouraged to contact the Engineering & Environmental Division any time they have questions regarding the process or submissions they are making.

When approval of the design is issued, the Municipal Service Inspector becomes the primary "City" contact; however, the technician involved in the design review will assist with any issues which arise.

The details and information in this Guide pertain only to the Engineering & Environmental Division's involvement in the subdivision process. Any other requirements of the Building Inspection Division and/or Planning Division should be reviewed with the applicable division of the Development Services Department.

MAJOR STEPS INVOLVED IN THE SUBDIVISION PROCESS



This chart shows the major stages of involvement of the Engineering & Environmental Division in the Subdivision process. For specific details on each stage, please refer to the text.

2. DESIGN DRAWINGS

When subdivision of land involves:

- the dedication and/or construction of “public” roads;
- the construction of watermains, sanitary sewer mains, storm sewer mains, or other related works;

Engineering design drawings, prepared by a Professional Engineer registered in the Province of British Columbia, are to be provided to the City.

Design drawings are not required until after the subdivision has received Preliminary Acceptance (PLA). However, the Approving Officer may require conceptual design drawings in order to assist in the analysis of the subdivision plan prior to issuance of PLA.

All design drawings, whether preliminary or detailed, for works that will eventually be owned by the City shall be drawn in accordance with the City of Nanaimo’s current drawings standards. Therefore, the consulting engineer should become familiar with these standards before making a submission. The drawing standards are contained in the City’s Manual of Engineering Standards and Specifications.

A. Preparation and Submission of Preliminary Design Drawings

The preliminary design submission should include a site plan of the proposed works, to a scale of not less than 1:1,000. The following information, where applicable, must be shown on the site plan:

- proposed lot numbers, property lines and dimensions;
- all known existing underground services;
- existing pavement and curbs;
- existing water courses (including required setbacks), ditches, culverts;
- proposed underground services and appurtenances;
- all pertinent property, rights-of-way and easement lines;

- proposed road allowances and easement dimensions;
- existing lot numbers and legal plan numbers;
- contour information sufficient to detail the existing topography;
- existing and proposed power, telephone and streetlight poles, etc.;
- existing and proposed survey control monuments; and
- a key plan to a small scale (example 1:10,000) showing the location of the works in relation to major streets. The key plan should be located in the upper right-hand section of the drawing sheet.

The preliminary design submission should include four (4) sets of plans. These plans should be submitted to the City of Nanaimo's Engineering & Environmental Division of the Development Services Department at 238 Franklyn Street. The drawings will be reviewed and then returned with comments to the consulting engineer.

B. Preparation and Submission of Detailed Design Drawings

A complete set of detailed design drawings shall consist of separate drawings of each of the following:

- site plan and key plan;
- plan and profile for roads, drainage, and storm sewers;
- plan and profile for sanitary sewers and watermains (profile of watermains for diameters 200mm and greater);
- plan of streetlighting layout;
- four (4) sets of prints of all drawings;
- a site plan showing all required statutory rights-of-way and working strips on-site and off-site; and
- additional plans showing any special details.

All detailed design drawings shall be sealed and signed by the consulting engineer responsible for the design. Detailed design drawings must be submitted to the City of Nanaimo's Engineering & Environmental Division of the Development Services Department, along with the following:

- a Certification that the design is in compliance with the City of Nanaimo's Engineering Standards and Specifications. A sample certification is included in Appendix A1;
- two (2) copies of the storm sewer design calculations. See sample in Appendix A2;
- two (2) copies of a storm sewer tributary area plan outlining all areas included in the drainage calculations tributary to the major and minor systems;
- two (2) copies of a storm sewer on-site overall plan, showing major and minor storm sewer systems. The design flows should be marked on the drawing at all discharge points from the property;
- two (2) copies of the sanitary sewer design calculations. A sample format is included in Appendix A3;
- two (2) copies of the sanitary sewer tributary area plan outlining all areas naturally tributary to the sanitary sewer system;
- an evaluation of the drainage system downstream of the project. Recommended improvements to the system should be included in the report;
- a letter of approval from the B.C. Hydro and Power Authority regarding the design of underground Hydro wiring and/or the location of Hydro poles;
- a letter of approval from B.C. Telephone Company regarding the design of underground telephone wiring;
- a letter of approval from the Gas Utility Company regarding the design of the gas main system if proposed; and
- the marked-up set of preliminary design drawings that were returned to the consulting engineer by the City of Nanaimo.

It is the responsibility of the consulting engineer to ensure that all forms, plans and documents, as required above, are submitted simultaneously with the first submission of design drawings. If incomplete, the submission may be returned to the consulting engineer without review.

The first submission of detailed design drawings must include two (2) sets of prints. All plans shall be on standard size drafting sheets and shall be neatly folded with the Title Block visible.

The design drawings will be reviewed by the assigned technician and if changes are necessary, a marked-up set of prints will be returned to the consulting engineer.

If a re-submission of the design drawings is required, the consulting engineer shall return the marked-up prints together with two (2) sets of revised drawings. This process shall be repeated until all aspects of the engineering design have been approved. Repeat reviews may be subject to a fee of _____ as per _____.

C. Design Stage Acceptance

DSA for utilities and roads will be issued on completion of the following:

- acceptance of detailed design drawings by the Ministry of Health, Ministry of Transportation & Highways and the Ministry of Water, Land and Air Protection, where required;
- acceptance by the City of Nanaimo's Engineering & Environmental Division of the detailed design submission, including drawings, soil reports, drainage reports, etc.;
- registration of all off-site statutory rights-of-way where required; and
- approval by any other agencies having jurisdiction (e.g. B.C. Hydro, Telephone, Cable, Gas, etc.).

DSA indicates that the drawings have been reviewed in accordance with the City of Nanaimo's Engineering Standards and Specifications and appear to fulfill all necessary requirements for subdivision.

Issuance of DSA by the City of Nanaimo shall not relieve the subdivider or his consulting engineer of responsibility for any errors or omissions, and shall **NOT** be regarded as an acceptance of responsibility for the design.

When the reviewing technician is satisfied with the design and is prepared to issue DSA, the engineer will be contacted for an additional three (3) sets of design drawings.

After DSA is issued, the design drawings will be date stamped "REVIEWED". One set of stamped drawings will be returned to the consulting engineer.

If after acceptance of detailed design drawings, any changes or extra work become necessary, the subdivider shall be required to make such changes.

3. CONSTRUCTION

A. Commencement of Construction

Construction of the works for a subdivision must not commence until the DSA has been issued by the City of Nanaimo.

