SUBDIVISION DEVELOPMENT GUIDELINES

&

TECHNICAL STANDARDS

January 30, 2014
As Amended

Foreword

The Foreword is provided as a general overview of the procedures and steps involved in the development of a subdivision in the City of Kingston. This is not written as a detailed, step by step process, but rather as an overview of the subdivision approval process.

Following this outline is critical to timely approval and assumption by the City.

- **Draft Plan pre-consultation meeting**
  At the Draft Plan pre-consultation stage, the Developer has the opportunity to discuss the subdivision concept with City Staff to identify key planning issues as well as any major technical items, including studies that will be required as part of the submission. This item is initiated at the request of the Developer and is strongly recommended by staff. It should be recognized that as the approval process proceeds other items, not noted at the pre-consultation meeting, may be requested as the design progresses and more information becomes available. The following is a bullet list of steps as well as items for discussion at this meeting.
  - Developer requests a meeting with Planning to discuss the proposal. The developer should have, at a minimum, a concept plan showing the configuration of the lots, lot areas and frontages, road widths, open space etc. Concept plan to be submitted to the Planning Department prior to meeting. A meeting Agenda, for distribution in advance of the meeting, should be provided to Planning to ensure the necessary City staff are present.
  - Planning will confirm the Official Plan designation and Zoning, identifying any Official Plan and Zoning amendments which may be required in addition to draft plan approval
  - The proponent should contact the Culture & Recreation Department Park Planner to determine whether parkland conveyance(s) will be required and if there is a preferred location(s) for any park or open space component in the plan
  - Review of preliminary design of proposal. Planning may consult with other Divisions or agencies if there are concerns/constraints which are immediately identified
  - The application requirements will be reviewed including:
    - ✓ Application forms required
    - ✓ Application fees
    - ✓ Any supporting documents required for the Official Plan and Zoning By-Law amendments
    - ✓ Draft plan of subdivision (20 full sized, folded copies, one 8 ½" x 11"
    - ✓ Need for site access agreement (Culture & Recreation)
  - Review of timelines and potential scheduling for public hearing and recommendation of Planning Committee would be discussed

- **Draft Plan of Subdivision Approval**
  - Requires completed application, fees, 25 full-sized copies of draft plan (folded), one reduced copy of draft plan and any required studies
  - Application sent to internal and external agencies for technical review
  - Public hearing scheduled and report prepared for Planning Committee
  - Planning Department works with applicant to address technical and public concerns. Comprehensive report prepared, with recommendations and draft conditions, for Planning Committee once issues resolved
  - Recommendation of Planning Committee forwarded to Council for decision
  - If approved, Notice of Decision with stamped plans circulated (Applicant to submit 25 copies of signed draft plan)
  - Draft Plan approved upon lapsing of 20 day appeal period, if no appeals filed

- **Design pre-consultation meeting**
  During this part of the process the Developer and their technical staff are invited to meet with City technical staff to discuss, in more detail, the studies required for the proposed development as it is expected that the Developer now has a more detailed proposal for discussion.
  - Planning, Engineering, Transportation, Utilities Kingston, Culture & Recreation and other divisions as needed will be part of this meeting
  - This meeting will clearly define 1st submission requirements
  - A review of the overall subdivision concept will be completed and identification of major issues
  - Discuss reports that are required
  - Identify major studies that need to be considered (Transportation Master Plan, Stormwater Management, etc)

- **Technical pre-submission meeting**
  This meeting, between the Developer's Engineer and City staff, is being recommended to ensure that the first design submission will meet the technical requirements of the City at the outset and thereby assist in shortening the review time.
  - Engineering & Utilities Kingston staff, and other departments as needed will be present at this meeting.
  - The Developer's Engineer will present draft design drawings
  - Potential concerns will be identified by City staff, solutions and opportunities will be discussed
  - The parties will re-confirm requirements for first submission

- **1st Design Submission**
  At this stage the Developer's Engineer should be presenting confirmation to the City of Kingston that the design is in accordance with the guidelines. In areas where the guidelines could not be met, then a brief can be submitted explaining the solution that is presented. With this information, the review can be completed in a timely manner.
  - Developer's Engineer submits *complete* submission
  - Developer's Engineer provides letter stating compliance with the City's Guidelines, explains in detail where the design does not meet the guidelines and why
  - City assesses drawings for possibility of immediate application to MOE
  - Developer to submit, for approval, to all required external agencies directly

- **1st Submission Comment Review Meeting**
  This meeting is suggested as an opportunity to advance the process in a timely fashion. An opportunity for discussion of the comments prepared by the City in response to the first submission will reduce the timeline as clear communication is integral to a successful process.
  - City comments are issued within four weeks of receipt of a complete submission and a meeting can be arranged within one week with the Developer's Engineer if requested
  - Engineering to attend, Utilities Kingston, Planning, Culture & Recreation and others as necessary
  - This provides an opportunity to ensure that everyone is on the same page to assist in obtaining approval on the second submission

- **2nd Submission submitted directly to Engineering**
  Should a second submission be required, the review should be very timely if the Developer's engineer takes the opportunity to have the First Submission Review Meeting.

- At this stage, if not already under review, the MOE submission is received
- Design drawings approved by City and/or any outstanding minor issues will be addressed

■ **Pre-Servicing Agreement**

Section 5.1 of the document outlines in detail the Pre-Servicing Agreement. This agreement is provided as an opportunity for the Developer to reduce the amount of security required at the outset of the development by permitting installation of future public underground infrastructure in advance of the final subdivision agreement.

- Requires security and proof of insurance
- Agreements to be requested in writing to Planning Department by Developer
- All works required for Preliminary Certificate of Approval (PCAUS) are permitted
- Developer provides 1% Design Review fee

■ **Model Home Agreement**

This agreement permits the developer to construct model homes on 10 lots or 10% of the subdivision phase, whichever is lesser, in advance of the completion of the underground services. A pre-servicing agreement must be in place in advance of the Model Home Agreement

- Agreement to be requested in writing to Planning Department by Developer
- Model Homes permitted on the lesser of 10% of phase of subdivision or 10 homes
- Specific lots to be identified by Developer
- Requires security
- Requires building permit and Fire & Rescue approval

■ **Subdivision Agreement**

Section 5.2 of the document outlines the Subdivision Agreement in more detail.

- Full security required for remaining works, plus maintenance holdbacks
- If a Preliminary Certificate of Approval of Underground Services (PCAUS) is issued by the time the Subdivision agreement is signed, then the Building Permit can be issued. Building Permit issuance when services are completed to the satisfaction of the City
- Developer provides 1% Inspection Fee

■ **Security Reductions**

- As works progress, security can be reduced as per the Security Reduction Guidelines outlined in this document in Section 6 and the subdivision agreement.

■ **PCAW and Assumption of the Works**

- Upon completion of all works, Preliminary Certificate of Approval (PCAW) is issued and one year maintenance period begins
- Final Certificate of Approval is issued and remaining security is released.

Revisions & Amendments
City of Kingston
Subdivision Development Guidelines
& Technical Standards

Section Revised or Amended:	Page:	Date of Revision/Amendment:
Section 1.12 Document Revision Process	Page 7	Revised November 27, 2006
Table of Contents Updated		Update November 27, 2006
Technical Schedule 1: 4.0 Lot Grading	Page 34	Update April 20, 2007
Technical Schedule 1: 8.0 Sidewalks	Page 28-29	Revised June 17, 2009
Technical Schedule 1: Figure 1A10: Concrete Sidewalk Joint Finishing Detail	Page 72	Added June 17, 2009
Technical Schedule 1: 2.0 Guidelines for the Installation of New Traffic Signals	Page 44	Added June 18, 2009
Technical Schedule 1: Figure 1A7: Standard Asphalt Walkway	Page 69	Revised June 18, 2009
Technical Schedule 2: Appendix 2G: Blank	Page 31	Revised June 18. 2009
Table of Contents Updated		Update June 18, 2009
Technical Schedule 3: Appendix 3F: Fencing Adjacent to Parks and Open Space	Page 21	Revised June 25, 2009
Technical Schedule 1: Figure 1A7: Standard Asphalt Walkway	Page 69	Revised June 25, 2009
Technical Schedule 1: 10.0Pedestrian Walkways	Page 30	Revised June 25, 2009
1.0 General: Revision Request Form	Page 9	Revised July 16, 2009
Technical Schedule 1: Appendix 1G – 4.0 Materials	Page 39	Revised July 22, 2009
6.0 Securities Clause 6.1 Pre-Servicing Agreement	Page 22	Revised July 29, 2009

Technical Schedule 2:		
Appendix 2B: Specification Update	Page 9	Revised June 20. 2011
Technical Schedule 2:		
Appendix 2B: Water Service Connections	Page 12	Revised June 24. 2011
Technical Schedule 1:		
Appendix 1k: Certificate of Insurance Form	Page 79	Revised October 4. 2011
Technical Schedule 3:		
Appendix 3H: Tree Conservation By-Law	Page 25	Revised October 4. 2011
1.0 General :		
Section 8.2 and 8.3	Page 27	Revised October 4. 2011
Technical Schedule 2:		
Appendix 2F: Spare Lighting Equipment	Page 28	Revised October 4. 2011
Technical Schedule 2:		
Appendix 2B:Water Distribution Guidelines	Pages 1-19	Revised July 19. 2012
Technical Schedule 2:		
Appendix 2H:Standard Drawings	Pages 41-51	Revised July 19. 2012
Technical Schedule 2:		
Appendix 2F: Street Lighting Guidelines	Pages 29-39	Revised January 30, 2014
Technical Schedule 2:		
Appendix 2H: Standard Drawings	Pages 56, 57	Revised January 30, 2014
Technical Schedule 3:		
Appendix 3A:Trees and Parkland development	Pages 5	Revised January 30, 2014

1.0 GENERAL

1.1 Introduction

This information is provided for prospective developers and Professional Engineers as a guide to the technical standards and procedures required to design, process and obtain approvals for the installation of public works associated with urban subdivision development.

1.2 Engineer's Role

The owner, throughout the design and contract inspection phases, shall utilise the services of a professional engineer, licensed to practice in the Province of Ontario (the "owner's engineer"). Such engineering firms shall at all times carry professional liability insurance coverage that is acceptable to the City, and shall provide sufficient proof that said policy is in force. The professional engineer, whose services are engaged by the developer, shall act in the role of designer, contract administrator and "payment certifier" with respect to the works. The owner's engineer, as contract administrator, shall structure each construction contract to ensure that the requirements for substantial completion on the part of the contractor are consistent with the owner's requirements as contained in the subdivision agreement.

Insofar as quality control is concerned the owner's engineer shall provide inspection services and oversee all testing to the level prescribed by the City of Kingston in accordance with its adopted standards. (See 6.4 Inspection and Testing). Prior to construction the engineer shall deliver to the Director of Engineering a company profile outlining the work history and expertise of the inspection personnel assigned to the project.

The City of Kingston reserves the right to reject any engineer or inspector who, in the sole opinion of the City, does not possess the expertise and experience necessary to oversee the quality control of the works on the City's behalf.

The City and Utilities Kingston, or their designated agents, will attend the construction site at key inspection intervals and will provide periodic random inspections during the course of construction. Should it be discovered that the developer's chosen consultant is not upholding the City's inspection standards, alternate inspection services will be provided by the City of Kingston. All costs incurred by the City of Kingston in connection with inspection of the work will be recovered from the owner in accordance with the provisions of the subdivision agreement.

1.3 Design of Works

A professional engineer registered with the Professional Engineers of Ontario shall design the works. The owner's engineer shall be responsible for securing all necessary approvals on behalf of the developer.

1.4 Pre-Design Meeting

The owner's engineer is encouraged to schedule a pre-design meeting to establish the design parameters or to clarify the design requirements. Such a meeting shall be arranged through the office of the Development Engineer.

1.5 Services

The following are the typical types of public services to be provided in the development of each new urban subdivision:

Roads with Curb & Gutter	Sidewalks and Walkways
Signs and Traffic Control Devices	Drainage and Grading
Stormwater Management	Sanitary Sewers
Watermains	Wire Utilities
Streetlights	Tree Planting
Natural Gas	Fencing
Parkland Development	Bridges / Culverts

The City will establish the extent of servicing at the pre-design meeting and advise on the required services when the type of development is defined by the owner.

Services are to be provided to the boundaries of the plan of subdivision and as required for the development of neighbouring lands (See Sec. 1.9 Commitment of Public Funds).

1.6 Phasing of Development

Construction of a registered plan in phases shall be co-ordinated through the office of the Development Engineer giving due consideration to traffic routing including public transit, pedestrian movement and emergency access. In addition, the logical extension of hard services including municipal underground works and utilities (Electric, Telephone, Cable TV, Gas) is also required to be considered.

When phasing of a development is proposed, the phase limits and the works within each phase shall be clearly identified on the plans.

1.7 Bridges & Culverts

Bridge and culvert designs for structures with spans greater than 3.0 meters shall be prepared by a professional engineer who specializes in bridge design and shall be approved by the Director of Engineering of the City of Kingston. The owner's engineer shall provide "General Arrangement Drawings" (3 copies) showing the general layout of the proposed structure together with a Design Criteria Sheet, a Hydrology Report, and a Foundation and Structural Design Report as part of the design "package". The design package shall also include related correspondence from other approval agencies (MNR, MOE, CRCA, etc.) as applicable.

Upon approval in principle of the General Arrangement Drawings the consultant may then proceed to complete the overall design of the structure. It is anticipated the full design will accompany the second submission of engineering plans. Bridges shall be designed in conformance with the Ontario Highway Bridge Design Code (OHBDC) & Ontario Provincial Standard Specifications (OPSS).

It should be noted that all bridge plans and supporting material shall undergo a peer review at the developer's expense by a consulting firm commissioned by the City of Kingston. The City, subject to the peer consultant's final recommendations, will approve of the final drawings. The final drawing review will include a check of:

- Adherence to the General Arrangement Drawing
- Adherence to the OHBDC
- Adherence to foundation report recommendations, random details; etc.

1.8 Parkland Development

Under the Planning Act, the City can take 5% of land in the subdivision as parkland conveyance, without any cost to the municipality. The City of Kingston looks to acquire functional lands for active and passive recreational needs for the community. Ideally the developer and Culture & Recreation Department staff should agree on the requirement for cash-in-lieu or parkland prior to any plan submission. If a municipal park(s) or open space is identified, staff and the developer can work towards a draft plan that presents the best park parcel to the neighbourhood and community.

The developer and the City must agree prior to draft plan approval whether the City will accept the parkland in a clean state only and be responsible for the implementation/ construction of the park or whether the developer will be responsible for the implementation and construction of the parkland. This decision will be included as a condition of draft plan approval.

Under the 2004 Development Charges By-Law, the City of Kingston reimburses the developer for any work above the 'clean' state. The park concept design will be developed by a consultative process between Culture & Recreation staff and a consultant Landscape Architect (chosen from a roster of Landscape Architects developed by the city or alternatively by a Landscape Architect Consultant hired by the Developer). Once a concept plan is agreed to and a final drawing approved by Culture & Recreation staff, the park plan and working drawing can be included in the 1st submission for final approval. This timing will allow the consultant to work in the grading of the park in conjunction with the lot grading plans. This will result in common lot lines that work both for the parks functions and the adjacent homeowner and a park that will not required major cutting or filling to provide a neighbourhood or community park. The intent of this process is that the parks be constructed at the same time as the houses. If the developer indicates that the city can manage the park development and construction, then a condition of draft plan approval will also be the requirement of a Parkland Development Site Access Agreement to allow City staff and their consultants to access and work on the park land prior to the deeding of the land through the final subdivision agreement.

See Appendix 3D for Parkland Specifications.

1.9 Growth Related Services (Policy Currently Under Review)

The City may, at its sole discretion, direct that certain underground and above ground services be sized, located and constructed to accommodate future growth in general and future growth from other development lands. The City will examine the costing for oversized or additional works and, subject to the availability of funds, apply (or defer) subsidy entitlement according to its local service policies and guidelines in effect at the time of approval.

Financial commitments pertaining to the contribution of the respective benefiting parties, including the reimbursement of any previous front-end contributions, will be addressed in each subdivision agreement.

Payment for subsidized works will be administered in accordance with current policy and upon certification of the works being substantially complete. Subsidized works shall be subject to all conditions imposed by the subdivision agreement as they relate to completion and warranty of the Works.

The engineer's estimate is required to show:

1. the full cost of the subsidized works;
2. the agreed upon subsidized portion; and
3. the net amount to be used for financial security purposes.

In regard to subsequent applications for security reduction the standard 5% maintenance and 10% construction lien holdbacks retained by the City shall at all times be based on the full (unsubsidized) cost of Oversizing.

Commitment of Public Funds

Any item to be cost shared must be tendered publicly. Where cost sharing is approved, the City of Kingston reserves the right to review and accept the contract documents prior to tendering and/or approve of any prices used in establishing public funding.

1.10 Reports

The following reports are to be commissioned in the design of the works as required. (It should be noted that this list is not necessarily complete as other types of reports may be requisitioned on a case by case basis).

Geotechnical Report

As part of the design of each new subdivision, the owner's engineer shall provide a Geotechnical Report. The report shall examine and confirm subsurface conditions and the impact on construction of public works and building construction within the plan of subdivision.

- The report shall specifically examine subsurface conditions such as:
    a) soil type(s);
    b) groundwater levels;
    c) depth of refusal, bedrock, etc;
    d) soil bearing capacity.

- The report shall confirm the adequacy of the City's minimum standard of flexible pavement design or recommend a higher standard of design if site conditions warrant. The report shall also examine and recommend a method of accommodating subgrade drainage.

- The report shall address the suitability of native soils, excavated and /or imported materials for roadway construction, trench backfill and building foundation construction. In addition to the forgoing, the report shall identify proposed construction methods, including those related to backfilling and the placement of fill materials.

- The report shall be accompanied by a scaled plan of the subdivision showing test pit or borehole locations, together with a log of test pit or bore hole findings tied to geodetic datum.

- The report shall be signed and sealed by a licenced professional engineer.

Traffic Impact Study (TIS)
(See Appendix 1H)
Unless waived in writing by the Director of Engineering, all developments bordering arterial roads are to provide a traffic impact analysis based on projected traffic flows and the ultimate build out of the development. The report is expected to recommend, at a minimum, storage lane requirements and traffic control devices based on the peak flows generated. The Engineering Department reserves the right to request a TIS for other road classifications based upon the nature of the proposed site use.

Noise Report
(As Required – See Appendix 1D Sec. 14.0)
All developments adjacent to or within close proximity to major noise sources such as those generated by existing or future rail and road facility expansions or other noise generators, shall provide a noise analysis, and possibly a vibration analysis, to demonstrate compliance to MOE guidelines.

Stormwater Management Report
Unless specifically waived in writing by the Director of Engineering, all developments shall be required to provide a Stormwater Management Report .

Note: As of the printing of this document, storm water management policies are under examination. The designer is to contact the City Stormwater Engineer for consultation prior to commencing design.

Environmental Site Assessments
A Phase I Environmental Site Assessment (Phase I ESA) shall be undertaken by each site proponent (owner) for all areas of the subdivided lands intended for residential occupancy or conveyance as park land, roadway or storm water management infrastructure. In general, the City will require that the proponent provide assurances that the environmental quality of the soils and groundwater within the lands intended for development are compatible with the intended land use as described within Ontario Regulation 153/04, as amended. The Phase I ESA shall be carried out in accordance with the regulation and shall be up to date.

If the results of the Phase I ESA indicate a need for further investigation the proponent shall be required to undertake any required follow-up studies (Phase II ESAs, Site Remediation Plans, etc.).

Environmental Impact Studies
Proposed developments that may impact upon significant natural environmental features may be required to provide an Environmental Impact Study. Significant natural environmental features may include wetlands, woodlots, significant habitats or threatened or endangered species.

The Environmental Impact Study is required to characterize the nature of the impact on the natural feature(s) of concern and make recommendations to mitigate those impacts.

Due to the fact that a reliable inventory of significant natural features does not presently exist, proponents are encouraged to pre-consult with the City of Kingston and the Conservation Authority to determine what, if any, requirements might exist for an Environmental Impact Study.

Archaeological Report

In those areas of the City where deemed necessary, the owner shall conduct an Archaeological Assessment of the lands within the plan and shall be required to perform mitigation measures as required to preserve significant historical features. If required, the mitigation plan is to be included in the set of Engineering Plans.

Reports - Distribution

The number of reports to be submitted shall be as follows, and will be distributed in accordance with the procedure described in 2.0.

Report Submission)	*Development Technologist*	*Planning Department*	*Storm-Water Engineer*	*Traffic Engineer*	*Building Dept.*	*Culture & Recreation*	*Environmental Engineering*	*Total*
Geotechnical	1	1						2
Traffic Impact	1	1		1				2
Noise	1	1						1
Storm WM	1	1	1			1		2
Environmental	1	1				2	1	2
Archaeological	1	1				2		2
Others	As Required							

1.11 Reference Documents

Table 1

PUBLICATION	PUBLISHER
Geometric Design Standards for Canadian Roads	Transportation Association of Canada.
Geometric Design Standards for Ontario Highways	Ontario Ministry of Transportation
Guide for the Design of Roadway Lighting	Transportation Association of Canada
Manual of Uniform Traffic Control Devices	Ontario Ministry of Transportation
Municipal Works Design Manual	Municipal Engineers Association.
Guidelines for the Design of Sanitary Sewer Works, Storm Sewers, Water Distribution Systems, Water Storage Facilities, servicing in Areas subject to Adverse Conditions, Water Supply for Small Residential Developments, Seasonally Operated Water Supplies,	Ministry of Environment
Standard Subdivision Agreement	City of Kingston
Development Charges By-law(s)	City of Kingston
Site Plan Design Guidelines	City of Kingston

1.12 Document Revision Process

Revision_Request_Form

This section is to define the process to continually improve the Subdivision Development Guidelines and Technical Standards. There were three scenarios by which the guidelines and technical standards could require revision:

Changes to existing standards that are legislated by other authorities, (Electrical Safety Authority, Ontario Provincial Standards, Provincial Government, Federal Government, Ministry of Labour etc. In some situations the change will occur in the field and the update to the guideline may occur after the fact.);

Current standards requiring revision because they are not working when put into practice; and,

New standards being introduced into the guidelines at the request of either the municipality or the development community (stormwater management standards, traffic signal design and installation standards etc.)

It is appropriate to identify individual plans that are to be followed since there are three different ways that an alteration to the existing standards can be introduced. This allows for an efficient and effective process to edit the guidelines as each of the scenarios requires a varied investment of time and effort.

Legislated Changes

This is a change that neither the municipality, nor the developer has an opportunity to challenge as it is initiated by others.

In these cases the revision can be initiated be whichever party first hears of the change. It should be communicated to the Infrastructure Engineer who will then issue an addendum to the appropriate section of the guidelines document. The addendum will be communicated to the secretary of the Kingston Construction Association (KCA) who will then circulate it to the members of the KCA as well as the Kingston Home Builders Association (KHBA). In addition a notice will be placed on the City's website advising of the update and communication will be sent to those parties that voluntarily registered when downloading the document.

Revision to Current Document

This is a revision to the guidelines resulting from any of the following: typing error, work can not be completed as described, alternative idea or opportunity being presented for an existing standard, etc.

Any party to the development guidelines can initiate this discussion. A written document should be prepared by the party requesting the change that:

- States the section of the Guidelines that are to be discussed,
- States the wording changes or drawing changes to be recommended, and
- Provide a written paragraph or more explaining the reasoning, technical or otherwise, supporting the request.

The attached form should be used to prepare the discussion paper and will be a tool for providing feedback.

The form is to be sent to the Infrastructure Engineer who will then circulate the discussion paper to the appropriate parties: municipal staff, outside agencies, as well as KCA and KHBA, requesting comment back within 2 weeks. Parties reviewing the paper can either

support the requested change and respond favourably or request a meeting for further discussion. If a meeting is requested, the Infrastructure Engineer will coordinate a meeting as soon as is practical. The contact for the KCA and KHBA will be the secretary who will advise those persons representing the KCA and KHBA. The person initiating the report will also be invited to the meeting. It is hoped that consensus will be reached at the meeting. For those circumstances where consensus is not obtained, the municipal staff person who authored the section of the guideline under discussion will have the final say.

The Infrastructure Engineer will chair the meeting and make any amendments to the guidelines as is recommended from the meeting. The Infrastructure Engineer will then circulate the addendum as noted above.

New Standard Introduced

From time to time the municipality, other agencies or the development community will want to make changes or additions to the guidelines that are not housekeeping in nature and are of significance. For these proposals it is anticipated that there will be considerable discussion as both parties work to an improved document. For this scenario the following process is suggested.

The Infrastructure Engineer will circulate the new section to the KCA and KHBA through their secretary. The KCA and KHBA will identify to the Infrastructure Engineer, as soon as is practical, who they are recommending to sit as representatives on the review panel and a meeting will be scheduled in or around three weeks of the Infrastructure Engineer receiving the list. If additional time is required by any of the participants it should be noted as soon as the document is received. In addition to the KCA and the KHBA, there may be other agencies that should form part of the review process depending on the topic. The Infrastructure Engineer will circulate to those parties as required.

At the first meeting the party preparing the document will be requested to make a presentation to the review panel giving an overview of the new section. After the presentation the floor will be open for questions and discussion. To attempt to manage the process it is proposed to set a maximum time for any meeting at 2.5 hours, with extensions only if consensus is close. If additional meetings are required as the nature of the topic is extensive this will be identified during the first meeting. The goal of the meeting is to identify items within the document that may cause undue hardship to any party and is not an opportunity to just deny the proposal. Those parties with an opposing position to any section of the document must come to the table with an alternative and present that alternative. It is hoped that this process will assist the group in attaining consensus. It is recognized that this may not be attainable on all items in which case it may result that the item is going forward as recommended initially. Opportunity to review at a later date will be afforded through the previous process if a better alternative presents itself in time.

Through these processes it is hoped that open discussion will result and the guidelines and technical standards will evolve into an improved document that fosters quality development of lands within the City of Kingston. It is also anticipated that this process will assist in streamlining updates to the document.

Revision Request Form

Subdivision Development Guidelines and Technical Standards
Revision Request and Response Form

Section A: To be filled in by requesting party
Name:

Current Section and description:

Proposed Wording:

Reasoning:

❒ Additional pages added ❒ Redline edits to drawing attached

Section B: to be filled in by responding party

❒ support requested change ❒ request a meeting

Contact Information: (Please print)

Name:

Address:

Telephone:

E-mail

Fax To: Kim Brown, Infrastructure Engineer (613) 542-7880 or **E-mail:** kbrown@cityofkingston.ca

2.0 DESIGN SUBMISSION REQUIREMENTS

A complete submission consists of the following:

- An application for Subdivision Agreement /Final Approval
- All applicable subdivision review fees (Planning and Engineering)
- A covering letter or report identifying the developer, the project, the owner's engineer and any special features of the submitted design.
- 2 copies of the watermain design calculations.
- 2 copies of streetlight design calculations (if varying from standard).
- Copies of reports as set out in 1.10 and any other reports that are required to support the design of the works in accordance with the Conditions of Draft Plan Approval.
- Copies of plans as set out in section 4.2.10 including first application under Land Titles.
- Specifications for non-standard items.
- A checklist is proposed to be included with submissions – See Appendix 1A for draft.

A submission that is deemed incomplete will be returned to the consultant without any review or other comments.

3.0 PLAN APPROVAL PROCESS

3.1 Initial Design Submission

The initial design review submission shall be delivered to the Director of Planning who will in turn distribute the design review submission to the City's Development Engineer. The Owner's Engineer shall submit to outside agencies and branches of government with instructions to copy the City on all correspondence.

3.2 Design Review

The review of public works is coordinated through the office of the Development Engineer. When the Development Engineer receives the submission from the Planning Department the file will be assigned to a Senior Development Technologist who will circulate the submission to all internal departments as set out in the following table. Comments will be provided back to the Senior Development Technologist with four (4) weeks.

1st Submission Distribution

Plans	Development Technologist	Planning Department	Culture & Recreation	Public Works - Forestry	Stormwater Engineer	Traffic Engineer	Utilities Kingston	Building Department	Public Works Department	Environmental Engineering	Owner	Total
Legal Plans	1(2)	1(3)			0			(1)				2(5)
Complete Sets	1(3)	0(0)			1	1	1(2)		(1)		(1)	5(7)
Street Tree Planting		1		2								1(3)2
Lot Grading Plan		1	1									1(3)
Tree Preservation		1	1	2								1(3)
Park Development		1	4(3)	2								1(3)
General Plan		1	1				1(0)			1(1)		1(1)
Noise Attenuation		1						(1)				(1)
Storm Drainage		1			(1)							(1)
Streetlight Design		1					1(0)					
MOE Submissions		1										

Comments from the internal departments will be consolidated by the Senior Development Technologist (SDT) and communicated to the owner's engineer. All correspondence exchanged during the review process will be copied to the Planning Department as well as to the owner. The owner's engineer will amend, revise, or justify the design accordingly. Revised drawings are to be submitted directly to the SDT including a written response clarifying how each item has been addressed. Additional sets of drawings may be requested on a case by case basis subject to comments received on the review. The owner's engineer should note that upon completion of any review of revised drawings new and/or amended comments may be generated as a result of the revisions required by the City or external agencies.

Meetings are encouraged at all stages of the review to promote the early resolution of any issues. This iterative process will continue until all items have been satisfactorily addressed.

4.0 DRAWING STANDARDS

4.1 General

a complete submission includes a complete set of engineering drawings. All plans submitted shall be prepared in ink (or equivalent), on standard size of 24"x 36" sheets or metric equivalent.

In general, all plans in the set must be complete, legible, and give clear instructions as to the materials, methods and details of construction. Each individual plan must also contain:

- The legal description of all individual parcels of land in accordance with the plan of survey.
- A north arrow.
- The NAD 83 UTM grid at 100m intervals
- A title block depicting the date, date of recent revisions, and scale of the plan in metric units.
- All "approved" street names.
- The seal and signature of a professional engineer licenced with the Professional Engineers of Ontario (P.E.O.)

4.2 AutoCAD Drawing Standards

- Drawing scale for plan/profile drawings shall be in metric and drawn in metres, using a scale of 1:500 in areas of sparse detail. A scale of 1:250 shall be used in congested areas.
- Drawings shall be oriented such that North points up and/or to the left (or right if required)
- Dimension and elevations shall be provided in metric units
- A paper size of 24" x 36" or metric A1 is acceptable
- Drawings shall be prepared such that the final representation of reproductions and photo copies show the proposed work in darker and thicker lines than existing conditions
- All linework and text should be drawn using a bylayer colour and linetype to facilitate easy modifications.
- Existing conditions should appear faded in comparison to proposed work, and use a text size of 1.6mm or 2.0mm on the final hard copy.
- The various utility lines should be identified and appear slightly darker than existing topography
- Proposed work should appear heavier than existing conditions, and use a text size of 2.4mm for notes, elevations and dimensions.

Plans which are "Approved for Construction" shall also be submitted to the Development Engineer in digital format compatible with the City's current version of AutoCAD software (one disk copy).

4.3 Engineering Drawings

A complete set of engineering plans is comprised of the following:

A Cover Sheet

A cover sheet bearing the name of the development, the subdivision owner's name, a key plan showing the site location relative to two nearby major highways and a table of plan contents.

A General Service Plan
(maximum scale 1:1000)
The General Plan will indicate the general overall scope of the project and the geographic relationship to surrounding lands. In addition to the requirements of Section 4.1, the General Plan will illustrate:

- Existing utility services and roads within and around the development
- Proposed storm, sanitary collection systems, water distribution systems (mains only), with details for:
  - ✓ Pipe diameters
  - ✓ Valve sizes and locations
  - ✓ Hydrants
  - ✓ Direction of flow in sewers
  - ✓ Standard service lateral connection symbols
- Existing and proposed easements.
- The location of test pits or boreholes from the soils report.
- A legend of symbols (OPSS 100).
- A list bearing the description, location and elevation of benchmarks to be used in establishing vertical control on the site. A minimum of two benchmarks to geodetic datum is to be to be provided with locations preferably within the project boundaries.
- A reference index showing the coverage of all plan and profile drawings and their corresponding drawing numbers within the set.
- Phase limits.
- Standard Notes and specification references as contained herein.

Lot Grading Plan
(Maximum scale 1:500)
The Lot Grading Plan shall establish the final grade control for all lots and blocks within the development in accordance with the City's lot grading requirements and objectives (See Appendix 1E) and in accordance with the City's stormwater management objectives (See Appendix 1F). The plan must contain sufficient detail to accurately assess the impact of post development surface drainage both within and adjacent to the owner's lands. In addition to the requirements of Section 4.1, the plan will contain the following:

- A key plan
- A legend using standard symbols.
- A list bearing the description, location and elevation of bench marks to be used in establishing vertical control on the site. Benchmarks are to be to geodetic datum and a minimum of two is required within the project boundaries.
- Existing ground contours or elevations in and adjacent to the development as established by field survey. Within and adjacent to the subdivision boundary, the City will accept elevations established by recent/modern aerial photography with the exception of all intersecting lot lines (existing and proposed) at the subdivision boundary. The Owner's Engineer shall verify the accuracy of all aerial contours by appropriate spot checks. Where adjacent lands are currently under development the approved proposed grades shall be identified and used in determining the treatment at the common boundary.
- The limits of cut and fill required in pre-grading (see Appendix 1E, 1.0)
- Existing vegetation limits, including that which is to be preserved.
- Existing ditches, swales and watercourses in and adjacent to the development.

- Existing buildings, foundations to be demolished.
- Proposed grades at each property corner and at the building platform plus any other grades required conveying the intent of the plan (See Figures 1B-1 and 1B-2).
- Proposed gradients along side and rear lot lines (in %).
- The proposed direction of surface run-off using arrows.
- Road centreline elevations calculated at the projected lot line extension or at regular chainage intervals (20 meter min.) which ever is the lesser.
- Control point road grades BVC, EVC, sag, crest etc.
- Location and inlet elevation of all existing and proposed storm drainage inlets. All structures are to be numbered. (Roadside inlets may be shown in table form)
- Test pit or borehole locations as per the soils report.
- Miscellaneous lot grading types and drainage patterns.
- Proposed swales and ditches including typical cross sections.
- Slope limits resulting from cut or fill operations.
- Typical grading details and specifications.
- Existing and proposed easements.
- Culverts including invert, diameter and length
- Details of all structures required for slope stability where maximum slopes cannot be achieved.
- Location and pertinent details of all sedimentation and erosion control measures.
- Masked imaging of the Storm Drainage areas.

Plan and Profile Drawings
(Scale 1:500 horizontal, 1:50 vertical)
The Plan and Profile Drawings will provide the detailed information required for construction of roads and municipal services.

In addition to the requirements of Section 4.1, the drawings will illustrate:

Plan Portion
- Horizontal control data for the road centreline including
    - ✓ P.I. Station chainage
    - ✓ length of tangent
    - ✓ degree of curve
    - ✓ curve length
    - ✓ beginning of curve chainage
    - ✓ end of curve chainage
- All existing services with original plan referenced.
- Cross reference numbers of adjoining plans and match lines.
- All municipal services to be constructed including service laterals with non standard locations dimensioned to property lines.
- Pipe diameters and pipe material. Symbols and notes may be used to depict size and type of standard building service laterals.
- Utility Structures i.e. Storm and Sanitary Maintenance holes, valve chambers etc. with corresponding identifier i.e. number or letter symbol (matching design sheets)
- Catchbasin locations and connection details such as
    - ✓ slope, invert
    - ✓ top of grate elevations (May be shown in table form)
- Any facilities to address public transit (bus lay-bys etc.)

- Radii at intersections and turnarounds.
- Street furniture locations, such as utility pedestals, community mailboxes, streetlights and fire hydrants.