In addition, prior to commencement of construction:

- the subdivider's engineering consultant shall provide a letter stating the business address and telephone number of all contractors who will be working on the site, and outlining the anticipated construction schedule for the project;
- the subdivider shall ensure that every company or business working on the project site has a City of Nanaimo business license; and
- the engineer should arrange for a pre-construction meeting through the assigned City technicians.

B. Work in Streets, Lanes and City Property Areas

Where construction related to the development of land requires work within a street, lane, right-of-way, or City property area, a permit is required by the contractor. It is the consulting engineer's responsibility to ensure that the contractor has the necessary permit prior to commencement of work.

Application for a permit is made to the Engineering & Environmental Division, 238 Franklyn Street.

With the completed "Application for a Permit to Install Works Within Streets, Lanes, and City Property Areas", (see sample in Appendix B1), the contractor shall include:

- a copy of a liability insurance policy with a minimum \$1 million coverage and indicating the City of Nanaimo as an additional named insured;
- proof of City of Nanaimo Business License; and

- security (cash, certified cheque or Irrevocable Letter of Credit), usually 10 percent (to a minimum of \$500.00) of the value of the work, or another type of security (i.e. construction agreement, subdivision agreement) to be negotiated with the City of Nanaimo.

Some processing time is involved with the application; therefore, it should not be left until the last minute!

C. Connection to Municipal Utilities

All work involving connection or modification of existing City utilities is done by the City of Nanaimo's forces unless otherwise authorized by the City.

Where a subdivision involves the extension, tie-in or connection to existing service mains, the work shall be done at the subdivider's expense. Prior to any work being done by the City forces, an authorization letter must be received from the registered owner of the property authorizing the City of Nanaimo to do the necessary work at his/her expense. A sample authorization form for utility tie-ins is included in Appendix B2.

Where new parcels in a subdivision require service connections from existing utilities, the City will install the service connections, upon receipt of a letter authorizing the work, at the owner's expense.

An authorization form for the installation of service connections may be obtained from the Engineering & Environmental Division. (See sample authorization form Appendix B3). In addition, a sketch plan is required showing the preferred location for the services and the locations of any existing services. (The preferred locations for the new services must also be clearly staked on site at the parcel boundary.) If the authorization form is incomplete, the application may not be processed.

Where possible, the service connections will be installed at the locations requested by the property owner. In the event that the property owner's preferred locations are not practical due to installed surface improvements, unsuitable ground conditions, or conflict with existing underground utilities, the service connections will be installed to accommodate the obstacles at the City's discretion.

Prior to the submission of the application, the owner must have the proposed property boundaries flagged or posted on site by a B.C. Land Surveyor so that construction staff can install the services in the preferred location.

Authorization letters must be submitted to the Engineering & Environmental Division.

Lot Servicing Procedure Summary

**Application and
Authorization submitted**



**Proposed property
boundaries flagged and
service connection
location staked**



**City installs
service connection**



**Approving Officer
is notified by
the Engineering & Environmental Division
upon completion**



**City's Finance Department
invoice property owner
for the work done**



**Invoice to be paid
prior to final approval
of the subdivision**

D. Driveway Construction for Residential Subdivision

If the ground elevation 10 metres inside the lot is more than 1.25 metres above or below the centerline of the road, or is bedrock, the driveway shall be designed and constructed as part of the initial subdivision, unless otherwise approved by the City of Nanaimo.

Driveway construction is subject to the City of Nanaimo's Engineering Standards & Specifications, and must meet the following requirements:

- no driveway to the street shall be less than 1.5 metres from the adjoining lot boundary;
- driveways must be set back at least 7.6 metres from a street intersection or 4.6 metres when one or both streets is a lane;
- angled driveways must be at least 45 degrees between the driveway and the edge of pavement on the road; and
- residential driveway approaches shall be a minimum 4.25 metres wide, and a maximum 6.0 metres wide.

For more detailed requirements on the construction of driveways, please refer to the appropriate sections in the City's Manual of Engineering Standards & Specifications and also to the current "Crossing Control Bylaw". When the driveway access has been constructed, the Engineering & Environmental Division should be notified by the subdivider or his consulting engineer so that an inspection can be made. Depending on the construction involved, the Engineering & Environmental Division may require a profile of the constructed driveway to be produced by the subdivider's B.C. Land Surveyor or consulting engineer at the subdivider's expense. When the driveway construction has been approved by the Engineering & Environmental Division, the Approving Officer will be notified.

4. INSPECTION

A. During Construction

The subdivider's consulting engineer is responsible for inspections of all on-site and off-site work that will be taken over by the City.

The City of Nanaimo's Works Inspector will conduct spot inspections of the project during construction to check compliance with the City's standards and to assist in the co-ordination of any construction required by City crews.

The consulting engineer shall notify the City's Municipal Service Inspector forty-eight (48) hours before:

- the start of construction;
- testing of utilities;
- flushing;
- chlorination of waterlines;
- testing of road base; or
- paving.

The consulting engineer **MUST** be present for all tests. Inspection by the City does not relieve the subdivider or his consulting engineer of their responsibility for ensuring compliance with the approved drawings, and with the City of Nanaimo's Engineering Standards & Specifications, and shall not be regarded as an acceptance of responsibility for work done.

The consulting engineer shall provide the City of Nanaimo with copies of all test results and a written opinion of them.

B. Testing

Upon completion of installation of sanitary, storm, and watermains, all testing shall be done under the direction of the subdivider's engineer and the City Municipal Service Inspector.

The testing information outlined below is provided only as a general guideline. For more detailed information, please refer to the appropriate section in the City's Manual of Engineering Standards & Specifications.

- Smoke Testing of Sanitary and Storm Sewer Mains

The consulting engineer may make their own arrangements for the various tests on installed sanitary and/or storm sewer systems. Arrangements for City crews to do smoke testing should be made through the City's Municipal Service Inspector.

At the time of smoke testing, copies of the as-built drawings for the services to the lots must be available for the City's Municipal Service Inspector. (The as-built information may be in the form of service cards.)

- Water System Testing, Flushing and Chlorination

On completion of construction, new water lines must be tested, flushed and chlorinated.

Pressure and leakage tests shall be performed on all installed piping and fittings. Hydrant lead valves and corporation stops shall be opened during the test so that the hydrant and water services are placed under test as well.

Pressure and leakage tests shall be performed between valved sections of the installation to ensure that every valve in the system is tested for leakage in the shut-off position.

Any leakage found shall not exceed the maximum allowable leakage permitted by the City of Nanaimo's Engineering Standards & Specifications.

Prior to chlorination, all water system piping shall be flushed at a minimum water velocity of one metre per second (1 m/s).

Discharge points for water flushing should be coordinated with the City's Municipal Service Inspector in order to prevent flooding, erosion, and environmental damage.

On completion of the initial flushing operation, all piping and appurtenances shall be chlorinated. Chlorination, final flushing and bacteriological testing procedures shall conform to AWWA (American Water Works Association) C601.

The consulting engineer shall arrange for sampling after chlorination, as well as testing by an independent laboratory. Test results shall be forwarded to the Engineering & Environmental Division of the City, along with the consulting engineer's confirmation that the chlorination has been satisfactory.

On completion of chlorination, the entire piping system shall be thoroughly flushed and re-filled with water. The water system shall not be opened to the City system until approval to do so is given by the City's Municipal Service Inspector.

Chlorination water shall be disposed of in a way not causing harm or damage to vegetation or aquatic life in bodies of water or water courses. Therefore, chlorination water shall be disposed of at a discharge point determined by the City's Municipal Service Inspector.

C. Final Construction Inspection

When the consulting engineer is satisfied that all works have been completed in accordance with the design drawings and the City's requirements, a final inspection should be requested through the City's Municipal Service Inspector.

Deficiencies noted at the Final Inspection must be corrected and approved prior to the City issuing a "Letter of Substantial Completion".

A re-inspection of the corrected deficiencies will be made by the City's Municipal Service Inspector.

All deficient items must also be corrected on the as-built drawings prior to their submission for review and approval.

5. COMPLETION OF CONSTRUCTION

The consulting engineer must provide:

- certification of the installed works (See sample form - Appendix C1);
- certification of ornamental street lighting taken over by the City (see sample form - Appendix C2);
- two (2) copies of an Engineering Record Statistics Sheet for works taken over by the City (see sample - Appendix C3); and
- as-built drawings reflecting the constructed condition of the works taken over by the City.

As-built Drawings:

As-built drawings for work taken over by the City shall be submitted in two stages to the Engineering & Environmental Division.

1. The first stage shall include:

- two (2) sets of prints of the drawings detailing the constructed works;
- one (1) set of utilities cards (see Appendix C4);
- certification of the constructed works and street lighting;
- Electrical Inspector's certification of the street lighting;
- two (2) copies of the Engineering Record Statistics Sheet;
- one (1) set of statutory rights-of-way drawings;
- appropriate utility, earthwork, concrete and asphalt test results; and
- copy of the Final Inspection Deficiency List.

The drawings will be reviewed by the Engineering & Environmental Division to confirm compliance with the City of Nanaimo's requirements. The check prints will then be returned to the consulting engineer for additions or changes, if required.

2. The second submission of as-built drawings shall include:
 - a) one (1) 3-mil mylar (not sepia) transparency of each drawing detailing the constructed works. The consulting engineer shall stamp/seal and sign the mylar transparencies and prints, certifying the as-built information is correct;
 - b) two (2) sets of prints of (a) and an additional four (4) prints of the "site plan";
 - c) one (1) set of lot utilities cards, if requested; and
 - d) the check set from the first submission.

All written certification and mylar transparencies and prints shall be stamped/sealed and signed by the consulting engineer to certify that the information is correct.

All information should be submitted as soon as possible after completion of the works to avoid delays in obtaining the "Certificate of Substantial Completion".

As noted under "Final Construction Inspection" (Section 4C), all field deficiencies must be corrected prior to the first submission of as-built drawings.

All required forms are available at the Engineering & Environmental Division, Development Services Department, located at 238 Franklyn Street.

Completion of Construction Summary

**Submit all Necessary
Certification, Engineering
Records Statistics Sheet
and As-Built Drawings**



**Review of
As-Built
Drawings**



**Additions or
Changes if
Necessary**



**Second Submission
of
As-Built Drawings**



**Review and Issuance
of
Substantial Completion**

6. CERTIFICATE OF SUBSTANTIAL COMPLETION

A “Certificate of Substantial Completion” will be issued upon completion of all of the service, utility and road works related to the project, final inspection by the City of Nanaimo’s Engineering & Environmental Division and the submission of the following:

- certification of the works, including street lighting;
- certified as-built mylars and prints;
- Engineering Records Statistics Sheet;
- Electrical Inspector’s Certificate;
- maintenance security; and
- proof of registration of statutory rights-of-way.

The “Certificate of Substantial Completion” will specify the works for which it is issued and the date the works were considered substantially completed. The date of substantial completion will be considered the starting date for the “maintenance period” for the works specified on the certificate.

A sample “Certificate of Substantial Completion” is included in Appendix D.

7. MAINTENANCE PERIOD

The subdivider is responsible for maintaining and/or correcting the work against any defects arising from installation, materials, workmanship or engineering design, which may appear after the date of substantial completion until the end of the maintenance period (minimum of one year).

Defects which are discovered during the maintenance period, shall be replaced and/or rectified by the subdivider to the satisfaction of the City. In the event that this work must be done immediately, in the opinion of the City, to prevent serious damage, injury or loss of life, the City will arrange for the necessary work to be completed and will then notify the subdivider.

Any work required shall, except for emergencies, be carried out by the subdivider or his representative within ten (10) days of the City's written instruction to perform the work. In the event that this work is not done by the subdivider within the ten (10) day period, the City will take whatever action is necessary to have the work done.

All work performed under the maintenance period shall be done at the subdivider's expense. An extended maintenance period may be required for repaired work.