Note - Barrier curbing (OPSD 600.010) shall be installed for a distance of 6.0 m. in both directions from Canada Post mailboxes. (See Appendix 1J, Figure 1A8 - Community Mailbox Curb Detail).

Profile Portion

- A profile of the existing grade and proposed road grade along the centreline of pavement projected directly below the plan view.
- Existing and proposed centreline road elevations.
- Vertical control data, including:
  - ✓ points of intersection
  - ✓ tangent gradients
  - ✓ K - factors
  - ✓ super-elevation details as necessary.
- A profile of the road subgrade elevation showing grade treatment, transition treatment, method of achieving subgrade drainage etc.
- Rock soundings at sufficient intervals to determine road construction requirements and to determine estimated rock excavation quantities for the construction of underground services.
- Test pit locations and critical bore hole results.
- Station chainage along the centreline of the road - maximum spacing 20 meters plus those for establishing vertical control.
- All proposed and existing pipes showing length, inside diameter, gradient, invert elevations at maintenance holes (san. storm), depth of cover (water), type of pipe material, and bedding requirements including specification numbers and reference to detail drawings.
- Storm and Sanitary Maintenance holes, valve chambers etc., including:
  - ✓ type (i.e., O.P.S.D Type)
  - ✓ size (barrel diameter or inside dimensions)
  - ✓ chainage and offset from centreline.
  - ✓ top of grate elevation
  - ✓ identifier i.e. number or letter symbol (matching design sheets)
  - ✓ details of drop structures, safety platforms, etc.
- Basement elevations of existing houses to be serviced from proposed sewers.
- Proposed and existing watermains with type of pipe material, bedding requirements and depth of cover.
- Cross reference to detail drawings elsewhere in the set for sewer maintenance holes or special watermain details.
- All pipe clearance details at crossing of pipes.

Detail Plan
(Scale to Suit)

Detail Drawings will be required when there is not sufficient space on the Plan and Profile Drawings or other drawings to fully describe the necessary works. In addition to the requirements of Section 4.1, the Detail Drawings shall include:

- Road cross section, curb and sidewalk details (mandatory).
- Details of special chambers, such as metering chambers.

- Details of special structures, such as storm sewer inlets and outlets, or retaining walls.
- Details of special drainage features, including stormwater retention/detention ponds.
- Pumping station details.
- Walkway fencing details.
- Typical service trench cross sections for single and double service trench (mandatory)
- Other details as required

Utility Plan
(Maximum Scale 1:750)
The designer will compile the Utility Plan for utilities other than water and sewer from the requirements of the various public and private utility agencies (Utilities Kingston, Electric, Telephone, Natural Gas, Cable TV, Canada Post). The Utility Plan also details layout for streetlighting. In addition to the requirements of Section 4.1, the Utility Plan shall include:

- A legend using standard symbols.
- Typical utility trench details, duct locations.
- Streetlight electrical distribution system.
- The location of all existing and proposed streetlights in and adjacent to the development.
- The location of utility structures and street furniture such as Electric, Telephone, Cable TV, Gas and Canada Post in and adjacent to the development.
- Connection details for all proposed streetlights, including wiring location, duct requirements, electrical source and fuse pedestal locations.
- Existing and proposed utilities (Electric, Telephone, Cable TV, Gas and Streetlight circuitry) including those in common trench (in schematic form). See Technical Schedule 2C.
- Specific duct and trench cross-section details for road crossings.

Storm Drainage / Sanitary Drainage Plans
(Scale to suit)
A separate drainage area map for storm and sanitary drainage calculations shall be prepared. In addition to the requirements of Section 4.1, each drainage area map will include a key plan and a legend.

Each drainage area map will show the street and lot layout of the subdivision, street names, property descriptions, existing and proposed sewers, maintenance holes with identifying numbers, sewer diameters, lengths, direction of flow, sub area boundaries with areas in hectares and pipe design calculations.

The storm drainage plan shall depict to scale the extent of drainage areas outside the development and be supported by existing ground contours, which shall also be shown.

Storm drainage sub-areas are to identify the runoff coefficient, as set out in the Technical Schedule 1C**,** and sanitary sub-areas are to identify the use of the property, i.e. residential, commercial, etc., and the population density or equivalent, as set out in Technical Schedule 2C.

Park Development Plans
(See Appendix 3D)

A completed set of plans to be included in the 1st design submission will include:

- Approved park plan as developed through draft plan stage in agreed to detail. (Trees – existing, to be preserved and protected) and new trees, recreational elements and play features/equipment, pathways, lighting, amenities, fencing, signage)
- Grading plan for park including any catch basin, swales, ditches or drainage control features
- Servicing (on grading plan) including any infrastructure in the park and minimally service laterals to the property line
- Tree preservation and protection plan (approved through Public Works – Forestry)

Street Lighting Illumination Plan
(See Appendix 2F)

Miscellaneous Plans
(As required)

- Noise attenuation / fencing, etc.
- Tree Preservation Plan in accordance with By-Law 2005-289
- Tree Planting Plans (see Technical Schedules 3 A and 3B for plan requirements)
- Bridge plans
- Traffic related
  - ✓ Electrical
  - ✓ Lane markings
  - ✓ Signal layout

Approved Plan Distribution

Plan distribution shall be in accordance with the following table. Upon addressing all conditions to the satisfaction of the City and all outside agencies, the plans are to be signed and sealed by the Owner's Engineer. Approved plans are then to be individually bound, identified and delivered to the Development Engineer. The plans shall then be stamped by the appropriate City authority as being "Approved for Construction".

Approved Plan Distribution Chart

Plans	Development Technologist	Planning Department	Culture & Recreation	Public Works - Forestry	Stormwater Engineer	Traffic Engineer	Utilities Kingston	Building Department	Public Works Department	Environmental Engineering	Owner	Total
Legal Plans	1(2)	1(3)	1		0			(1)				2(5)
Complete Sets	1(3)	1(0)	1		1	1	1(2)		(1)		(1)	5(7)
Street Tree Planting				2								1(3)2
Lot Grading Plan			2(3)	1								1(3)
Tree Preservation			1	2								1(3)
Park Development			4	1								1(3)
General Plan			2				1(0)			1(1)		1(1)
Noise Attenuation								(1)				(1)
Storm Drainage					(1)							(1)
Streetlight Design							1(0)					

The Owner's Engineer shall be responsible for distributing approved plans to the owner, the contractors and outside agencies.

5.0 AGREEMENTS

5.1 Pre-Servicing Agreements

Those owners wishing to obtain an early construction start may, with the necessary approvals, enter into a "Pre-Servicing Agreement" with the City. The owner shall make the request for the Agreement in writing to the Planning Department. Such an arrangement is subject to the following restrictions.
All plan approvals
All approvals from outside agencies.
All other provisions as identified in the standard pre- servicing agreement including financial security and proof of insurance.
A copy of the standard Pre-Servicing Agreement may be obtained from the City's Planning Department.

5.2 Model Home Agreement

Those wishing to construct model homes within the plan and prior to the preparation of a subdivision agreement may enter into a "Model Home Agreement" with the City. The owner shall make the request for the Agreement in writing to the Planning Department. A Model Home Agreement is subject to the following pre-requisites:

- An executed Pre-Servicing Agreement
- Approval of location of the model home lot(s).
- Approval of means of access and servicing level
- All other provisions, as identified in the Model Home Agreement, including financial security
- A copy of the standard Model Home Agreement may be obtained from the City's Planning Department.

5.3 Subdivision Agreement

The developer will be required to enter into a subdivision agreement with the City. A standardised form of agreement is used; a copy of which is available from the Director of Planning. The owner's engineer is expected to obtain a copy of the agreement and be fully conversant with its terms as well as the standards contained herein. The owner's engineer shall also be expected to provide and/or co-ordinate the following schedules for inclusion in the subdivision agreement.

Schedule "B" -Description and Cost of Works to be constructed
Schedule "E" -Approved Plans for Works to be constructed

Schedule "B" - Engineer's Estimate

The owner recognizes the City's need to maintain sufficient securities at all times to complete the works should the development default for any reason. In this regard, the engineer's estimate of Cost to Complete the works shall meet the following criteria:

1. The estimate is to cover 100% of the cost to complete the works and must factor in any other costs that are dictated by the subdivision agreement.
2. When unit prices are based on estimated costs only, the unit prices shall be suitably conservative to provide a reasonable level of confidence that the works could be completed by the City. When unit prices are based on tendered unit prices, the tendered unit prices shall be used. In all cases, the estimated cost of the Works shall extend to a two (2) year horizon. Should construction be deferred beyond the two year horizon, the

Engineering Department will re-examine the engineer's estimate and will require the estimate/security to be updated based on current construction costs.

3. Estimates of the cost to complete the Works shall take into account, in addition to applicable taxes, increases in unit prices that occur over time, and any local price increases that are known.
4. The secured value of the works shall contain no deductions for external sources of funding for any portion of the works.
5. Format of estimate to be as per City Subdivision Agreement format. The engineer is to provide four (4) copies of the Engineer's Estimate, sealed, signed and dated for inclusion in the Subdivision Agreement.

Schedule "E" (Approved Plans)

All approved plans for the works to be constructed are to be reduced to legal size (8.5"x14") for inclusion in the agreement. The reduced versions are to be photographic reductions of the originals having black lines on a white background. Photocopy reductions are not permitted.

5.4 Site Access Agreement to Park & Open Space

To permit Culture & Recreation, Forestry, Environment and Engineering staff access to any park and open space blocks for site and environmental analysis, tree preservation and pre-engineering works prior to the deeding of these parcels at the executed subdivision agreement stage of the process.

6.0 Securities

Note: GST currently charged at 0% but subject to change.

6.1 Pre-Servicing Agreement (PSA)

1. Consultant provides for review a **complete** cost estimate for all works in the subdivision, including 5% contingency, 7% Engineering/Inspection/Testing, and GST.

2. Security amount required will be calculated based on the approved cost estimate, as follows:
   $75,000 + 100% of any works unique to the subdivision (such as works in the City ROW, works off-site or pumping stations), including 5% contingency, 7% Engineering/Inspection/Testing, and GST **+ 1% of all other works**

3. Prior to the City forwarding the PSA to the Owner for signing, the following is required (in addition to the normal requirements for approval, i.e. MOE C of A's):
   a. Letter of Credit or Certified Cheque in the calculated amount for security, proof of insurance
   b. Engineering Division's 1% Design Fee.

6.2 Security for Model Homes

$10,000 per model home or $50,000, whichever is greater.

6.3 Subdivision Agreement (SA)

1. Consultant provides for review a complete cost estimate for all remaining works.

2. Security amount required for the SA will be calculated based on the approved cost estimate of remaining works, as follows:
   100% of the remaining works + 5% contingency + 7% Eng./Insp./Testing + GST + 5% maintenance holdback for completed works + 10% construction lien holdback.

3. No reductions in security, including the construction lien holdback, will be processed until after the SA is registered, and as per the *Security Reduction Guideline*.

4. The PSA security will be released without delay once the SA security is in place.

5. Prior to the City forwarding the SA to the Owner for signing, the following is required from the developer:
   a. Letter of Credit or Certified Cheque in the calculated amount for security, proof of insurance (where PSA was not requested)
   b. Engineering Division's 1% Inspection Fee.

6.4 Security Release

The engineer is encouraged to obtain a copy of the Engineering Department's Security Release Procedure document dealing with this subject

Frequency

Security reductions will be processed at the following four milestones:

1. Following the issuance of the Preliminary Certificate of Approval of the Underground Services.
2. Following the issuance of the Preliminary Certificate of Approval of the Works.
3. Following the issuance of the Final Certificate of Approval of the Works.
4. At one other milestone at the choice of the developer.

The Director of Engineering may agree to process a fifth reduction if extenuating circumstances persist that are beyond the Developer's control.

Criteria For Engineer's Estimate

Requests for reduction shall be made by the owner's engineer, and shall include:

1. A cover letter.
2. An estimate of the cost to complete the works signed, sealed and dated by a Professional Engineer.
3. The secured value of the works shall contain no deductions for external sources of funding for any portion of the works.

Process

The City recognizes the owner's need to reduce the security once works are completed, and will therefore attempt to meet the following guideline:

1. Where there are no known issues affecting the release of securities, the Engineering Division shall issue instructions to carry-out the release within 10 working days, and shall provide a written calculation of the securities to be retained to the Owner's Engineer.
2. If liens have been registered or if monies owing the City are outstanding, security will be held pending payment of the account or discharge of the lien. Unaccounted for costs will be reported to the owner's engineer without delay with instruction to amend the estimate accordingly.
3. Securities shall not be released if the Subdivision Agreement is not yet registered and/or while the Pre-Servicing Agreement is in effect.
4. If an inspection is required due to a known or reasonably suspected issue, the Engineering Division shall, through its best efforts, schedule the inspection, subject to suitable weather conditions. The results of the inspection shall be made known to the owner's engineer within 10 working days of the issue being identified, subject to the availability of staff from departments other than Engineering. Security shall not be released until the inspection is complete and, if necessary, corrective action taken.

6.5 Holdbacks

Each reduction will be subject to a 5% maintenance holdback on all completed works and a 10% construction lien holdback pursuant to the Construction Lien Act (publication in a daily trade newspaper and 45 day lien period).

7.0 Certificates

7.1 General

The owner is required to maintain the public works until such time as Kingston City Council formally accepts the works. The agreement provides for the approval of the works at various stages of construction through the issuance of Certificates. The certificates verify preliminary approval of the works, at such points that the City will issue building permits and undertake to provide certain basic levels of service. An explanation of the various certificates and the requirements for preliminary approval is as follows:

7.2 Stage 1: Preliminary Certificate of Approval of Underground Services

This certificate is issued upon completion of the underground infrastructure, roads to base asphalt level and the completion of preliminary grading. The application of base asphalt may be waived, in writing, by the Director of Engineering due to extreme weather conditions. The requirements for issuance of the certificate are as follows:

Underground Infrastructure

- ✓ The municipal water, storm sewer and sanitary sewer infrastructure must be fully installed as per approved plans such as to perform their basic function. All testing of the underground works must be completed with satisfactory testing of the sanitary and waterworks systems being confirmed by Utilities Kingston on the Certificate Application.
- ✓ All joint trench utilities must be fully installed and backfilled unless waived in writing by the Director of Engineering. In all cases Electric and Telephone services to dwelling units must be fully installed and operable prior to occupancy.
- ✓ All leakage testing satisfactorily completed.
- ✓ Water system is to be disinfected, flushed and verified acceptable by Utilities Kingston.
- ✓ Flow ratings must be completed on all hydrants (See Appendix 2B-4.1i).
- ✓ All valves including curb stops are to be set to final grade and be fully operable.
- ✓ All maintenance holes are benched, cleaned and adjusted to finish grade. The exception is those within the roadway, which are to be at base course level.
- ✓ All maintenance hole steps and safety platforms must be in place.
- ✓ Pumping facilities must be fully operative (if applicable).
- ✓ All catchbasin frames and grates are to be installed to base asphalt grade. All other storm inlets and outlets are to be installed to grade with grates and headwalls in place.
- ✓ All Stormwater Management quality and quantity ponds must be in place and functional to the satisfaction of the Development Engineer and the C.R.C.A. Security fencing shall be in place if applicable.
- ✓ The entire sanitary and storm systems, including roadside catchbasins, must be free of dirt and debris.

Roads

- ✓ Granular road base must be in place. Base asphalt must also be in place unless waived, in writing, by the Director of Engineering due to extreme weather conditions.
- ✓ All traffic and street name signs must be installed.
- ✓ Boulevard areas must be rough graded to promote positive drainage.
- ✓ All designated swales and receiving channels must be rough graded and at grade.
- ✓ All erosion and sedimentation control measures must be in place.

Miscellaneous

- ✓ Security fencing or other such requirements, which are a condition of occupancy, must be in place.

Interim Operations and Level of Service - City of Kingston

Upon the issuance of this Certificate the City will provide the following levels of service to the public.

- ✓ Utilities Kingston will, subject to the maintenance provisions as contained in the subdivision agreement, undertake the operation of the water distribution and sewer collection systems.
- ✓ The Public Works Department will attend to winter maintenance of the road system and the Solid Waste Department will commence collection provided that base course asphalt is present.

7.3 Stage 2: Preliminary Certificate of Approval of the Works

This certificate is issued by the City after all remaining works are substantially complete. The certificate marks the commencement of the "maintenance period" whereby the City will hold security in the amount of 5% of the cost of works completed. Not limiting the generality of the foregoing the following must be complete.

- ✓ The CCTV (Closed Circuit Television) inspection of the underground sewer works.
- ✓ A 2nd (final) flushing of all sewers
- ✓ surface asphalt applied
- ✓ Concrete curb and gutter and sidewalks.
- ✓ Street light system in place and energized.
- ✓ Asphalt walkways and related fencing
- ✓ Noise attenuation barriers and related fencing
- ✓ Park grading complete.
- ✓ All valve boxes shall have received their final adjustment and all valve boxes shall be confirmed as clean and deemed operative.
- ✓ All landscaped areas are to be sodded or seeded as specified.
- ✓ All street tree planting is to be complete to the satisfaction of the Supervisor of Forestry, Public Works and Emergency Services.
- ✓ All deficiencies identified by the owner's engineer and/or City's final inspection must be rectified with the exception of minor deficiencies, which are scheduled for correction to the satisfaction of the Development Engineer.
- ✓ As Built drawings complete and provided to the Development Engineer.

Interim Level of Service - City of Kingston

The City of Kingston will undertake general maintenance of the "works", save and except for remedial work that is deemed beyond normal wear and tear. More specifically:

- ✓ Utilities Kingston will undertake normal maintenance of the underground distribution and collection systems including the related above ground infrastructure and including the street light system.
- ✓ The City's Department of Operations will provide normal summer and winter maintenance on the road system and continue to provide solid waste collection.
- ✓ The City's Public Works Department will attend to grass cutting and maintenance of parks, stormwater management facilities and trees on public lands.

7.4 Stage 3: Final Certificate of Approval of the Works

Issued one year after the Preliminary Certificate of Approval of the Works this certificate marks the end of the maintenance period and the release of the maintenance security deposit. Prior to release of the security all deficiencies identified during the maintenance period are required to be rectified including the rough grading of vacant lots to provide positive drainage (and having due regard for neighbourhood aesthetics) to the satisfaction of the Development Engineer. Also, in accordance with the subdivision agreement, a Surveyor's Certificate must be filed with the Development Engineer confirming the presence of all main survey bars establishing the location of roads, parks and public utility easements within the plan.

8.0 CONSTRUCTION APPROVAL / INSPECTION

8.1 General

The owner's engineer, having obtained design approval and wishing to proceed to construction is advised of the following.

8.2 Construction Prerequisites

The following shall be considered pre-requisites to the commencement of construction.

- Engineering plan approval including approval from all outside agencies having jurisdiction.
- All construction related permits / approvals in place including MOE Certificates of Approval.
- Acceptance of the owner's contract documents.
- Posting of the certificate of insurance and others as set forth in the Subdivision Agreement.
- Delivery of all forms of consent, securities and payments as provided for in the subdivision agreement.
- Execution and delivery by the Owner /Developer of the subdivision agreement and all deeds and easements for lands to be given to the City and other public agencies.
- Site Access Agreement in favour of City for park and open space blocks
- Delivery of all approved plans plus copies of reports

8.3 Pre-Construction Meeting

Having met the pre-requisites for the commencement of construction, the owner's engineer shall request a pre-construction meeting to be arranged through the office of the Development Engineer 5 (five) working days prior to construction. The office of the Development Engineer will contact staff members, the utility companies and any other agencies, which are perceived to have an interest in the construction. It is expected that the owner's engineer, the site inspector and contractor will attend, as well as the owner or his direct representative. For the meeting the contractor will be required to provide an approximate schedule of construction, a list of subcontractors, and a list of materials, mix designs etc., to be used in the construction of the subdivision works (materials must have Municipal approval). Minutes of the meeting will be taken by the owner's engineer and circulated to all in attendance upon a draft being reviewed and approved by the Development Engineer.

At the City's discretion, other sub-consultants may be required to attend the pre-construction meeting.

8.4 Inspection and Testing

All works to be constructed shall be inspected and tested under the direction of a professional engineer as approved or designated by the City's Director of Engineering. Inspection services will be provided in new subdivisions by either one of the following two options:

a. The owner's engineer is approved by the City to provide full time inspection in the subdivision. The City or a representative of the City will provide periodic part time inspection at pertinent inspection intervals.

b. The owner's engineer is unable to perform the inspection in the subdivision in the opinion of the City or the Developer requests that the City or a representative of the City perform the full time inspection in the subdivision.

Qualifications for Construction Inspector
The owner's engineer is required to provide the following qualifications for those engaged in the inspection of the public works:

Each construction inspector must be a graduate of a three-year Civil Engineering Technology Community College program or equivalent and have a minimum of 5 years of work experience in the construction of Municipal Public Works Projects or equivalent as approved by the Director of Engineering. The owner's engineer is to provide the Director of Engineering with a resume of each Construction Inspector that is to be used in the inspection of the public works.

Duties of the Owner's Engineer during Construction
The owner's engineer shall ensure that an approved construction inspector is present on site for the purposes of ensuring quality control during construction. The following functions, at a minimum, are considered mandatory on the part of the owner's engineer.

Start Up

- Attend pre-construction meeting
- Check all benchmarks on the plan for accuracy
- Check elevations of any receiving sanitary or storm sewers to ensure conformance with plan elevations
- Check for adequate control for layout i.e. survey bars
- Obtain approved engineering drawings from the City of Kingston
- Obtain asphalt curves, asphalt and concrete mix designs, sieve analysis, and aggregate sources; to be forwarded to the City and the chosen Testing Company

Underground Works

- Record top of rock shots
- Check horizontal and vertical alignment and grades of all works
- Verify acceptability of material on site
- Inspect bedding installation and confirm proper compaction
- Inspect coverage of sewer pipes and verify clearances
- Check to make sure sufficient cover on watermain
- Check maintenance hole and catchbasin locations to ensure they meet plan dimensions
- Check tops of maintenance holes and catchbasins to ensure they are low enough to accommodate frames and grates plus at least one lift of modular adjustment units and mortar bed for frame and grate
- Ensure all maintenance holes are properly benched and have sufficient rungs
- Complete all necessary testing for sanitary sewer system (air test, mandrel, leakage, etc.) as well as for watermains (continuity of tracer wire, chlorination, etc.) and record information.
- Supervise closed circuit TV inspection and remedial work.
- Record all "As-Built" information and complete lateral sheets for each lot

- Check final elevations for frame and grates of all maintenance holes, catchbasins and ditch inlets, which are not in the pavement

Roadworks

- Check sub base to make sure it is to grade; complete compaction testing
- Complete compaction testing and testing of granular materials
- Check curb grades, location and layout.
- Ensure all storm inlets are in accordance with the approved design elevation.
- Take air tests, slump tests, and cylinders on all concrete pours (curb and sidewalk)
- Check final road base elevations prior to base course asphalt to ensure proper crown and proper depth between top of base and top of gutter
- Ensure Maintenance Hole frames and grates and gate valve boxes are constructed to the proper grade and crossfall at base course asphalt grade.
- Sample both surface and base course asphalt
- Prior to surface course asphalt, confirm and witness CCTV; CCTV reports and tapes to be reviewed and commented upon
- Prior to surface course paving, make sure all Maintenance Hole frames and grates, catchbasin frames and all gate valve boxes are properly adjusted.
- Ensure all ditch inlet structure grates and storm outfall grates are properly secured
- Check sidewalk alignment and grades
- Check sidewalk base material and compaction, check sidewalk forms to ensure proper thickness

Utility Trenches, Street Lights, Boulevards, and Street Trees

- Check locations and depth of utility trenches
- Check locations of ducts
- Check location and grade of transformer pads, pedestals, etc.
- Ensure road crossings and utility trenches are properly backfilled and compacted
- Check location of street lights
- Check sod and landscaping for compliance
- Confirm stakeout of street trees and confirm species planted

Miscellaneous

- Complete weekly progress reports which are forwarded to the City which details the work completed, identifies significant deficiencies, details progression of work versus the contractors schedule of work, appends all test results, etc.
- Certification from a Professional Engineer that the works have been installed in accordance with the approved engineering drawings; both at above and below ground stages of construction
- Complete deficiency inspections and reports
- Verify security reduction requests
- Check all rip rapped areas for dimensions, grade, size, and quality of rock and installation of filter cloth
- Check all storm water management facilities for grade and dimensions
- Check all major drainage swales and rear yard swales for grades and alignment
- Monitor construction of berms and noise attenuation fences
- Monitor construction in park areas
- Check construction of walkways and fencing
- At completion of all landscaping, check fire hydrant flange elevation to ensure the minimum 150mm clearance

- Check all gate valves and curbstops for visibility and operation, documenting the final position of all valves on forms provided by Utilities Kingston
- Tie in all maintenance holes and gate valves that are not in the pavement

Quality Control/ Inspection Frequency (Minimum Standards)
The owner's engineer shall ensure that quality control and inspection frequency is carried out in accordance with the following tables:

Table 2: Compaction

Area	Min. % Compaction	Minimum Frequency/Intervals*	Test Location/Identification
Mainline Sewer – Bedding, Cover and Trench Backfill	95	50 meters at random depths, 0.3 meters max. lift for first 150 m and every 100 m thereafter	Street, Distance from Downstream Maintenance Hole
Mainline Water Main –Bedding, Cover and Trench Backfill	95	50 meters at random depths, 0.3 meters max. lift for first 150 m and every 100 m thereafter	Street, Station, and Offset
Road Subgrade Utility Crossings	100	50 meters at random depths, 0.3 meters max. lift for first 150 m and every 100 m thereafter	Street, Station, and Offset
Service Trenches (Water, Sanitary, Storm)	95	First 2 trenches and every 20th trench thereafter	Lot Number
Curb & Gutter Sidewalk	100	50 meters at random depths, 0.15 meters max. lift	Street, Station, and Offset (left or right)
Granular Road Base	100	50 meters, 0.15 meters max. lift	Street, Station, and Offset (left or right)
Asphalt	100	50 meters, each lane	Street, Station, and Offset (left or right)
Existing Driveway Reinstatement	100	Random	Lot or House Number and distance

Testing shall be done at all changes of soil types and/or types of mechanical compaction.

Table 3: Inspection Frequency

Type of Operation		Owner's Engineer	City of Kingston
Pre- Construction Meeting	(1)(2)	A	A
Clearing and Grubbing		P	A
Stripping topsoil		P	A
Below Ground Works			
Check bench marks & Control Bars		A	A
Check Trenching, Bedding, and Backfilling Operations		F	A
Verify Acceptability of Materials		P	A
Check Layout & Monitor installation of below ground works		F	A
Monitor Testing of Watermain (leakage)	(2)	F	A
Monitor Chlorination (Water)	(2)	F	A
Contact Utilities Kingston for hydrant flow testing	(2)	A	F
Monitor Testing of San. Sewer and maintenance holes	(2)	F	A
Utility trenching (Electric, Telephone, Cable, Gas)	(1)(2)	P	A
Utility Trench Backfill	(1)(2)	F	A
Compile Information and Prepare As-Built drawings		F	
Above Ground Works			
Checking grade and layout of all above ground works		F	A
Monitor Road sub excavation and placement of Granulars	(1)	F	A
Check Rough grading of boulevards		P	A
Check pre grading of lots /Swales/Parkland/ Storm Ponds		P	A
Check base asphalt	(1)	F	A
Check streetlight installation and wiring	(2)	F	A
Check curb and gutter installation	(1)	F	A
Check Sidewalk installation	(1)	F	A
Walkways		F	A
Fencing (Noise, Berms, Misc.)		P	A
CCTV sewers	(1)(2)	F	A
Check top course asphalt	(1)	F	A
Boulevard Landscaping, Street Trees	(1)		A
Park Landscaping	(3)	A	A
Other			
Prepare weekly progress reports		A	A
Security reduction requests	(1)	A	A
Administering deficiency inspections	(1)(2)	A	A

F= Full time inspection, **P**= Part time inspection, **A**= As required to establish compliance
(1) Indicates mandatory involvement by City of Kingston – Engineering Department staff
(2) Indicates mandatory involvement by City of Kingston – Utilities Kingston staff
(3) Indicates mandatory involvement by City of Kingston – Cultural Services staff

Consistency

The owner's engineer shall make every reasonable attempt to maintain consistency in regard to on-site inspection. If an alternate inspector is to be assigned to the project the owner's engineer shall notify the Development Engineer and obtain his or

her concurrence. If unforeseen circumstances require the immediate substitution of the designated inspector the Development Engineer shall be notified as soon thereafter as possible.

Inspection by City of Kingston Staff and Utilities Kingston

The City of Kingston staff and Utilities Kingston representatives will attend the site at periodic and random intervals to ensure that the level of inspection is adequate. As per the terms of the Subdivision Agreement, all costs incurred by the City in attending to the periodic and random inspections will be paid for from fees paid by the owner prior to the issuance of the Preliminary Certificate of the Underground Services (1% of Schedule "B" - Subdivision Agreement). Any and all information regarding the work in progress shall be made available on request to the City's inspection personnel. Without limiting the generality of the forgoing the owners engineer shall notify the City of Kingston at least 48 hours in advance of all key steps in the construction process. Interim statements at various stages of completion of the works in the form of "Certificates" will be issued by the Development Engineer at key intervals as outlined in the Subdivision Agreement (See section 7.3 and Appendix 1K). Prior to each of the various certificates being issued, the owner's Engineer must certify to the City of Kingston that the required works at each stage of construction were inspected and that the construction adheres to the plans and specifications approved by the City of Kingston. Standard forms for certifying compliance may be obtained from the office of the Development Engineer (See Appendix 1K).

8.5 On-Site Facilities

Unless waived in writing by the City an on site heated office trailer with desk, chair and telephone shall be provided for the general use of the on site inspector and the City's inspection personnel.

8.6 Site Meetings

Site meetings may be called by the Development Engineer as required to monitor the work in progress and to discuss and resolve matters of mutual interest or to resolve any on site difficulties.

8.7 Plan Revisions

Engineering Drawing revisions are to be reviewed and approved by the City prior to issuance. Requests for design alterations shall be co-ordinated by the owner's engineer who shall submit copies of the proposed revision to the Development Engineer together with a covering letter outlining the nature of the change. The number of plan copies required for review will be determined by the Development Engineer depending upon the nature of the proposed revision at which time he/she will determine the need to involve the Director of Engineering. Upon approval by the Development Engineer and/or the Director of Engineering, other affected agencies may be contacted. Upon all necessary approvals being granted, copies of the revised plan(s) shall be submitted to the City for internal use and for distribution to inspection personnel on site.

8.8 "As-Built" Information / Drawings

As-built information will be recorded by the on site inspector as the work progresses and in turn the information shall be provided to the owner's engineer**.**

Prior to or in conjunction with the application for issuance of the Preliminary Certificate of Approval of the Underground Services the owner's engineer shall submit to the Development Engineer all as-built lot servicing details in the form of the Subdivision Lot Servicing Sheet attached hereto (Appendix 1K- Standard Forms)

Prior to the City's inspection leading to the issuance of the Preliminary Certificate of Approval of the Works or within 12 months of the issuance of the Preliminary Certificate of Approval of the Underground Services, whichever occurs sooner, three (3) clear and legible hard copy sets of plans on bond paper of "as-built" drawings depicting all as built features shall be provided to the Development Engineer for distribution internally and to Utilities Kingston. The City's inspection will not proceed until this information is delivered.

The as-built plans shall record at a minimum**:**

- Inverts of all gravity sewers at the maintenance holes
- Inverts of all gravity sewer laterals at the property line.
- Top of watermain elevation
- Pipe lengths and grade
- Pipe materials, connection details including all non- standard features
- Top of grate, inlet and maintenance hole elevations
- Tie-ins to all water valves including curb stops (at all non-standard locations), bends**,** etc. from the 2 nearest property corners or 2 permanent structures.
- Tie-ins to maintenance holes from the 2 nearest property corners or 2 permanent structures.
- Trench rock elevations
- Street addresses as provided by the City of Kingston.
- Individual Lot Servicing sheets shall be provided with the as-built drawings.

All drawings and data files become the property of the City of Kingston, and the City and its agents may use these drawings and data files as the City sees fit, without compensating the owner or the owner's engineer. (See general – As-built plans)

8.9 Closed Circuit Television Examination of Sewers

A video examination shall be carried out throughout the entire length of sanitary and storm sewer systems in accordance with the provisions outlined in Utilities Kingston's Appendix 2A as contained herein. The examination shall be carried out prior to the application of the final lift of asphalt but not within the first 10 months following the completion of base asphalt. The CCTV inspection shall be carried out in the presence of the City's designated representative who shall assist in the co-ordination of the work.

8.10 Progress Reports / Inspection Records

The owner's engineer shall prepare weekly reports indicating:

- Works completed
- Works in progress
- Any change orders and/or directions to the contractor involving issues of non-compliance
- Adherence to the construction schedule
- All records confirming satisfactory completion of the works. Records shall include;
  - ✓ Lot servicing details as set forth using the Subdivision Lot Servicing Detail Sheet attached hereto (Appendix 2I- Standard Forms)

- ✓ Leakage test results of both water and sanitary sewer systems as set forth in the OPSS
- ✓ Mandrel test results of plastic sewer mains as set forth in the OPSS.
- ✓ Water main disinfection test results as set out in the OPSS as set out in OPSS and other applicable legislation.
- ✓ Compaction results
- ✓ CCTV reports and videos
- ✓ Portland cement concrete test results
- ✓ Asphaltic concrete test results (all lifts)

Upon completion, copies of the weekly report are to be furnished to the City's Development Engineer and to Utilities Kingston

ENGINEERING DEPARTMENT: TECHNICAL SCHEDULE 1

Appendix 1A	-	Standard Conditions of Draft Plan Approval
Appendix 1B	-	Development Application Pre-Consultation Form
Appendix 1C	-	Submission Checklist ***Draft***
Appendix 1D	-	Design Standards - Roads
Appendix 1E	-	Design Standards - Lot Grading
Appendix 1F	-	Design Standards - Stormwater Management
Appendix 1G	-	Design Standards - Storm Sewers
Appendix 1H	-	Design Standards - Traffic
Appendix 1I	-	Design Standards – Rural Estate Subdivisions
Appendix 1J	-	Standard Drawings
Appendix 1K	-	Standard Forms

ENGINEERING DEPARTMENT

Appendix 1A: *Standard Conditions of Draft Plan Approval*

1. Approved Draft Plan:

That this approval applies to the Draft Plan of Subdivision, prepared by

_____, dated _____ which shows the following:

- _____ residential lots (Lots 1-___);
- _____ residential blocks (Blocks 1-___);
- _____ Block(s) for infrastructure and servicing (Block ___);
- _____ block(s) for natural open space (Block(s) ____);
- _____ block(s) for parkland dedication (Block(s) ___);
- _____ block(s) for environmental protection (Block(s) ___);
- _____ block(s) for stormwater management pond (Block(s) ___);
- _____ block(s) for road widening purposes (Block(s) ___);
- _____ block(s) for 0.3 m reserves (Block(s) ___);
- _____ block(s) for daylighting triangles (Block(s) ___); and
- _____ new roadways (Streets '_____' to '____').

2. Streets and Civic Addressing:

(a) That the road allowances included in this Plan shall be shown and dedicated as public highways.

(b) That the Streets within this Plan shall be named to the satisfaction of the City, in consultation with the Planning and Development Department, in accordance with the City's Civic Addressing and Road Naming By-law. The proposed street names shall be submitted by the Owner for approval by the Planning and Development Department and shall be included on the first submission of the engineering drawings.