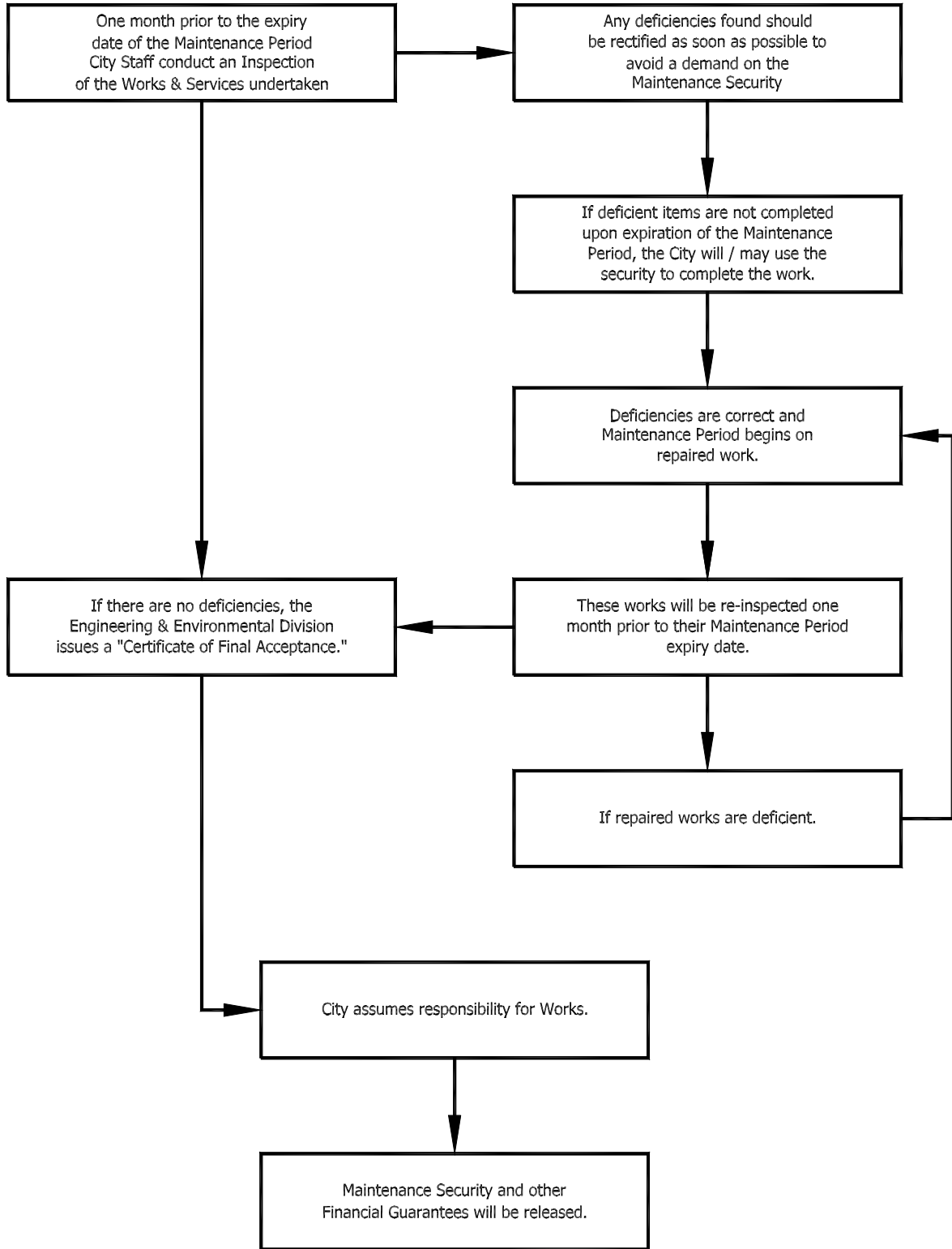
8. FINAL ACCEPTANCE

Works taken over by the City will be inspected one month before the end of the maintenance period. If any deficiencies are evident in the installation, materials, workmanship or engineering design, the subdivider's consulting engineer will be advised in writing to make the necessary corrections and repairs. An extended maintenance period may be required on repaired works.

If there are no deficiencies, a "Certificate of Acceptance" (see sample Appendix E) will be issued for the works by the City of Nanaimo. With issuance of a "Certificate of Acceptance", the City will assume responsibility for maintenance of the works.

Steps will then be taken by the City to release deposits and other financial guarantees provided by the subdivider for the maintenance period.

SUMMARY OF FINAL ACCEPTANCE



9. STATUTORY RIGHTS-OF-WAY

Statutory rights-of-way registered in favour of the City of Nanaimo are required for all utilities and drainage systems crossing private property, which will become the responsibility of the City of Nanaimo for maintenance and repair. A statutory right-of-way gives the City of Nanaimo the authority to enter the lands over which the right-of-way is registered for the purpose of inspecting or maintaining the utilities.

The limits of all statutory rights-of-way shall be defined by plans prepared by a British Columbia Land Surveyor. The plans shall be registered in the Land Title Office in Victoria.

Before “Substantial Completion” of construction, and final approval of the subdivision plan, the subdivider must obtain and register all on-site and off-site statutory rights-of-way, including working easements where required.

The subdivider's consulting engineer shall ensure that all statutory rights-of-way for works and services are correctly shown on the as-built drawings. Minimum right-of-way and working easement widths for underground services through private property are shown in Appendix G. In some cases, additional width may be required.

All statutory right-of-way documents shall be in a completed form satisfactory to the City of Nanaimo.

Outlined below is the procedure to be followed for statutory right-of-way registration, including the responsibilities of the subdivider:

- the subdivider shall submit copies of (proposed) right-of-way plans prepared by a B.C.L.S. to the City Engineering Technician, for review.
- after the right-of-way site plan has been reviewed and accepted by the City of Nanaimo, the subdivider must arrange for:
 - ◆ a B.C. Land Surveyor to prepare the required statutory right-of-way plans; and
 - ◆ signing of the necessary right-of-way documents. The City of Nanaimo's Land Agent will supply the standard documents required for registration of the statutory rights-of-way.

- completed right-of-way plans and documents must be submitted to the City of Nanaimo's Land Agent for approval prior to registration. The subdivider must arrange for the registration of the approved statutory right-of-way documents and plans in the Land Title Office in Victoria; and
- following registration of the documents and plans, the subdivider shall submit to the City of Nanaimo's Land Agent a copy of the documents with evidence of their registration.

10. SUBDIVISION AGREEMENT - CONSTRUCTION AND MAINTENANCE AGREEMENT

If permitted by the Approving Officer, a subdivider may enter into a "Subdivision Agreement" to allow registration of the subdivision prior to completion of construction. Twenty-five (25) percent of the works is usually required to be completed as a condition of entering into the agreement. In this case, sufficient security must be posted with the "Subdivision Agreement" to cover the following outstanding or incomplete engineering-related items:

- engineering - construction inspection, certification, as-built drawings, registration of necessary right-of-ways;
- construction of all works (future public works) related to the project, both on-site and off-site;
- contingency allowance (usually 10 percent of the cost of the work); and
- maintenance period security.

For the purpose of estimating the amount of security, the consulting engineer shall submit the following information to the Engineering & Environmental Division:

- consulting engineer's detailed unit price cost estimate, or three (3) detailed contractor's bids covering all the work to be done on-site and off-site. Estimates and bids shall include unit costs and quantities;
- detailed cost estimate of work to be done by Municipal forces;
- confirmation of the status of works constructed; and
- detailed estimate of engineer's costs expected on the project, including a breakdown for design, survey, inspection, certification, and as-built drawings, in addition to any other expected charges.