(c) **That Prior to Final Plan Approval**, the Owner shall provide confirmation that civic addresses have been assigned to the proposed lots and blocks by the City's Planning and Development Department, in accordance with the City's Civic Addressing and Road Naming By-law.

(d) That the road allowances within the Plan shall be designed in accordance with the City's engineering standards and shall be dedicated to the City free of all charge and encumbrances. The streets, lots and blocks shall be designed to coincide with the development pattern on adjacent properties.

(e) **That Prior to Final Plan Approval**, the Owner shall deed to the

City Block(s) _____as daylighting triangles.

(f) Any dead end or open side of a road allowance within the Plan shall be terminated in a 0.3 m reserve to be conveyed to the City free of all charges and encumbrances.

(g) That the Owner shall agree that the location and design of any **construction access** shall be approved by the City and/or the appropriate authority.

3. Reserves and Easements:

(a) That any dead ends and open sides of the road allowances created by this Plan shall be terminated in 0.3 metre reserves to be conveyed to, and held in trust, by the City.

(b) That such easements as may be required for utility or drainage purposes shall be granted to the appropriate authority free of all charges and encumbrances.

4. Financial Requirements:

(a) That the Owner agrees in writing to satisfy all the requirements, financial and otherwise, of the City concerning all provisions of municipal services but not limited to including fencing, lighting, landscaping, sidewalks, roads, installation of underground services, provisions of drainage and noise mitigation where required.

(b) **That Prior to Final Plan Approval**, the Owner shall submit for the City's approval a detailed breakdown of the construction costs for the works associated with the development of this Plan, including any cash surcharges or special levies. The construction costs shall be prepared and stamped by a professional engineer. The cost estimate shall be submitted in the City's standard format for incorporation into both the Pre-Servicing and Subdivision Agreements.

(c) That the Owner shall bear the expense of all off site works resulting from the approved public works design where such works are not subsidized under the Policies and By-laws of the City.

(d) That the Owner agrees to reimburse the City for the cost of any Peer Reviews of the Studies / Reports submitted in support of the proposed Plan of Subdivision.

5. Subdivision Agreement:

(a) That the Owner shall enter into the City's standard Subdivision Agreement which shall list all approved plans and municipal conditions as required by the City for the development of this Plan.

(b) The Subdivision Agreement between the Owner and the City be registered against the lands to which it applies once the Plan of Subdivision has been registered.

(c) That the Subdivision Agreement shall contain all necessary warning clauses and notices to purchasers resulting from, but not necessarily restricted to, the design and provision of services, including the requirement to provide and maintain private site specific works as necessary.

6. Holding Provisions:

That the City shall require the use of '-H' Holding Provisions in accordance with Section 36 of the *Planning Act*. The terms for the removal of the Holding '-H' Holding Symbol shall be in accordance with

Section _____of Zoning By-law No _____ and shall require the following:

- confirmation of sufficient servicing capacity for the development;
- that all necessary approvals have been received from all other agencies and government bodies and any required Agreements have been executed by the Owner; and
- that a Zone Change Application has been approved by the City to remove the '-H' Holding Symbol.

7. Engineering Drawings:

(a) **That Prior to Final Plan Approval**, the Owner shall submit for approval, subdivision design drawings, including design plans for all public works and services, prepared and certified by a Professional Engineer and designed pursuant to the City's Subdivision Design Guidelines and to the satisfaction of the City. Such plans are to form part of the Subdivision Agreement.

(b) **That Prior to Final Plan Approval**, the Owner shall submit a digital listing of the approved subdivision design drawings in the City's standard format for incorporation into the Pre-Servicing and Subdivision Agreement.

8. Revisions to Draft Plan:

(a) That any further subdivision of Blocks or additional road patterns on the Plan shall be completed to the satisfaction of the City.

(b) **That Prior to Final Plan Approval** of any part of the Plan, the Owner shall submit a revised Plan, if required, to reflect any significant alterations caused from this Draft Plan Approval.

(c) That where final engineering design(s) result in minor variations to the Plan (e.g., in the configuration of road allowances and lotting, number of lots, etc.), these may be reflected in the Final Plan to the satisfaction of the City.

9. Phasing:

(a) That Final Plan Approval for registration may be issued in phases to the satisfaction of the City, subject to all applicable fees.

(b) That the **phasing** of the development shall be reflected in the Subdivision Agreement and on the approved subdivision design drawings to the satisfaction of the City, taking into account the temporary termination of underground services, interim grading, interim stormwater management, operations and maintenance vehicle access and access for emergency vehicles.

(c) That the phasing of the development shall be proposed in an orderly progression, in consideration of such matters as the timing of road improvements, infrastructure, schools and other essential services.

(d) That all agencies agree to registration by phases and provide clearances, as required, for each phase proposed for registration; furthermore, the required clearances may relate to lands not located within the phase sought to be registered.

10. Zoning By-law Compliance:

(a) That the lands within this Draft Plan shall be appropriately zoned by a Zoning By-law which has come into effect in accordance with the provisions of the *Planning Act*.

(b) **That Prior to Final Plan Approval**, the Owner shall submit a Surveyor's Certificate which confirms that the lots and blocks within this Plan conform to the minimum lot frontage and lot area requirements of the applicable Zoning By-law.

11. Required Studies:

(a) **That Prior to Final Plan Approval**, the Owner shall submit a **Geotechnical Study**, certified by a Professional Engineer, to the satisfaction of the City. The recommendations of the Geotechnical Study shall be incorporated into the Subdivision Agreement and the Subdivision Agreement shall contain provisions whereby the Owner agrees to implement the Study recommendations to the satisfaction of the City.

(b) **That Prior to Final Plan Approval**, the Owner shall demonstrate that the soil and groundwater quality of the property is compatible with a residential land use as defined by the generic criteria listed within the Guideline for Use at Contaminated Sites in Ontario (MOE, rev. 1997). The acceptable method for this demonstration would be a **Phase I Environmental Site Assessment** (ESA) performed in accordance with CSA standard Z768-01 and any required follow up investigations (Phase II ESA) or remediation. The recommendations of the Study shall be incorporated into the Subdivision Agreement and the Subdivision Agreement shall contain provisions whereby the Owner agrees to implement the Study recommendations to the satisfaction of the City.

Should site remediation be required to meet the applicable soil and ground water criteria set out in the above Guidelines, the Owner shall submit to the City **Prior to Final Plan Approval**, a copy of the Record of Site Condition acknowledged by a Provincial Officer of the Ministry of the Environment.

The Owner shall provide a certificate by a qualified professional that all lands within the Plan and any lands and easements external to the Plan to be dedicated to the City, meet the applicable soil and ground water criteria noted above.

(c) **That Prior to Final Plan Approval** all recommendations of the Servicing Study shall be incorporated into the Subdivision Agreement and the Subdivision Agreement shall contain provisions whereby the Owner agrees to implement the Study recommendations to the satisfaction of the City.

(d) **That Prior to Final Plan Approval**, the Owner shall submit a **Traffic Impact Report**, prepared by a professional engineer to the satisfaction of the City. The Subdivision Agreement shall contain provisions for the Owner to design, construct and financially secure the costs of any off site road improvements as are deemed necessary by the Report's recommendations to the satisfaction of the City's Director of Engineering.

(e) **That Prior to Final Plan Approval**, a **Stormwater Management Report** and implementing plans for the development shall be prepared by a qualified Professional Engineer, to the satisfaction of the City and Cataraqui Region Conservation Authority. Such plans shall be included in the Subdivision Agreement. The Owner shall carry out the recommendations of the report, at his expense, to the satisfaction of the City and the Cataraqui Region Conservation Authority.

(f) **That Prior to Final Plan Approval,** the Owner shall submit a detailed **Noise Impact Study** prepared to the satisfaction of the City and the Ministry of Environment. The recommendations of the Study shall be incorporated into the Subdivision Agreement and the

Subdivision Agreement shall contain provisions whereby the Owner agrees to implement the Study recommendations to the satisfaction of the City.

12. Archaeological Assessment:

(a) That the Owner shall carry out an archaeological assessment of the subject property and mitigate, through preservation or resource removal and documentation, adverse impacts to any significant archaeological resources found. No grading or other soil disturbances shall take place on the subject property prior to the approval authority and the Ministry of Culture confirming that all archaeological resource concerns have met licensing and resource requirements.

(b) **That Prior to Final Plan Approval and Prior to Commencement of any Works** on any site identified as being archaeologically significant, the Owner shall carry out archaeological excavations of such sites to the satisfaction of the Ministry of Culture and the City; the Owner shall agree to take protective measures required by the City for such sites.

(c) Should archaeological resources be found on the property during construction activities, the *Ministry of Culture* must be notified immediately.

(d) In the event that human remains are encountered during construction, the proponent must immediately contact both the *Ministry of Culture* and the Registrar or Deputy Registrar of the Cemeteries Regulation Unit of the *Ministry of Government Services*. (1-800-268-1142).

13. Stormwater Management:

(a) **That Prior to Final Plan Approval**, Block(s) ___ shall be deeded to the City for Stormwater Management purposes. The design of the pond's open space, including any connecting paths, shall be subject to approval by the City.

(b) **That Prior to Final Plan Approval**, the Owner shall submit lot grading and drainage plans, and erosion and sediment control plans prepared by a qualified Professional Engineer for the Owner, to the satisfaction of the City and the Cataraqui Region Conservation Authority. The approved plans shall be included in the Subdivision Agreement between the Owner and City.

(c) **Prior to Final Plan Approval and Prior to any Works Commencing on the Site**, the Owner shall submit for approval by the City and the Cataraqui Region Conservation Authority (CRCA), a detailed engineering report(s) that describes the storm drainage system for the proposed development, which shall include:

i) plans illustrating how this drainage system will be tied into the surrounding drainage systems, and indicating whether it is part of an overall drainage scheme, the design capacity of the receiving system and how external flows will be accommodated;

ii) the location and description of all outlets and other facilities;

iii) storm water management techniques which may be required to control minor and major flows;

iv) proposed methods of controlling or minimizing erosion and siltation on-site and in downstream areas during and after construction;

v) overall grading plans for the subject lands; and

vi) storm water management practices to be used to treat storm water, to mitigate the impacts of development on the quality and quantity of ground and surface water resources as it relates to fish and their habitat.

(d) That the Owner shall agree to maintain all storm water management and erosion and sedimentation control structures operating and in good repair during the construction period.

(e) **That Prior to Final Plan Approval**, text shall be included in the Subdivision Agreement between the Owner and City, to the satisfaction of the Cataraqui Region Conservation Authority, to advise the Owner of the requirement to obtain a permit under the Fill, Construction and Alteration to Waterways Regulation of the Conservation Authority, prior to the placement or re-grading of fill on the site, and to advise the purchasers of Lots / Blocks _____ inclusive that a permit from the Conservation Authority may be required prior to the issuance of a building permit by the City.

14. Parkland Conveyance / Open Space / Environmental Protection Areas:

(a) That the Owner conveys up to 5% residential and up to 2% commercial of the land included in the Plan of Subdivision to the City for functional park or other public recreational purposes. Where the subdivision exceeds 15 units per residential hectare of land, the Owner shall convey lands for recreational purposes at a rate of one hectare (2.5 acres) for each 300 dwelling units. Alternatively, the City may require cash-in-lieu for all or a portion of the conveyance.

(b) That lands to be conveyed to the City for park or other public recreational purposes shall be subject to the following conditions:

(i) **That all lands shall be left in an untouched, natural state**. All existing vegetation is to remain within the limits of the park site, including any significant trees at the property line. Existing grades/elevations are to be maintained at the property lines and within the park itself unless approval for site alteration is received in writing from the Manager of Culture, Parks and Recreation or designate.

(ii) **That Prior to Assumption of the park,** the Manager of Culture, Parks and Recreation shall be in receipt of a clearance memo from the Manager of Environment indicating that the park site is environmentally clean.

(iii) That the Owner shall enter into a Site Access Agreement with the City to permit City staff to access the park site to complete pre-engineering, survey and design works for the park. This Agreement shall terminate once the City is deeded the land as part of Final Plan Approval.

(iv) **That Prior to the Commencement of any Clearing, Grubbing or Construction Work** within 10 metres of the park blocks defined on the Draft Plan, the Owner shall:

1. Install snow fencing around the periphery of the park site to protect the site. The City will be responsible for the maintenance of the fence and its removal.
2. Post signage to City specifications, on all accessible sides of each park block, which indicates:
   - the future use of the block as a park;
   - that no construction storage shall occur on this parcel of land nor shall any construction debris be dumped on this site; and
   - that all trees and other vegetation must not be disturbed.

(v) **That Prior to the Transfer of Deeds for the Parkland to the City,** the Manager of Culture, Parks and Recreation or designate shall inspect the park site to ensure that the park is in a clean/natural state. The conditions on the site must be satisfactory to the Manager of Culture, Parks and Recreation prior to transfer of title and the removal of

the snow fencing. Should the park blocks be in an unsatisfactory state, the Owner shall be held responsible for restoring the site to the City's satisfaction.

(c) That the Owner shall deed the lands described as Natural Open Space, to the City, said lands being described as Block(s) _____ as natural areas. Text shall be included in the Subdivision Agreement between the Owner and City, to advise all purchasers that these public lands are intended to remain in a naturalized condition and that only risk management practices will be done on the land as required by the City. No regular or periodic maintenance will be done on the subject parcel.

(d) That the Owner shall deed the lands described as Environmental Protection Area, without prejudice or compensation, to the City, said land being described as Block(s) _____. Text shall be included in the Subdivision Agreement between the Owner and City, to advise all purchasers that these public lands are intended to remain in a naturalized condition, for the purpose of providing fish and wildlife habitat and opportunities for passive recreation, and that the lands may be subject to flooding and erosion from time to time. Risk management practices only will only be done on the land. No regular or periodic maintenance will be done on the subject parcel.

(e) **That Prior to Final Plan Approval**, the Owner shall prepare a Landowner Information Package, to the satisfaction of the City and the Cataraqui Region Conservation Authority, which shall be distributed to all prospective purchasers and shall be appended to their Agreements of Purchase and Sale or Lease. Text shall be included in the Subdivision Agreement between the Owner and the City, to the satisfaction of the City and the Cataraqui Region Conservation Authority, to require a Notice to Purchasers that the Landowner Information Package has been prepared to help

_____. The Landowner Information Package shall be registered on title of the subject property.

15. Tree Inventory / Street Trees:

(a) That prior to any grubbing/clearing or construction on parcels of land not defined as roadways or servicing easements on the draft plan, the Owner shall receive final approval from the City for a Tree Preservation plan prepared for the subject lands. The final approved tree inventory plan shall be prepared by a certified arborist (ISA approved), and shall set out the surveyed locations of all trees on the site. The tree inventory shall list the species, caliper size, condition, crown radius and indicate whether the tree is to be retained or removed. If the tree is to be removed a rationale for this action must be noted. If significant trees or groups of trees are identified to be retained in the tree inventory, a tree preservation plan will be required prior to final approval at the discretion of the City. This plan shall be reviewed and approved by the City and be included as a schedule to the Subdivision Agreement. Requirements for the tree preservation plan are noted in the subdivision design guidelines produced by the City.

(b) **That Prior to Final Plan Approval**, the Owner shall submit a Street Tree Planting Plan prepared by a Landscape Architect to the satisfaction of the City.

16. Community Mailboxes:

(a) **That Prior to Final Plan Approval**, the Owner shall, in consultation with and to the satisfaction of Canada Post, identify the location of community mailboxes within the Plan, and shall identify such locations on drawings for approval by the City. The locations of these

community mailboxes shall be identified in the notice to future purchasers of the lots within the Subdivision.

(b) **That Prior to Final Plan Approval,** the Owner shall, in consultation with and to the satisfaction of the City, provide detailed design plans for the community mailboxes including a landscape plan showing street furniture and complimentary architectural features.

(c) That the Owner shall provide a suitable temporary community mailbox location(s) until the curbs, sidewalks and final grading have been completed at the permanent location(s).

17. Bell Canada Requirements:

That the Owner shall meet the following conditions of Bell Canada:

i. that the Owner shall agree in the Subdivision Agreement, in words satisfactory to Bell Canada, to grant Bell Canada any easements that may be required for telecommunications services; and,

ii. that the Owner shall be requested to enter into an Agreement (Letter of Understanding) with Bell Canada complying with any underground servicing conditions imposed by the City, or if no such conditions are imposed, the Owner shall advise the City of the arrangements for servicing.

18. _____Pipelines Requirements:

(a) That approval from _____ Pipelines shall be obtained prior to any work occurring within the easement or if work will cross the pipeline.

(b) That prior to any excavation within 30 metres of the _____ Pipeline easement, the owner/contractor shall contact

_____ Pipeline.

(c) That prior to any work within the pipeline easement the pipeline using heavy equipment, the owner/contractor shall contact

_____ Pipeline a minimum of 3 working days prior to commencement of the activity.

19. Hydro One Requirements:

(a) **That Prior to Final Plan Approval**, the Owner/Subdivider shall submit to Hydro One the lot grading and drainage plan, showing existing and final grades, for review and approval. Drainage must be controlled and directed away from the Hydro One corridor.

(b) That the following **Warning Clauses/Notices** as required by Hydro One shall be included in the Subdivision Agreement:

"The transmission lines abutting this subdivision operate at 500,000, 230,000 or 115,000 volts. Section 186-Proximity-of the Regulations for Construction projects in the Occupational Health and Safety Act, require that no object be brought closer than 6 metres (20feet) to an energized 500 kV conductor. The distance for 230kV is 4.5 metres (15 feet), and for 115 kV conductors is 3 metres (10 feet). It is the Owner's responsibility to be aware, and to make all personnel on site aware, that all equipment and personnel must come no closer than the

distance specified in the Act. They should also be aware that the conductors can raise and lower without warning, depending on the electrical demand placed on the line. "

(c) That temporary fencing must be installed along the edge of the right-of-way prior to the start of construction, at the Owner's expense.

(d) That permanent fencing must be installed after construction is completed along the Hydro One corridor, at the Owner's expense.