Engineering & Environmental Division staff will review the information and make a recommendation to the Approving Officer regarding the amount of security which should be included with the Subdivision Agreement for engineering-related works.

The Approving Officer may have additional items requiring financial guarantee which are included in the total security deposit required. The Approving Officer will indicate the total security required.

The subdivider will be required to provide a maintenance security deposit upon completion of the construction for the project. The amount of the security will be

determined based on the total cost of the work to be taken over by the City; \$1,000. per lot created is the minimum security required.

The normal form of security accepted by the City of Nanaimo is:

- an automatically renewing irrevocable Letter of Credit (see sample Appendix H);
- cash; or
- certified cheque payable to the City of Nanaimo.

Reduction in Engineering-Related Security Deposits

Requests for reduction in the amount of security held by the City of Nanaimo for utilities construction should be made, in writing, by the consulting engineer for the project. Applications should be directed to the City's Engineering Technician for review and processing.

The consulting engineer shall include the following with his application:

- a) a copy of the most recent Progress Certificate signed by the consulting engineer;
- b) a detailed report on the amount of work completed and tested and a revised estimate of the cost to complete the remaining construction;
- c) a detailed breakdown of the engineer's remaining costs expected on the project, including a breakdown for design, survey, inspection, certification, and as-built drawings, in addition to any other expected charges;
- d) an affidavit from the contractor stating that he has been paid for all works completed except for that included in the Progress Certificate submitted, and that he has paid all his contractors and subtrades;
- e) a confirmation from the consulting engineer that he has been paid for all his services up to the date of the previous Progress Certificate; and
- f) where the information required in (d) and (e) above cannot be supplied, the consulting engineer shall provide a detailed explanation of all outstanding payments to be made.

Requests for reductions shall only include items in the original detailed cost estimate which was used to calculate the initial amount of the security deposit.

Generally, releases by the City of Nanaimo may be limited to 75 percent of the value of constructed works until all deficiencies are corrected.

The Engineering & Environmental Division will inform the Approving Officer of approval for reductions in security deposits.

11. LIST OF RELEVANT CITY REGULATIONS

The following City of Nanaimo bylaws can be obtained at the City Clerk's office located at 455 Wallace Street:

- current Subdivision Control Bylaw;
- current Zoning Bylaw; and
- current Crossing Control Bylaw.

The following manual can be obtained at the Engineering Department office located at 200 Franklyn Street:

- City of Nanaimo's Manual of Engineering Standards & Specifications.

APPENDICES

APPENDIX A1

CERTIFICATION OF DESIGN

I, _____, a Professional Engineer registered in the Province of British Columbia, hereby certify that the works, as herein set out on the attached drawings entitled _____

_____ have been designed with the City of Nanaimo's Engineering Standards & Specifications, and in accordance with good engineering practice where such design is not covered by the City's Engineering Standards & Specifications.

I have been retained to provide design, supervision, inspection, as-built drawings, and final certification for this project by:

(Name of Client)

I am satisfied that in the contractual mandate which exists between myself and my client, the terms of reference will permit me to render a level of supervision of the construction work which will allow me to put my name and seal to the "Certification of Works" required by the City of Nanaimo, a sample of which is attached to this document and initialed by me.

In the event that my client releases me from this project, or in the event that I find the terms of reference do not permit me to render a level of supervision of the construction work which will allow me to put my name and seal to the form of certification required by the City of Nanaimo, I will notify the City of Nanaimo within twenty-four (24) hours verbally and follow it up with written confirmation and clarification.

Signed this _____ day of _____ 20 _____.
_____ P. Eng.

(Signature)

I understand that the "Certification of Works" is to be completed in this format and submitted with the as built drawings.

Engineer

APPENDIX A1 (cont.)

Location of the Construction Site and Works: (Legal Description)

All within the City of Nanaimo, British Columbia

I, _____, a Registered Professional Engineer (Reg. No. _____) in the Province of British Columbia, hereby certify:

1) That the following Construction tests were carried out to confirm that construction met the specifications required:

- (a) _____
- (b) _____
- etc.

2) That I was able to monitor the construction and provide a level of supervision of the construction work sufficient to be able to confirm that the specifications in force and effect by the City of Nanaimo and in the applicable design drawings for the said Works were generally met during the Construction Period; and

3) That the accompanying plans labeled:

- i) _____
- ii) _____
- iii) _____

accurately record the materials, grades, inverts, offsets and dimensions of the constructed work.

Dated this _____ day of _____ 20 _____.

Engineer (Signature)

Engineering Firm

CITY OF NANAIMO STORM SEWER FLOW ANALYSIS - CALCULATION SHEET

Project _____

ENGINEERING COMPANY _____

ADDRESS _____

ENGINEER _____

MH to MH	Area (HA) (A)	Coeff. (C)	Area x Coeff. (AC)	Accum. A x C	Time of Consent (Mins.)	Rainfall Intensity (MM/HR.) (i)	Q (l/s)	Diam. (MM) (D)	Design Slope (%) (S)	Installed Slope (%)	Cap. (l/s)	Velocity (M/S) (V)	Length MH to MH (M)	Time of Flow MH to MH (Mins)	Ground Elevation	Invert Upper	Drop Between n MHs	Invert Lower MH	Return Period _____ Yrs.		
																			Seal / Engineer's / Stamp	Date: _____ Design By: _____ Sheet _____ Of _____	Manning's Formula $V = 1.49 R^{2/3} S^{1/2}$ n $Q = VA$ n = 0.013

APPENDIX A3

CITY OF NANAIMO SANITARY SEWER FLOW ANALYSIS - CALCULATION SHEET

Project _____

ENGINEERING COMPANY _____

ADDRESS _____

ENGINEER _____

Seal / Engineers / Stamp	Date: _____	Manning's Formula $V = 1.49 R^{2/3} S^n$ $Q = VA$ $n = 0.013$
	Design By: _____	
	Sheet _____ Of _____	

Area No.	MH No. To MH No.	Location	Area Hectares (A)	Units Or Lots	Density P.P. Hec.	Equiv. Pop.	Cum. Equiv. Pop.	Sewage Flow			Infiltration		Prop. or Exist. Sewer					
								Peak Flow AWWF LPCPD	Peak Flow M.L.D.	Inflt. M.L.D.	Cum. Inflt. M.L.D.	Total M.L.D.	Flow C.M.S. (Q)	Pipe Size (D)	Pipe Slope (S)	Cap C.M.S.	Vel. M.P.S. (V)	