(e) That the Hydro One corridor is not to be used without the express written permission of Hydro One Networks Inc. During construction, there shall be no storage of materials or mounding of earth or other debris on the right-of-way. The Owner shall be responsible for restoration of any damage to the right-of-way resulting from construction of the subdivision.

(f) The costs of any relocations or revisions to Hydro One facilities that are necessary to accommodate this subdivision shall be borne by the Owner.

20. Utilities Requirements:

(a) **Prior to Final Plan Approval**, the Owner shall satisfy all technical, financial and other requirements of Utilities Kingston regarding the design, installation, connection and/or expansion of electric distribution services, gas distribution services, water distribution services and sanitary sewer distribution services, or any other related matters.

(b) The Owner shall agree to design, purchase materials, and install a buried hydro distribution system, compatible with the existing and/or proposed systems in surrounding Plans, all in accordance with the latest standards and specifications of Utilities Kingston and the City.

(c) The Owner shall agree to design, purchase materials and install a street lighting system, compatible with the existing and/or proposed systems in surrounding Plans, all in accordance with Municipal standards and specifications.

21. Warning Clauses:

That the Owner shall cause the following warning clauses to be included in a schedule to all offers of purchase and sale, or lease for all lots / blocks within this Plan

(a) within the entire subdivision plan:

- "Purchasers and/or tenants are advised that despite the inclusion of noise control features within both the development area and the individual building units, noise levels, including from construction activities, may be of concern and occasionally interfere with some activities of the dwelling occupants."
- "Purchasers and/or tenants are advised that the proposed finished lot and/or block grading may not meet City of Kingston lot grading criteria in certain areas to facilitate preservation of existing vegetation and to maintain existing adjacent topographical conditions".
- "Purchasers and/or tenants are advised that traffic calming measures may have been incorporated into the road allowances."
- "Purchasers and/or tenants are advised that the planting of trees on City boulevards in front of residential units is a requirement of the City and a conceptual location Plan is included in the Subdivision Agreement. While every attempt will be made to plant trees as shown, the City reserves the right to relocate or delete any boulevard tree without further notice."

- "Purchasers and/or tenants are advised that Canadian National or Canadian Pacific Railway Company(s), or its assigns or successors in interest, has a right-of-way within 300m from the subject lands, and there may be future alterations or expansions to the rail facilities or operations which may affect the living environment of the residents in the vicinity, notwithstanding any noise and vibration attenuating measures included in the development and individual dwellings(s): CNR/CPR will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid right-of-way."
- "Purchasers and/or tenants are advised that mail delivery will be from a designated community mailbox, the location of which will be identified by the Owner prior to any home closings."
- "Purchasers and/or tenants are advised that any roads ending in a dead end or temporary turning circle may be extended in the future to facilitate development of adjacent lands, without further notice."

(b) abutting any open space, woodlot or storm water facility:

- "Purchasers and/or tenants are advised that the adjacent open space, woodlot or storm water management facility may be left in a naturally vegetated condition and receive minimal maintenance."

(c) abutting a park block:

- "Purchasers and/or tenants are advised that the lot abuts a

"_____ Park", and that noise and lighting should be expected from the designed active use of the park."

(d) abutting a potential transit route:

- "Purchasers and/or tenants are advised that the following streets

may be used as transit routes in the future: _____,

_____, _____.

22. Model Homes:

That where the Owner proposes to proceed with the construction of a model home(s) prior to registration of the Plan, the Owner shall enter into an Agreement with the City, setting out the conditions, and shall fulfill all relevant conditions of that Agreement prior to issuance of a building permit.

23. General Conditions:

(a) That the Owner shall pay any and all outstanding application fees to the Planning and Development Department, in accordance with the City's Tariff of Fees By-law.

(b) That when requesting Final Approval from the City, the Owner shall accompany such request with the required number of originals and copies of the Final Plan, together with a surveyor's certificate stating that the lots/blocks thereon conform to the frontage and area to the requirements of the Zoning By-Law.

(c) That the Owner agrees to remove any driveways and buildings on site, which are not approved to be maintained as part of the Plan; any modification to off-site driveways required to accommodate this Plan shall be coordinated and completed at the cost of the Owner.

(d) That the Owner shall agree that all lots or blocks to be left vacant shall be graded, seeded, maintained and signed to prohibit dumping and trespassing prior to assumption of the works by the City.

(e) **That Prior to Final Plan Approval**, the Owner shall pay the proportionate share of the cost of any external municipal services, temporary and/or permanent, built or proposed, that have been designed and oversized by others to accommodate the subject plan.

(f) That the Owner shall agree to erect fencing in the locations and of the types as shown on the approved subdivision works drawings and as required by the City.

(g) The Owner shall agree that no building permits, with the exception of model homes, will be applied for until the City is satisfied that adequate access, municipal water, sanitary and storm services are available.

24. Clearance Letters:

(a) **That Prior to Final Plan Approval**, the approval authority shall advise that all Conditions of Draft Plan Approval have been satisfied; the clearance memorandum shall include a brief statement detailing how each Condition has been met.

(b) **That Prior to Final Plan Approval**, the City is to be advised in writing by the Cataraqui Region Conservation Authority the method by which Conditions _____ have been satisfied.

(c) **That Prior to Final Plan Approval**, the City is to be advised in writing by Canadian National Railway the method by which Conditions _____ have been satisfied.

(d) **That Prior to Final Plan Approval**, the City is to be advised in writing by Ontario Hydro the method by which Conditions _____ have been satisfied.

(e) **That Prior to Final Plan Approval**, the City is to be advised in writing by _____ Pipelines the method by which Conditions _____ have been satisfied.

25. Lapsing Provisions:

(a) That pursuant to Section 51(32) of the *Planning Act*, this Draft Plan Approval shall lapse at the expiration of **three (3) years from the date of issuance of Draft Plan Approval** if final approval has not been given, unless an extension is requested by the Owner and, subject to review, granted by the approval authority.

(b) That pursuant to Section 51(33) of the *Planning Act*, the Owner may submit a request to the approval authority for an extension to this Draft Plan Approval. The extension period shall be for a maximum of two (2) years and must be submitted prior to the lapsing of Draft Plan Approval. Further extensions may be considered at the discretion of the approval authority where there are extenuating circumstances.

Notes to Draft Plan Approval:

1. It is the Applicant's responsibility to fulfill the foregoing Conditions of Draft Plan Approval and to ensure that the required clearance letters are forwarded by the appropriate agencies to the Planning and Development Department of the City of Kingston.

2. When requesting Final Approval, the Applicant will submit a detailed account of how each Condition of Draft Plan Approval has been satisfied along with the appropriate clearance letter from the Agency, Ministry or body requesting the condition.

3. **Prior to Final Plan Approval**, the Applicant shall submit to the City of Kingston for review four (4) draft copies of all Reference Plans and Surveys and three (3) draft copies of the Final M- Plan.

4. When requesting final approval, such a request must be directed to the Planning and Development Department and be accompanied with:
   - Eight (8) mylars and four (4) paper prints of the completed Final M-Plan,
   - four (4) copies of all Reference Plans and (4) copies of all Conveyance Documents for all easements and lands being conveyed to the City; and,
   - a Surveyor's Certificate to the effect that the lots and blocks on the Plan conform to the Zoning By-law.

5. All measurements in subdivision final plans must be presented in metric units.

6. Hydro One advises that an electrical distribution line operating at below 50,000 volts might be located within the area affected by this development or abutting this development. Section 186 – Proximity – of the Regulations for Construction Projects in the *Occupational Health and Safety Act,* requires that no object be brought closer than 3 metres (10 feet) to the energized conductor. It is the proponent's responsibility to be aware, and to make all personnel on site aware, that all equipment and personnel must come no closer than the distance specified in the Act. They should also be aware that the electrical conductors can raise and lower without warning, depending on the electrical demand placed on the line. Warning signs should be posted on the wood poles supporting the conductors stating ***"DANGER – Overhead Electrical Wires"*** in all locations where personnel and construction vehicles might come in close proximity to the conductors.

7. The Final Plan approved by the City must be registered within thirty (30) days or the City may, under Subsection 51(59) of the *Planning Act*, withdraw its approval.

ENGINEERING DEPARTMENT

Appendix 1B: *Development Application Pre-Consultation Form*

Development Application Pre-Consultation Form

Pre-Consultation Meeting Date: _____

Owner: _____ Agent: _____

Site Address: _____

Site Area: _____ Designated or Listed Heritage Property? _____

Application Type (check applicable applications):

☐ Official Plan Amendment	☐ Zoning By-law Amendment or H Removal Amendment	☐ Plan of Subdivision	☐ Site Plan

Future Plan of Condominium:	☐ (i) Standard	☐ (ii) Common element	☐ (iii) Vacant Land

1. Brief description of proposed development:

_____

_____

_____

2. a) **Existing Official Plan Designation:**_____

Conformity with City Official Plan land use designation? YES ☐ NO ☐

If 'NO' what is the nature of the amendment needed ? ____ _____

b) **Existing Zoning:** _____ **By-Law No.** _____

Conformity with existing zoning? YES ☐ NO ☐

If 'NO' what is the proposed zoning:_____

3. **Fees Required**

APPLICATION	CITY	CRCA		
Official Plan Amendment				
Rezoning/H Removal				
Plan of Subdivision				
Site Plan				
TOTAL				

- Note: fees are payable based on the fee schedule in effect on the date the application is made

4. **Additional Agencies to be contacted:** _____

5. Required Information

Reports, Studies, Plans * *(See Appendix for additional details)*		Number of Copies	To be submitted with application	To be submitted during processing
5.1	Planning Justification Report / Cover Letter			
5.2	Conceptual Site Plan Layout			
5.3	Serviceability Report			
5.4	Storm Water Report			
5.5	Tree Inventory and Preservation Study			
5.6	Traffic/Transportation Impact Study			
5.7	Hydrogeology Study			
5.8	Market Impact Study			
5.9	Financial Impact Study			
5.10	Environmental Impact Study			
5.11	Noise and/or Vibration Study			
5.12	Shadow Analysis Plan			
5.13	Phase I Environmental Site Assessment			
5.14	Phase II Environmental Site Assessment/ Record of Site Condition Report			
5.15	Height Survey of adjacent buildings			
5.16	Archaeological Report			
5.17	Heritage Impact Study			
5.18	Urban Design Study			
5.19	Other (specify)			

* **Notes:**
It may be determined during the review of the application that additional studies or information will be required as a result of issues arising during the processing of the application.

There may also be financial requirements arising from the application, including, but not limited to, park dedication, development charges and impost fees, payment of outstanding property taxes, deferred local improvement charges, road widening conveyance, legal preparation and registration of agreements.

6. COMMENTS:_____

Planning Staff *(print)*	Planning Staff *(signature)*	Date
Engineering Staff *(print)*	Engineering Staff *(signature)*	Date
Utilities Kingston Staff *(print)*	Utilities Kingston Staff *(signature)*	Date
Owner / Agent *(print)* (I have authority to bind the owner)	Owner / Agent *(signature)*	Date

NOTES:

1. The purpose of this pre-consultation form is to identify the information required to commence processing of a development application, as well as any information required during the processing of the application. Pre-consultation does not imply or suggest any decision whatsoever on behalf of City staff or the Corporation of the City of Kingston to either support or refuse the application.
2. An application submitted without the information identified in this Pre-consultation Form may be recommended for refusal based on insufficient information to properly evaluate the application, or will be considered incomplete and processing will be delayed until all required information is received.
3. Acknowledgement of Public Information:

   The applicant acknowledges that the City considers the application forms and all supporting materials, including studies and drawings, filed with any application to be public information and to form part of the public record. With the filing of an application, the applicant consents to the City photocopying and releasing the application and any supporting materials either for its own use in processing the application or at the request of a third party, without further notification to or permission from the applicant. The applicant also hereby states that it has authority to bind its consultants to the terms of this acknowledgement.
4. The applicant acknowledges that if there is a need for a peer review for any of the required supporting studies/reports, the peer review shall be at the Owner's cost.

REQUIREMENTS FOR REPORTS/STUDIES AND PLANS

5.1 Planning Rationale Report

Required for all Official Plan Amendments, as well as major rezoning applications at the discretion of the Planning Division. A qualified planner must submit a report providing planning justification for the proposed amendment in light of the principles and objectives of the City's Official Plan. A draft of the proposed Official Plan Amendment is required to be submitted as part of the Planning Rationale. A detailed description of the requirements for a Planning Rationale is available from the Planning Division.

Planning Cover Letter

Required for all Zoning Amendment Applications, this information can be prepared by the owner, the agent, the applicant or a member of the consulting team depending on the nature of the application. This is intended to help the applicant organize and substantiate the application and assist staff in the review of the proposal to expedite the approval process. This letter is required to provide a clear understanding of the proposal and highlight the information specific to the proposal such as special history or unique circumstances. Information required includes a description and overview of the proposal; site statistics (height, density, parking, setbacks); surrounding land uses; and site planning history.

5.2 Conceptual Site Plan Layout

General plan required showing proposed building envelopes, driveways, parking, loading and landscape areas.

5.3 Serviceability Report

Required for all draft plans of subdivision and site plan applications for multi-residential development, may be required for Official Plan Amendments and Zoning Amendments. Report is to identify how the proposed development will be serviced, including water, sanitary and storm, connections to existing municipal infrastructure, availability of capacity in the municipal system to accommodate additional capacity of the proposed development. The Serviceability report should also address effects on downstream infrastructure that could require system upgrades.

5.4 Storm Water Report

The requirement for a Storm Water report will be identified through pre-consultation. All storm water runoff is to be controlled to the specified run-off rate adopted for the original subdivision, or to the City's current Design Criteria. Specific requirements for SWM reports can be obtained from the Engineering Division.

5.5 Tree Inventory and Preservation Study

Required when a property under application contains woodlots, tree stands or hedgerows. A tree survey must be prepared by a qualified professional, identifying all existing trees, their type, size and condition, those trees proposed to be removed and retained, and the methods to be used to ensure preservation of those trees to be retained. In accordance with the City's Tree Preservation By-law, a permit may be required prior to any tree removal.

5.6 Traffic/Transportation Impact Study

The need for a traffic impact study will be identified through pre-consultation. Most commercial developments and subdivisions will require the submission of a traffic impact study. Contact Engineering Division staff for background information. A peer review may be required.

5.7 Hydrogeology Study

Required for all applications in areas subject to private water and septic services, Applicants should contact the Environment Division for more details regarding site-specific studies, which must be approved by the Environment Division.
A peer review may be required.

5.8 Market Impact Study

Required for commercial applications as set out in the Official Plan. These studies will be evaluated by the City on the basis of a peer review to be undertaken at the applicant's expense.

5.9 Financial Impact Study

Required for applications in accordance with the Urban Growth Policies of the Official Plan.

5.10 Environmental Impact Study

Required for applications that affect significant or environmentally sensitive lands. The report shall be submitted as part of the development application. The report shall include a description of the environment that will be affected, description of the development proposal, an assessment of the expected effects on the environment, a list of assumptions used in the assessment and recommendations regarding the actions necessary to prevent, mitigate or remedy the effects on the environment of the development proposal. This study may be peer reviewed.

5.11 Noise and Vibration Study

Required for applications for plan of subdivision and site plan control. The need for a noise and vibration study will be identified through pre-consultation with the application or consultant. Generally required where a sensitive land use (residential) is proposed near a noise source (railway, major roadway) or where a noise source (commercial or industrial use) is proposed adjacent to an existing sensitive land use.

5.12 Shadow Analysis Plan

Required for all applications where, in the opinion of the Planning Division, the proposal may result in impacts on adjacent properties from sun shadowing.

5.13 Phase I Environmental Site Assessment

Generally required for all applications where a land use change is proposed. The need for this report will be addressed through pre-consultation. Applicants should contact the Environment Division for further information regarding the preparation of Environmental reports.

5.14 Phase II Environmental Site Assessment/Record of Site Condition Report

Required when the Phase I site assessment identifies the possibility of site contamination. Applicants should contact the Environment Division further information regarding the

preparation of Environmental reports. There may be a requirement to have these studies peer reviewed.

5.15 Height Survey of adjacent buildings

May be required for residential infill and intensification rezoning applications. A surveyor's report must identify the highest points of the existing adjoining roofs measured from the existing average grade of the shared property line.

5.16 Archaeological Report

Required for all applications in or near areas of archaeological potential, as determined by the criteria set out by the Ministry of Culture. Reports must be completed in accordance with Provincial requirements.

5.17 Heritage Impact Study

Required for development or redevelopment applications on lands adjacent to protected heritage property. The proposed development is required to be evaluated and the report is to demonstrate how the heritage attributes of the protected heritage property will be conserved, and what mitigative measures or alternative development approaches may be required to protect the resource. This report is required to be prepared by a qualified professional.

5.18 Urban Design Study

Required for residential redevelopment proposals in the downtown core area proposing building heights in excess of six storeys.

5.19 Other

Any other studies as determined to be necessary to facilitate proper consideration of the application.

ENGINEERING DEPARTMENT

Appendix 1C: *Design Submission Checklist*

To Be Included with Each Submission

- ☐ An application for Subdivision Agreement/Final Approval
- ☐ All applicable subdivision review fees (Planning and Engineering)
- ☐ A covering letter from the owner's engineer certifying that the submitted design is in accordance with the Subdivision Guidelines and explanations for where the design does not meet the guidelines.
- ☐ 2 copies of the watermain design calculations.
- ☐ 2 copies of sanitary and storm sewer design sheets
- ☐ 2 copies of streetlight design calculations (if varying from standard).
- ☐ Copies of reports as set out in 1.10.7 and any other reports that are required to support the design of the works in accordance with the Conditions of Draft Plan Approval.
- ☐ Copies of plans as set out in section 4.2.10 including first application under Land Titles
- ☐ Specifications for non-standard items.

ENGINEERING DEPARTMENT

Appendix 1D: *Design Standards - Roads*

1.0 General

Roads are to be designed, commencing at the draft plan stage, to geometric standards established by the City of Kingston and contained within this document, the Transportation Association of Canada and the Ontario Ministry of Transportation. This document will be updated from time to time. In the interim, the City of Kingston reserves the right to make revisions having due regard for applications already in the review process. The City will notify individuals or groups affected accordingly, and revisions will become effective on the date of notification.