CITY OF NANAIMO

APPLICATION TO WORK ON OR WITHIN CITY STREET, RIGHTS-OF-WAY/PROPERTY

- 1. Applicant's Name _____
- 2. Business Address _____
_____ Postal Code _____
- 3. Telephone Number _____ Business License No. _____
- 24 Hour Emergency # _____ Contact Person _____
- 4. Owner's Name _____
- 5. Starting Date _____
- 6. Completion Date _____
- 7. Name of Street _____ Nearest Intersecting St. _____
- 8. Street No. & Legal Description _____

- 9. Type of Work _____
- 10. Distance of Work from Property Line _____
- 11. Purpose of Construction _____
- 12. SD # if part of a Subdivision _____
- 13. Building Permit Yes _____ No _____ Number _____

I (we) hereby agree to be bound by the provisions of the City of Nanaimo Traffic Bylaw and amendments thereto, if any; as well as any regulation contained within the City of Nanaimo Manual of Engineering Standards & Specifications which may govern work in or under Municipal streets, easements and property; as well as to such special conditions, restrictions, and regulations as may be imposed by the Director of Strategic Planning, Engineering and Economic Development.

- INSURANCE ON FILE
- 3 SETS OF APPROVED DRAWINGS
- DEPOSIT (BONDING) AMOUNT \$ _____

Authorized Company Signature

Applicant's Signature

Date of Application

PERMIT FEE	\$25.00
G.S.T.	<u>1.75</u>
TOTAL	\$26.75

APPENDIX B2

AT-COST AUTHORIZATION FORM

City of Nanaimo
455 Wallace Street
Nanaimo, B.C. V9R 5J6

To be used for the installation of services by City forces where required service size exceeds the size covered by the bylaw rates.

Dear Sir: FOLIO _____
BP _____
RE: (Legal Description of Property) ENG _____

I, _____, the registered owner of the above-noted property, hereby request the City of Nanaimo to do or have done the following work in connection with the above-noted property, at my cost:

I understand that a minimum of two (2) weeks notice shall be given to the City of Nanaimo Public Works Department (758-5222) prior to anticipated construction date. Also, I understand that the City will construct the required works at rates uniform with those charged to all other projects undertaken by City forces. I will be billed after completion for the total cost of the works, including labour; trucking and machinery rental; materials and the cost of any other service arising during the course of construction, consistent with Municipal cost accounting policies.

Payment of all charges will be due within thirty (30) days following billing date. Overdue accounts will be subject to interest.

Attached is a plan, initialled by me, showing the location of the works.

DATED the _____ day of _____ 20 ____.

MAILING ADDRESS of registered property owned (**PLEASE PRINT**):

NAME (Last) (First) (Initials)

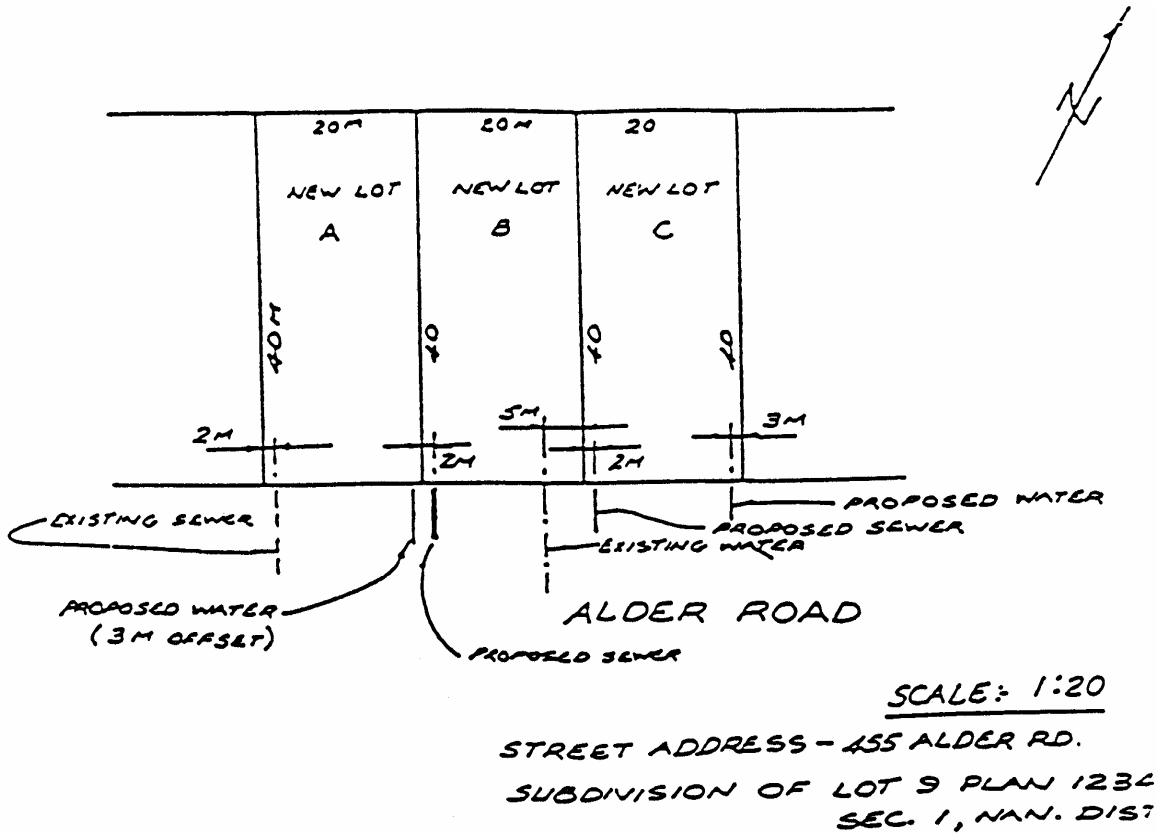
HOUSE (Apt.) No. STREET CITY Postal Code

Signature of Registered Property Owner Telephone

APPENDIX B3 (cont.)

SKETCH
TO ACCOMPANY AN AUTHORIZATION
TO INSTALL SERVICE CONNECTIONS

SAMPLE SKETCH



THE SKETCH MUST INCLUDE THE FOLLOWING INFORMATION:

1. Scale
2. North Arrow
3. Proposed lot dimensions
4. Proposed lot numbers/letters
5. Dimensioned location of existing service connections
6. Dimensions for preferred location of proposed new service connections
7. Name of fronting street
8. Street address of existing lot
9. Legal description of existing property
10. Registered property owner's signature in the lower right-hand corner of the sketch.