2.0 Design Criteria

The City of Kingston's standard road cross-sections and standard utility locations are as shown in Figures 1A1 to 1A4.

2.1 Road Classification

(Currently under review – Refer to Kingston Transportation Master Plan)

Local Residential

Local residential streets are those which serve to permit "local" traffic to immediately access private property and to convey traffic to and from the minor collector street system. Traffic volumes are minimal at less than 1000 vehicles per day based on the annual average daily traffic (AADT).
Two standard road cross sections apply depending upon whether or not sidewalks are required.

Minor Collector

The minor collector road serves to convey local traffic to the major collector road system and in turn to public transportation routes and recreational facilities. Traffic volumes are somewhat higher being in the range of 1000 to 5000 vehicles per day.
Sidewalks shall be provided on one side of the street only

Major Collector

The major collector road provides access between the minor Collector Street and the arterial road network. Increased right of way and pavement widths provide for increased traffic volumes. Direct access to residential properties is prohibited as well as on street parking. Controlled access to commercial lands and higher density residential on a case by case basis is permitted and sidewalks on both sides are provided for higher pedestrian traffic

Minor Arterial

The minor arterial road provides a direct link for residential, commercial and public transportation traffic between the major collector and the major arterial road network. Generally, the road will support 2-lane traffic with wider pavement

widths to provide a combination bicycle lane and emergency stop lane on both sides. Provision for bus bays has also been taken into consideration. Access to low density residential lands is prohibited and access to non-residential lands will be determined on a case by case basis at the draft plan and site plan approval stage. Sidewalks are required on both sides.

Major Arterial

The major arterial road is the major transportation route in the City's road system being designed to accommodate 4-lane traffic. Access will be restricted to public side streets. Wider right of way width is required to accommodate 4-lane traffic, bus bays, and bicycle traffic. Sidewalks are required on both sides.

2.2 Vertical and Horizontal Alignment

Table 1D-1 Classification /Design Speed/ Alignment Criteria.

Classification (AADT Range)	Design Speed Km/hr	Posted Speed Km/hr	Grades (%)		Alignment		
			Minimum	Maximum	Min. Hor. Radius	Min. "K" Value	
						Crest	Sag
Local (under 1,000)	50	50	0.5	8.0	15.0 Normal Crown	8	12
Minor collector (1,000 to 5,000)	50	50	0.5	6.0	90 Normal/***Reverse*** Crown	8	12
Collector (5,000 to 8,000)	60	50	0.5	6.0	120 6***%max*** Super – elev.	15	20
Minor Arterial (8,000 to 15,000)	70	60	0.5	6.0	190 6***%max*** Super – elev.	22	25
Major Arterial (> 15,000)	80	60	0.5	6.0	250 6***% max***.Super elev.	25	***30***

Note: *Maximum allowable grades may not apply at street intersections*

2.2.1 Vertical Alignment

- Vertical curves are required where longitudinal grades change by more than 1.5%.
- Road cross fall is to be adjusted at sag curves and detailed on the plans as necessary to maintain minimum 0.5% grade along gutter line to catchbasins. In the case of semi-urban sections, roadside ditch grades shall be designed at 1% minimum slope.
- The design profiles shall be in keeping with the City of Kingston's Stormwater Management Policy dealing with the 100-yr. storm while minimizing the number of sag curves where possible. The limiting depth of

flow on the roadway shall be 300mm and major overland flow routes are to be directed to coincide with public lands (parks, walkways etc.).

2.2.2 Horizontal Alignment

All roads must be aligned to produce safe traffic flow at the design speed. Designs should be based on a normal cross fall however superelevation will be permitted depending upon road classification.

2.2.3 Cross Section, Right-of-Way Width, Base Composition

Table 1D-2 - Urban Section
Total Pavement width –Curb Face /Curb Face, exclusive of Auxiliary Lanes

Road Classification (AADT)	**No. of Lanes**	***Minimum* Right of Way Width (m.)**	***Minimum* Pavement Width (m.) (1)**	***Minimum* Pavement Structure (mm)**	***Minimum* Granular Base**	
					In Earth (mm)	**In Rock (mm)**
Urban Section						
Local (under 1000)	2	18.0	8.5	40 – HL3 40 – MDB(***2)***	200mm - Gran."A" 250mm - Gran."B"	200mm - Gran. "A" 300mm - Shatter
Collector - (Minor) (1000 to 5000)	2	20.0	9.0	40 – HL3 40 – MDB ***(2)***	200mm - Gran."A" 250mm - Gran."B"	200mm - Gran. "A" 300mm - Shatter
Collector - (Major) (5000 to 8000)	2	22.0	10.0	40 – HL1 45 – MDB 45 –MDB	200mm - Gran."A" 350mm - Gran."B"	275mm - Gran. "A" 300mm - Shatter
Arterial - (Minor) (8000 to 15,000)	2	26.0	12.0	40 – HL1 45 – MDB 45 – MDB	275mm - Gran."A" 350mm - Gran."B"	275mm - Gran. "A" 300mm - Shatter
Arterial - (Major) (Greater than 15,000)	4	36.0	18.0	To be governed by Geotechnical Report	To be governed by Geotechnical Report	To be governed by Geotechnical Report

(1) Total Pavement width
(2) Medium Duty Binder

Table 1D-3 – Estate Residential (Semi-Urban Section)

Road Classification	No. of Lanes	*Minimum* Right of Way Width (m.)	Pavement/ Shoulder/ Rounding	*Minimum* Pavement Structure (mm)	*Minimum* Granular Base	
					In Earth (mm)	In Rock (mm)
Semi - Urban Section						
Local (under 1,000)	2	20.0	7.0/1.0/0.5	40 – HL3 40 – MDB(2)	200mm - Gran."A" 250mm - Gran."B"	275mm - Gran. "A" 300mm - Shatter
Collector - (Minor) (1,000 to 5,000)	2	20.0	8.0/1.5/0.5	40 – HL3 40 – MDB	200mm - Gran."A" 250mm - Gran."B"	275mm - Gran. "A" 300mm - Shatter
Collector - (Major) (5,000 to 8,000)	2	26.0	8.0/2.0/0.5	40 – HL1 45 – MDB 45 – MDB	200mm - Gran."A" 350mm - Gran."B"	275mm - Gran. "A" 300mm - Shatter
Arterial - (Minor) (8,000 to 15,000)	2	26.0	10.5/2.0/0.5	40 – HL1 45 - MDB 45 - MDB	275mm - Gran."A" 350mm - Gran."B"	275mm - Gran. "A" 300mm - Shatter
Arterial - (Major) (Greater than 15,000)	4	36.0	10.5/3.0/0.5	To be governed by Geotechnical Report	To be governed by Geotechnical Report	To be governed by Geotechnical Report

(2) Medium Duty Binder

3.0 CUL-DE-SACS

- Permanent turning basins are to conform to the cul-de-sac detail in Figure 1A5 - Appendix 1J.
- Minimum grade of 0.5% is to be maintained along gutter line. Gutter line grades to be detailed on drawings.
- Circular right of way radius is to be 20 meters for 20 meter wide right of ways and 18 meters in the case of 18 meter wide right of ways.

Turning circles, in accordance with the temporary turn around detail shown in Figure1A6-Appendix 1J shall be provided at the limits of each phase where a "temporary" dead-end section of roadway would otherwise result. Where feasible, the temporary turning circle should be accommodated on lands beyond the phase boundary. If this is not feasible, the turning circle should be offset to one side of the roadway, so as to impact on as few lots as possible.

Easements shall be provided to the City of Kingston for the construction of temporary turnarounds outside of the public road system, and will be disposed of when no longer required. Each easement shall be deeded in the form of lots or blocks, with the intent that the City will relinquish its interest in the lands at such time as the lands are no longer required.

4.0 DRIVEWAY ENTRANCES

Access to the public street must comply with the appropriate City of Kingston regulations governing entrances.

Driveway locations are not required to be illustrated on the Engineering Plans for single family and semi-detached lots. Alternatively they are required to be shown by the builder at the building permit application stage.
Driveway slope shall fall within the range permitted by O.P.S.D. 351.010.

5.0 INTERSECTIONS

Intersection spacing shall be established on the basis of providing safe stopping, turning and crossing sight distances in accordance with the stipulated design speed.

- An intersection angle of 90° is preferred, 70° is the minimum.
- Gradients on through streets are to have a continuous profile. Maximum and minimum grades at an intersection are 8.0% and 0.5% respectively.

Table 1D-4-Intersection Radii (From Street Class to Street Class)
Edge of pavement radius shall be as follows:

From	To	Min. Radii (meters)
Local	Local or Minor Collector	7.5
Minor Collector	Any higher Class road	11.0
Major Collector / Minor Arterial	Any higher Class road	13.0
Major Arterial	Any higher Class road	15.0 *

* Turning templates are to be used where conditions warrant.

6.0 EMERGENCY ACCESS

Local Residential Streets shall not terminate in dead ends longer than 150 meters, measured from the intersecting street line to the start of the turnaround right of way. Streets configured as “P-Loops” shall have an entrance leg that does not exceed 150 meters measured from the intersecting street line to the start of the return loop. Temporary roadways exceeding these guidelines may be acceptable provided that a temporary secondary access road is provided to loop the street to an adjoining street while limiting the limited access length to 150 meters or less.

Rural residential streets, having a single point of access, shall be limited in length as described above. Where conditions do not permit a second access, alternative designs comprising emergency access points, increased road widths, restrictive covenants requiring all dwellings to be provided with fire sprinklers or combinations of these measures may be considered.

7.0 CONCRETE

Concrete shall conform to the following:

Class of Concrete	30 MPA at 28 days
Coarse Aggregate	19mm nominal maximum size
Air Content	6.0% to 8.0%
Maximum Slump	75mm
Curing Compound	White Pigmented, O.P.S.S. 1315

Quality Assurance
Concrete poured without the benefit of inspection by the designated site engineer or the engineer's inspector will be rejected automatically and unconditionally.

Unsatisfactory Concrete
Unsatisfactory concrete shall be any sampled concrete, which has a representative twenty-eight day test less than 90% of the required strength. If this result occurs the concrete structure will be removed and replaced.
In addition, should the average of any five consecutive representative twenty-eight day tests fall below the required strength, then the number of tests that must be deleted to raise the average to the required strength shall be considered representing unsatisfactory concrete.
If the tests fail, the Contractor may submit core samples for testing under test method C.S.A. A23.2-14C. When the cores test out at 100% of the required strength at 50 days it will be deemed acceptable. If the cores fail to reach 100% of the required strength at 50 days, the concrete will be rejected or accepted according to the above noted "Unsatisfactory Concrete".

8.0 SIDEWALKS

Location within the right of way will be determined in consultation with the City of Kingston giving due regard to the pedestrian traffic being generated and access for the physically disabled. Sidewalks are required to facilitate access to neighbourhood schools and at all Canada Post mailboxes. The location of pedestrian crossings at intersections will be governed by pedestrian movements and the need to avoid conflicts with turning vehicles. Generally sidewalks will be required in accordance with the following criteria:

Table 1D-5 - Sidewalk Placement

Road Classification	Adjacent Land Use	Sidewalk Required
Local and Minor Collector	Low and Medium Density Residential	One side of street only (1)
	High Density Residential	One side of street only
	All other Land Uses (2)	Both sides of street (2)
All Other Road Classifications	All Land Uses (2)	Both sides of Street (2)

(1) Not required on dead end streets less than 150 meters in length unless through pedestrian access is required from street to park, street to street etc. The 150m is measured from the intersecting street line to the nearest point of the bulb or cul de sac right of way.

(2) Requirements in the case of industrial land use will be established by the City's Director of Engineering on a case by case basis.

8.1 Concrete sidewalks are to be 1.5 meters wide in accordance with O.P.S.D 310.010. Granular base thickness shall be 100mm granular "A', compacted to 100% Standard proctor density. Slab thickness shall be 125mm.

8.2 In the case of commercial/industrial frontages where entrance locations are unknown the entrances shall be determined at the site plan approval stage in which case the proponent shall apply 150mm X 150mm steel mesh reinforcement within the width of each new entrance.

8.3 All sidewalks and walkways are to be continuous through driveway entrances.

8.4 The tool margins from finishing tools used for finishing joints are to be broomed out to eliminate the lip, of which requirement will be strictly enforced. Refer to Figure 1A10 City of Kingston Concrete Sidewalk Joint Finishing Detail.

8.5 Dummy joints shall be constructed as per OPSS 351 at a spacing of 1.5m. All dummy tool margins are to be broomed out so only the 5mm joint remains. See Figure 1A10.

8.6 Contraction joints shall be constructed as per OPSS 351 at every third dummy joint. All dummy tool margins are to be broomed out so that only the 5mm joint remains. The contraction joint must be saw cut to a depth of 0.25% of the sidewalk thickness as per OPSS 351.

8.7 Expansion joints shall be constructed as per OPSS 351 and shall be constructed where the sidewalk abuts a rigid object or changes direction or where thickness of sidewalk changes. See OPSD 310.030.

9.0 CURB AND GUTTER TYPES

Table 1D-6 - Concrete Curb and Gutter

Concrete Curb and Gutter shall be provided in accordance with the following criteria.

Road Classification	Adjacent Land Use	Curb and Gutter Type
Local and Minor Collector	Low Density Residential	Mountable type - O.P.S.D 600.100
	Medium Density Residential	Mountable type - O.P.S.D 600.100
	High Density Residential	Barrier Type – O.P.S.D. 600.010
	All other Land Uses	Barrier Type – O.P.S.D. 600.010
All Other Road Classifications	All Land Uses	Barrier Type – O.P.S.D. 600.010

Barrier Curb and Gutter is required at all community mail box locations. Refer to details as shown in Figure 1A8-Appendix J.

10.0 PEDESTRIAN WALKWAYS

Pedestrian walkways shall be located as required to facilitate pedestrian traffic in conjunction with the roadway sidewalk system. The walkway shall link the street system with adjacent streets, parks, schools and/or commercial areas. Minimum right of way width shall be 3.0 meters however greater widths may be required to facilitate vehicular access and/or the placement of underground utilities. Walkways shall be constructed with an asphalt surface and flanked on both sides with chain link fencing having a diamond mesh not greater than 38mm (By Law 2003-405).See Figure 1A7-Appendix 1J.

11.0 COMMUNITY MAIL BOXES

Community mail boxes are an integral part of each new development and as such the owner's engineer shall incorporate into the design of the works the necessary pedestrian approaches to accommodate the mailboxes provided by Canada Post. At each permanent mailbox location a concrete pad shall be provided with a concrete walk connecting to both the existing road and sidewalk system. The pad and approaches shall be poured in conjunction with the sidewalk system and shall follow the sidewalk width and thickness dimensions. The City shall also require barrier curbing at each location to prevent damage to the boulevard area. Standard locations and curb treatment are as shown in Figure 1A8 – Appendix 1J.

12.0 BOULEVARD LANDSCAPING

Boulevards are to be finished with 100mm of topsoil and nursery sod. The requirements for seeding or sodding of other public areas will be determined by the Development Engineer in consultation with other City officials.

Boulevard slope shall be a minimum of 2% and a maximum of 8% within the public right of way.

13.0 SIGNS AND TRAFFIC CONTROL DEVICES

All traffic control devices are to conform to the Ontario Manual of Uniform Traffic Control Devices, including all newly incorporated Ontario Traffic Manuals and shall also meet the requirements of the Highway Traffic Act.

Traffic control sign blanks are to be 0.064" thickness for less than 600mm x 600mm and 0.081" thickness for those that are larger. A street name sign indicating the name of each intersecting street will be required at each intersection.

Local intersections (2-lane)
Signs are to be high intensity grade reflectorized sheeting (3M or equivalent) mounted on 200 mm extruded aluminium blanks (green - anodized). Lettering is to be 125mm series "C" Highway Gothic (white – upper case).

Major intersections
Speciality "fingerboard" type signs are required in addition to advance warning signs at all major intersections. Type and location to be specified based on actual conditions. Contact City of Kingston -Transportation Department.

The Developer will be required to provide all traffic and street signs as required including no exit signs on all dead end streets. Signs shall be located in accordance with Figure 1A9 in Appendix 1J.

All traffic and street name signs are to be erected prior to completion of the base course asphalt.

Warning signs indicating **"ROAD NOT ASSUMED – USE AT YOUR OWN RISK"** are to be placed at each entrance to the development at such time as the base course asphalt is applied. The sign shall be sized such that it is legible from the roadway however it shall not exceed 3.0 square meters in size. See subdivision agreement.

Pavement markings shall include a one time application of painted stop bars at all subdivision street intersections that are designated as being signed for stop conditions. Paint shall be in accordance with either OPSS 1713 or OPSS 1714.

14.0 NOISE MITIGATION / PRIVACY FENCING

Noise mitigation and privacy fencing are installed for the benefit of the subsequent purchaser and as such are to be located on private property. Design life expectancy is to be a minimum of 20 years. Those fences designed using wood are to be treated and are to be have ground contact components made of galvanized steel.

Privacy fencing is required to be installed between all Residential / Commercial or other non-residential zones with installation being on the non-residential site if within the plan of subdivision. Privacy fencing is also required abutting private lanes without rear yard access with location decided based on who is last in developing and requiring the visual barrier.

15.0 CONSTRUCTION MATERIALS

The requirements of the following Ontario Provincial Specifications shall apply:

OPSS 1010 Aggregates - Granular A and B. (In addition, Granular A and B shall be crushed limestone).

OPSS 1150 Hot Mixed, Hot Laid Asphaltic Concrete.
Note: All asphalt mix designs for Hot Mix asphalt shall be as follows:
H.L1-PG64 - 28, minimum 5.3% asphalt cement and 3.5% air voids.
HL3, HL4, - PG58-28, minimum 5.3% asphalt cement and 3.5% air voids.
MDB-PG 58-28, min. 5.0% asphalt cement and 3.5%air voids
The owner's engineer, upon approving of the contractor's mix designs, will furnish copies to the office of the Development Engineer

OPSS 1350 Concrete - Materials and Production.