APPENDIX C1

CERTIFICATION OF INSTALLED WORKS

This form is to be completed and submitted with the as-built drawings

Location of the Construction Site and Works: (Legal Description)

all within the City of Nanaimo, British Columbia.

I, _____, a Registered Professional Engineer
(Reg. No. _____) in the Province of British Columbia, hereby certify:

1. That the following construction tests were carried out to confirm that construction met the specification required:

(a) _____

(b) _____

2. That I was able to monitor the construction and provide a level of supervision of the construction work sufficient to be able to confirm that the specifications in force and effect by the City of Nanaimo and in the applicable design drawings for the said Works were generally met during the Construction Period; and

3. That the accompanying plans labeled:

(i) _____

(ii) _____

(iii) _____

accurately record the materials, grades, inverts, offsets and dimensions of the constructed work.

DATED this _____ day of _____ 20 _____.

Engineer (Signature)

Engineering Firm

APPENDIX C2

CERTIFICATION OF STREET LIGHT INSTALLATION

Location of the Construction site and Works (Legal Description)

all within the City of Nanaimo, British Columbia.

I, _____, a Registered Professional Engineer (Reg. No. _____), in the Province of British Columbia, hereby certify that:

1. I have received the final inspection report on the streetlighting installation from the Provincial Electrical Safety Officer, approving the installation (copy attached).
2. All of the street lighting system is installed in accordance with all of the specifications in force and effect by the Provincial Government and the City of Nanaimo as shown on the drawings and specifications authorized by me and submitted to the City of Nanaimo, Engineering & Environmental Division. The system has been connected to the B.C. Hydro and Power Authority's system and is ready for use.
3. The accompanying plans labeled:

are certified "as-builts" and truly record the construction of all the street lighting required for the subject property.

DATED this _____ day of _____ 20 _____.

Project Engineer

**SUBSTANTIAL COMPLETION STATISTICS RECORD
UTILITIES & WORKS
FOR DEVELOPMENT**

FILE NO:

ENG. CO:

DATE:

DATE OF CERTIFICATION:

LOCATION:

WATERWORKS

ITEM	TYPE	CLASS	UNIT	QUANTITY	COST PER UNIT (\$)	VALUE (\$)
100mm				L.M.		
150mm				L.M.		
200mm				L.M.		
250mm				L.M.		
300mm				L.M.		
400mm				L.M.		
F.H.						
F.O.						
PRV						
METER						
VALVES						
FITTINGS						

TOTAL

SANITARY

ITEM	TYPE	CLASS	UNIT	QUANTITY	COST PER UNIT (\$)	VALUE (\$)
100mm				L.M.		
150mm				L.M.		
200mm				L.M.		
250mm				L.M.		
300mm				L.M.		
375mm				L.M.		
MANHOLE						
CLEANOUT						
DROP M.H.						

TOTAL

APPENDIX C3 (cont.)

STORM SEWER WORKS

ITEM	TYPE	CLASS	UNIT	QUANTITY	COST PER UNIT (\$)	VALUE (\$)
100mm				L.M.		
150mm				L.M.		
200mm				L.M.		
250mm				L.M.		
300mm				L.M.		
375mm				L.M.		
450mm				L.M.		
525mm				L.M.		
600mm				L.M.		
675mm				L.M.		
750mm				L.M.		
825mm				L.M.		
900mm				L.M.		
MANHOLE						
CLEANOUT						
DBL. C.B.						
C.B.						
INLET						
OUTLET						

TOTAL

APPENDIX C3 (cont.)

SEWER, SIDEWALKS, CURBS, STREETLIGHTS

ITEM	UNIT	QUANTITY	L.M.	COST PER UNIT (\$)	VALUE (\$)
50mm Asphalt 5.7m wide incl. base and subbase	S.M.				
50mm Asphalt 7.5m wide incl. base and subbase	S.M.				
50mm Asphalt 10.0m wide incl. base and subbase	S.M.				
50mm Asphalt 10.5m wide incl. base and subbase	S.M.				
75mm Asphalt 12.2m wide incl. base and subbase	S.M.				
75mm Asphalt 14.2m wide incl. base and subbase	S.M.				
75mm Asphalt 15.6m wide incl. base and subbase	S.M.				
75mm Asphalt 17.4m wide incl. base and subbase	S.M.				
75mm Asphalt 18.9m wide incl. base and subbase	S.M.				
75mm Asphalt 20.1m wide incl. base and subbase	S.M.				
Mountable curb and gutter	L.M.		N/A		
1.5m wide concrete sidewalk	L.M.		N/A		
1.8m wide concrete sidewalk	L.M.		N/A		
Streetlights *			N/A		
Asphalt Widening & Patching	S.M.		N/A		

TOTAL

GRAND TOTAL OF ALL WORKS

The cost per unit for streetlights includes supply of all materials and installation of electrical service equipment, concrete pole base, conduit, wiring, pole and lamp for each streetlight.

APPENDIX C3 (cont.)

STATISTIC TOTALS

DATE:

DATE OF CERTIFICATION:

ENG. CO.:

ITEM	UNITS	QUANTITY	TOTAL
WATERMAINS	L.M.		
SANITARY SEWERS	L.M.		
STORM SEWERS	L.M.		
ROADS	L.M.		
LANES	L.M.		
SIDEWALKS	L.M.		
CURB & GUTTER	L.M.		
FIRE HYDRANTS			
STREETLIGHTS			

APPENDIX C4



CITY OF NANAIMO - SERVICE SHEET

HOUSE NO.:	STREET NAME:	
PLAN NO.:	LOT NO.:	FILE NO.:

SHOW:

1. LOT
2. STREET R/W NAME
3. RIGHTS OF WAY IF ANY
4. NORTH ARROW
5. LOCATION OF ALL UTILITIES (Dimensioned & Identified)

DESCRIBE SERVICE LOCATION:

Water Location:	Size:
Sanitary Sewer Location:	Size: Sanitary Invert:
Storm Sewer Location:	Size: Storm Invert:
Minimum Basement Floor Elevation:	

CERTIFIED ACCURATE (P.ENG.):

COMPANY NAME & ADDRESS

SIGNED AND SEALED

APPENDIX D

SAMPLE

Date

Eng. Division File: ENG _____

Via Facsimile: _____

Engineering Company
Address
City, Postal Code

Attention: Name of P. Eng.

Dear Sir:

RE: ENG or CIVIC ADDRESS
LEGAL DESCRIPTION

This letter will serve as a **CERTIFICATE OF SUBSTANTIAL COMPLETION** for the works named below which were required for final approval of the above-noted development/subdivision. The works are considered substantially completed by the City of Nanaimo as of "**DATE OF COMPLETION**".

THE WORKS FOR WHICH THIS CERTIFICATE OF SUBSTANTIAL COMPLETION IS ISSUED INCLUDE:

(LIST THE SERVICES INCLUDED)

A Certificate of Acceptance will be issued by the City of Nanaimo at the end of the applicable maintenance period provided there are no outstanding deficiencies.

The Certificate of Substantial Completion shall not relieve the developer /subdivider of responsibility for defects in materials, workmanship or engineering design. The developer/subdivider shall be responsible for maintaining and/or correcting the work against any defects arising from installation, materials, workmanship or engineering design, which may appear during the maintenance period.

Defects which are discovered during the maintenance period shall be replaced and/or rectified to the satisfaction of the City of Nanaimo. The same maintenance as is herein provided and for the same period shall apply to replacement materials or rectified defects, and the maintenance period for the rectified defects shall begin on the date the City accepts the rectified work.

... / Page 2

APPENDIX D (cont.)

Engineering Company

Re: File Number

CERTIFICATE OF SUBSTANTIAL COMPLETION

Date:

If it is discovered by use, tests or inspection of the works prior to the end of the maintenance period, that a deficiency exists in the materials and/or workmanship and/or design in respect to the works, the developer/subdivider shall arrange to rectify the fault within ten (10) days. In the event that this work, in the opinion of the City, must be done immediately to prevent serious damage, injury, or loss of life, the City will perform, or cause to be performed, the necessary work and will notify the developer/subdivider accordingly.

In the event that this work is not done by the developer/subdivider within the ten (10) day period, or such period as may be approved by the City, the City will take whatever action is necessary to have the work done.

All costs relating from the necessity to do work under the maintenance period shall be borne by the developer/subdivider.

Yours truly,

Manager, Engineering & Environmental Division
DEVELOPMENT SERVICES DEPT.

APPENDIX E

SAMPLE

DATE

Eng. Division File:

Addressee

Dear Sir:

**RE: FILE NUMBER
CIVIC ADDRESS**

This letter will serve as a **Certificate of Acceptance** for the works named below which were required to be constructed for final approval of the above-noted development. There are no outstanding deficiencies in the works, and by this letter of acceptance, the City of Nanaimo will now assume responsibility for maintenance of the works.

The works for which this Certification of Acceptance is issued include:

Yours truly,

Manager, Engineering & Environmental Division
DEVELOPMENT SERVICES DEPT.

GS/sl
Attachment:

APPENDIX F

MINIMUM REQUIRED STATUTORY RIGHT-OF-WAY AND WORKING STRIP WIDTHS FOR UNDERGROUND SERVICES THROUGH PRIVATE PROPERTY

Max. Pipe Size O	Trench Depth	Right-of-Way Width	Working Strip Widths
0 - 600mm	0 - 2m depth	3m	3m
	2 - 3m depth	3m	3m
	3 - 4m depth	3m	3m
	over 4m depth	3m	negotiable
over 600 - 900mm	0 - 2m depth	4m	4m
	2 - 3m depth	4m	5m
	3 - 4m depth	4m	6m
	over 4m depth	5m	negotiable
over 90mm		5m	negotiable

The above figures are to be used as a guideline only.

In areas of rock, or steep ground, widths may be increased at the discretion of the City of Nanaimo's Engineering & Environmental Division of the Development Services Department.

“ Blank Letterhead “

Letter of Credit No. _____ **Amount \$** _____
Initial Expiry Date: _____

City of Nanaimo
455 Wallace Street
Nanaimo, B.C.
V9R 5J6

Dear Sir:

We hereby authorize you to draw on the _____
(Name of Bank)

_____ (Address)
for the account of _____ up to an aggregate amount of
(Name of Customer)
_____ available on demand.

Pursuant to the request of our customer, we hereby establish and give you an Irrevocable Letter of Credit in your favour in the above amount which may be drawn on by you at any time and from time to time, upon written demand for payment made upon us by you, which demand we shall honor without inquiring whether you have the right as between yourself and the said customer, to make such demand, and without recognizing any claim of our said customer, or objection by it to payment by us.

You may make partial drawings or full drawings at any time.

The Letter of Credit relates to those Municipal services and/or financial obligations set out in an agreement between the customer and the Municipality and briefly described as:

The amount of this Letter of Credit may be reduced from time to time as advised by notice in writing to the undersigned by the City of Nanaimo.

This Letter of Credit will continue in force for a period of one year, but shall be subject to the condition hereinafter set forth.

APPENDIX G (cont.)

It is a condition of this Letter of Credit that it shall be deemed to be automatically extended without amendment from year to year from the present or any future expiration date hereof, unless at least 30 days prior to the present or any future expiration date, we notify you in writing by registered mail, that we elect not to consider this Letter of Credit to be renewable for any additional period.

DATED AT _____, **British Columbia,**
this _____ **day of** _____, **20** _____.

(Name of Bank)

(Address of Bank)

PER:

(Authorized Signature)

(Authorized Signature)



FOR YOUR INFORMATION

If you require additional help regarding the procedures in this guide, please contact the **DEVELOPMENT SERVICES DEPARTMENT**.

The Engineering & Environmental Division

Phone: 755-4429

Fax: 755-4439

Hours of Operation: 8:00 a.m. - 4:30 p.m. - Weekdays

Office Address: (2nd Floor) 238 Franklyn Street, Nanaimo, BC, V9R 5J6

The Planning Division

Phone: 755-4429

Fax: 755-4439

Hours of Operation: 8:00 a.m. - 4:30 p.m. - Weekdays

Office Address: (2nd Floor) 238 Franklyn Street, Nanaimo, BC, V9R 5J6

The Building Inspection Division

Phone: 755-4429

Fax: 755-4439

Hours of Operation: 8:00 a.m. - 4:30 Weekdays

Office Address: (2nd Floor) 238 Franklyn Street, Nanaimo, BC, V9R 5J6

The mailing address for all City Departments:

City of Nanaimo
455 Wallace Street
Nanaimo, B.C.
V9R 5J6

Phone: 754-4251
Facsimile: 755-4440

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