Materials (O.P.S.S. 350, 351, 352 and 353, 1301, 1302)

16.0 CONSTRUCTION

All construction shall be in accordance with Ontario Provincial Standard Specifications and Drawings, unless specifically modified by the City of Kingston.

Surface course asphalt shall not be placed in the same calendar year as the binder course or before the completion of a closed circuit T.V. inspection of both the storm and sanitary sewer systems.

All maintenance holes within the roadway are to be set to the base asphalt grade pending final adjustment just prior to the time the wearing course is applied. Maintenance hole adjustment units are to be pre-manufactured precast concrete. Where the top lift of asphalt is deferred to a subsequent construction season the City will permit the use of <u>one</u> manufactured polyethylene adjustment unit (Turner adjustment ring or equivalent) providing the depth does not exceed the design thickness of the top course. <u>Metal adjustment units are not permitted.</u>

The City requires strict adherence to the temperature provisions of the Ontario Provincial Standard Specifications for all pavement applications.

ENGINEERING DEPARTMENT

Appendix 1E: *Design Standards – Lot Grading*

1.0 GENERAL

Lot grading shall be designed to conform in principle to the site Storm Water Management Plan. The plan shall show the existing and proposed final grades for each lot and block within the plan. In addition the design shall adequately provide for any necessary interim drainage in order to limit flood risk, having regard for the pre development overland flow patterns. The term "flood risk" is to be interpreted as a risk of personal liability and/or property damage as a result of flooding brought about by the alteration of pre-development flows and/or flow patterns. The design shall make provision for such interim measures, grading culverts etc. as may be required to promote positive drainage and such works shall be incorporated into the designated "works" as defined in the engineer's estimate. This shall not be construed as a requirement for the owner to pre-grade the subdivision as a whole.

2.0 DESIGN CRITERIA

- Lot grades shall be 2% minimum and 33% (3:1) maximum on all grassed surfaces. Adequate control measures shall be employed where necessary to control erosion.
- Retaining walls are to be identified on the plan where the maximum lot slope is exceeded. Subject to height the City may require an engineer's seal to support the design.
- Entrance slope shall meet the provisions of OPSD 351.010 within the lot boundary.
- Individual lot grading shall be designed in accordance with Figures 1B1 and 1B2-Appendix 1J.
- Natural drainage patterns and channels must be respected. Landowners must accommodate runoff from upgradient properties. Surface runoff water shall not be discharged onto adjacent lands in a concentrated amount nor shall it exceed the pre-development flows.
- Major system drainage is to be directed to public lands.
- Rear yard catch basin leads shall be located in public easements more or less straddling the common lot line and spacing between catchbasins shall not exceed 90 meters. See Appendix 2A Section 6.0 for minimum easement widths.
- Leads to rear yard catchbasins shall not be less than 250mm and shall be spaced to coincide with maintenance holes such that access is obtainable from either end.
- The maximum depth of ponding resulting from any storm event shall not exceed 300mm.

3.0 OVERLAND STORM FLOW ROUTES

All major swales and major system outlets are to be constructed and sodded by the Developer in conjunction with site servicing. While lot grading in general is the responsibility of the building permit applicant, common drainage facilities, as noted in the Subdivider's Agreement, are also the responsibility of the Developer.

4.0 LOT GRADING

The following steps form the process for review and approval of lot grading within a subdivision.

- A Lot Grading Plan (LGP) has been approved by the Engineering Department and is registered as a Schedule within the Subdivision Agreement.
- The Developer, as the owner of the lands described in the subdivision agreement, will act as the monitor for the progress of the subdivision as each lot is sold and built on. Therefore the Developer will provide Lot Grading Security in the amount of $10,000 which amount will be held back by the City when the first security reduction is processed.
- When the builder makes application for a building permit the LGP is to be used to establish the grades for the lot. The builder prepares the Plot Plan as per the appended Plot Plan Requirements. For those Plans that deviate from the approved LGP, the Plot Plan must be sealed by an Engineer (of the Developer's choosing) and the box on the Plot Plan checked indicating there is a deviation. Copies of the Plot Plan are to be provided to the Building Department as well as the Developer.
- During construction the Builder's OLS is to provide to the Building Department before the drywall stage a Surveyor's Real Property Report to show the as-built foundation yard ties.
- Once the building is complete and the lot is graded the builder's OLS or P.Eng. will prepare the Lot Grading Certificate. The Lot Grading Certificate is to illustrate the proposed grades as well as the as-built grades for the lot. The detailed Lot Grading Certificate requirements are also appended to this document. A Lot Grading Certificate to certify compliance is to be provided to the Developer and a copy of same provided to the Engineering Department
- As the lot grading is completed the Developer's Engineer can choose to submit a letter to the City certifying the lot grading for each lot or group of lots.
- It is suggested that the Developer's Engineer compile the certificates to create a consolidated as-built lot grading plan. (This could be in the form of red lining the approved Grading Plan) The as-built plan is to be within reasonable tolerances to demonstrate that the as-built grading achieves the designed drainage pattern that was intended for the subdivision and that there are no locations within the lots that would result in extended periods of standing water or wet areas on a property.
- Lot Grading Security is released once all lots are certified or the subdivision has been assumed by the City whichever comes first. At no time will the security be less than $10,000 until less than 5 lots remain. Reduction in lot grading security will be processed at a rate of $2,000 per lot for each of the last 5 lots.
- Prior to issuance of the Final Certificate of Approval of the Works (FCAW), the Developer's Engineer is required to submit an as-built Lot Grading Plan for the subdivision. At the time of issuance of the FCAW any outstanding lot grading securities will be released.
- For lots that remain undeveloped after the issuance of the FCAW the builder will be required to submit a $2,500 deposit for each lot and the review process will be completed by City staff.

ENGINEERING DEPARTMENT

Appendix 1F: *Design Standards – Stormwater Management*

Design Standards - Stormwater Management is being revised and will be included when consultations with affected parties is completed.

The designer should contact the city stormwater engineer for direction prior to commencing design of stormwater management facilities.

ENGINEERING DEPARTMENT

Appendix 1G: *Design Standards – Storm Sewer System*

1.0 RESPONSIBILITIES

The responsibilities for storm drainage design approval at the local level are as follows.

a) Overall concepts of storm flow management – City of Kingston (Engineering Department Appendix 1F) and the Cataraqui Region Conservation Authority
b) Surface and subsurface drainage including storm frequency, catchbasin location, catchbasin inlet capacity and runoff coefficients.

2.0 DESIGN CRITERIA

The storm water collection system shall be designed to accommodate rainfall intensity as set out in the following formulae.

$$Q = 2.78\ AIR$$

Where: Q = Design flow in L/s
A = area in ha
I = intensity in mm/h
R = runoff coefficient

Rainfall intensity to be based on the City of Kingston standard intensity duration equation:

$$I = \frac{1778}{t_c + 13}$$

where t_c = time of concentration in minutes

Minimum inlet time = 15 minutes. Where two drainage systems meet, the larger time of concentration is used to calculate the resultant downstream flow.

Runoff coefficients shall be based on the following:

• Asphalt, concrete, roof areas	0.90
• Grassed area, parkland	0.25
• Commercial	0.80
• Industrial	0.70
• Residential - single family housing, ≥ lot size of 400 m^2	0.40
- single family housing, ≤ lot size of 400 m^2	0.50
- semi-detached housing	0.50
- townhouses	0.60
- apartments	0.60
• - institutional	0.55

The owner's engineer shall submit detailed design calculations for the major and minor flow paths, utilizing the storm sewer design form as contained herein in Appendix 2G.

Storm sewer design standards for the storm collection system are set out separately in Appendix 2G.

3.0 DESIGN CONSIDERATIONS

Storm sewers shall be designed to the following standards:

a) To accept flows as indicated by the surface drainage requirements set forth by the Engineering Department. (See Appendix 1F).
b) All sewers will be smooth walled conforming to OPSS. Corrugated steel pipe is not permitted. See Sect. 3.0
c) Flow shall be calculated using Manning's Formula with a roughness coefficient (n) of 0.013.
d) The maximum velocity at design flow shall not exceed 6 m/s.
e) The minimum velocity at design flow shall be not less than 0.75 m/s.
f) The minimum slope shall be that used for sanitary sewers.
g) Surcharging is permitted subject to 50 year storms not backing into any connected building foundation drainage system so as to cause flooding.
h) The sewer design method shall normally be the Rational Method. Design sheets shall be submitted in accordance with the City's standard format (See Appendix 1K), complete with software data compatible with Microsoft Access.
i) Minimum pipe sizes shall be as follows:

i)	Storm Sewers	250mm
ii)	Single catch basin lead (road)	200mm
iii)	Rear yard catch basin leads	250mm *
iv)	Double catch basin lead	250mm
v)	Foundation and Building Drains	Ontario Building Code Applies

*All rear yard catch basin leads shall be connected to a maintenance hole

Maximum MH spacing shall be as follows:

i)	250 to 450mm sewer	120m
ii)	500 to 750mm sewer	150m
iii)	larger than 750mm	considered on a case-by-case basis

j) The depth of storm mains shall be such to ensure that they can withstand soil dead load and traffic loading from an H-20 live load. The minimum depth of bury shall be 1.0 m measured finished grade to top of pipe.
k) Design shall ensure that adjacent structures are not jeopardized by extra frost penetration from within a storm sewer, catch basin or culvert.

4.0 MATERIALS

All pipe and fittings supplied must carry CSA certification to the appropriate CSA standard sewer grade. The following pipe shall be used for sewers:

a) Reinforced concrete pipe per OPSS 1820 according to CSA A257.2 Class 65-D with rubber gaskets or
b) Type PSM polyvinyl chloride (PVC) pipe with elastomeric gasket per OPSS 1841 and CSA B182.2 M1990.
    (i) Mains – DR 35 pipe
    (ii) Storm Laterals – DR 35 pipe

c) Profile Polyvinyl Chloride (PVC) pipe with elastomeric gasketed bell and spigot type joints meeting CSA 182.4 and having a minimum stiffness of 320 kPa may be used for storm sewer applications.

d) ADS N-12 ST/WT sizes 100mm to 750mm corrugated dual-wall High Density Polyethylene (HDPE) pipe with elastomeric gasketed bell and spigot type joints meeting CSA 182.8 and OPSS 1840, and having a minimum stiffness of 320 kPa.

5.0 EASEMENTS

Storm sewer infrastructure that is to be assumed by the City of Kingston and servicing more than one property shall be situated in either a road allowance or on property deeded to the City of Kingston by easement or ownership. Easement documents shall be in the standard format prescribed by the City of Kingston.

All easements shall be of sufficient width as to permit access for routine maintenance, repair and replacement purposes. Widths shall allow for future excavation without the need for shoring and shall permit sufficient working clearance and side slopes as required by regulation. Easement width shall not be less than 3.0 meters. Where more than one utility main or line is to be contained in a single easement, the easement shall extend to 3m beyond the outside edge of the outside mains or lines. All measurements are to be construed as being perpendicular in relation to the works. Regardless, the separations as stated in the Public Utilities Act are not to be compromised.

6.0 STORM SERVICE LATERALS

a) Where storm sewer mains have been provided for in the design of the public works each dwelling unit shall be provided with an individual storm drainage lateral extending from the main to the limit of the public right of way.
b) Building and lot storm drainage sewers including rain leaders may be subsequently connected to the storm sewer.
c) Foundation drainage shall be connected to the storm sewer by gravity unless otherwise waived in writing by the Manager, Engineering Department. Foundation drainage shall be protected from surcharging from the storm drainage main for design storms of up to 50 years
d) Unconnected foundation drains shall be capped at the property line.

e) Capped services shall be appropriately marked with a "2X4" extending from the pipe invert to at least 1.0 meter above finished grade level.
f) All gravity foundation drains shall be white in colour.
g) A backwater valve shall be installed by the homebuilder on all storm laterals. The valve shall be connected to the foundation drain to the satisfaction of the City's Plumbing Inspector.

ENGINEERING DEPARTMENT

Appendix 1H: *Traffic*

1.0 Traffic Impact

Traffic Impact Study Guidelines

The City of Kingston may require a Traffic Impact Study (TIS) for any development regardless of its size and land use. All proposed developments are considered on an individual basis in order to assess the need for a TIS. A TIS may be required for any proposed development that is expected to generate a total of 100 vehicle trips or more (inbound and outbound), during the morning or afternoon peak period.

- The TIS must be signed and sealed by a licenced professional engineer.
- The TIS must identify the impacts of the proposed development for five horizon years after completion.
- All numerical data (including raw traffic count data), results and findings must be tabulated in a report.
- A functional sketch of the proposed road system modifications must be included (Scale 1:250) along with cost estimates for any required off-site improvements.
- The design of all off-site modifications i.e. a left-turn bay, must adhere to the minimum standards outlined by the Transportation Association of Canada (TAC). Exceptions to the TAC standard will only be considered where there are serious design constraints. The City retains the right to require left-turn bays for safety related reasons.
- A minimum of 3 (three) copies of the Transportation Impact Study should be submitted for circulation and review.
- Intersection capacity analysis must be completed with Syncro.

If a TIS is not needed for a particular development, The City may still require the developer to be responsible for any off-site modifications deemed necessary.

The City requires that all Transportation Impact Studies adhere to the methodology outlined as follows:

Project & Transportation System

- Describe the project, study area and existing conditions
- Describe existing and proposed land uses for the subject site
- Identify and describe the study area
- Identify anticipated adjacent developments
- Describe the study area transportation system
- Identify proposed roadway improvements in the area
- Identify transit routes
- Identify bicycle and pedestrian facilities

Background Traffic

- Assemble existing hourly background traffic volumes for the weekday AM and PM peak periods and identify the design hours for analysis. If the proposed development would generate high volumes of traffic on weekends, a peak weekend design hour must be included as well.
- Estimate future hourly background traffic volumes on the study area road system for the selected design hours.
- The current growth rate being used for the City of Kingston is 1.3% non-compounded.

Traffic Impact

- Estimate site generated traffic for the selected design hours.
- Identify the net-auto trips for the proposed development.
- Identify the trip distribution/assignment methodology and carry out a directional distribution of the net auto trips.
- Assemble estimated traffic volumes for any nearby proposed development sites.
- Determine total traffic conditions in the study area by adding the development traffic and the future background traffic volumes for the selected design hours.
- Determine intersection and movement level of service (LOS) and volume to capacity ratios (V/C) at signalized intersections under existing, future background and future total traffic for the 5-year horizon period.
- The City may be consulted regarding current traffic signal timing information.
- The use of the current version of Synchro/SimTraffic is preferred for all capacity analysis calculations and simulations.
- The saturation flow shall not exceed 1800 passenger cars per hour of green per lane.
- Determine signalization warrants for unsignalized intersections.
- Identify operational and geometric modifications required to maintain the system at Level of Service "D". A v/c of 0.90 should not be exceeded for any vehicle movement if at all possible.
- Identify potential safety implications.
- Identify implications for pedestrian and bicycle movements.

Other Considerations

- Public safety
- Turning restrictions for vehicles and crossing restrictions for pedestrians
- Upgrades to existing traffic signals for pedestrians i.e. pedestrians fixtures and crosswalk markings.
- Parking for all vehicles, including bicycles
- Pedestrian movements.
- On-site traffic circulation must demonstrate that vehicles queues would not extend out to adjacent public roads.
- Access locations must be checked for sightlines, the need for dedicated left-turn and right-turn bays and conflict with other driveway locations, bus stop locations.

- Left-turn storage lanes must be long enough to accommodate 1.5 times the average number of arrivals per cycle during the heaviest hour.
- Right-turn storage lanes should be long enough to permit right-turning traffic to clear the maximum queue of through vehicles in the queue during the red indication.
- The introduction of right-turn channelization is not acceptable unless deemed necessary by the City for capacity or turning radius reasons.
- Vehicle storage between intersections must be adequate to accommodate 1.5 times the average number of vehicles arriving on each red indication during the heaviest hour.

2.0 Guidelines for the Installation of New Traffic Signals

Introduction and Background

The Engineering Department regularly receives requests for traffic signals to be installed at a variety of locations in the City. The requirement to assess the need for a new traffic signal typically arises after a technical analysis or concerns regarding delay, congestion, safety or pedestrian crossing issues.

When **properly** located, designed, operated and maintained, traffic signals can provide for the orderly movement of traffic, reduce the frequency of certain types of collisions (i.e. right-angle, pedestrian and left-turn), increase the capacity of the minor street and interrupt heavy traffic flows to allow other traffic to enter or cross the intersection.

When **improperly** located, designed, operated and maintained, traffic signals can increase delay and fuel consumption, increase the frequency of certain types of collisions (i.e. rear-end, lane change), cause driver frustration and disrespect for traffic control and may encourage motorists to short-cut through residential areas.

It is therefore important that new traffic signals only be installed after a thorough analysis and careful consideration. The City of Kingston's "Guidelines for the Installation of New Traffic Signals" are intended to provide information regarding the framework currently being used to determine where new traffic signals should be installed.

Ministry of Transportation Traffic Signal Warrants

Until the 1990's, funding for new traffic signals was subject to a cost-sharing agreement between the Ministry of Transportation Ontario (MTO) and each individual municipality. Provincial funds were only provided if the MTO traffic signal warrants were met. Although the Province no longer provides funding for municipal traffic signals, the MTO traffic signal warrants are still widely used across Ontario.

The City of Kingston generally follows the Ministry of Transportation Ontario's (MTO) warrants to determine if a traffic signal could be installed. A detailed study of the traffic conditions and the physical characteristics are key components to assess whether or not a traffic signal is justified.

The assessment to determine whether or not a traffic signal is justified is made using the following criteria:

- Justification 1 – Minimum Vehicle Volumes
- Justification 2 - Delay to Cross Traffic
- Justification 3 - Collision Experience
- Justification 4 – Combination Experience
- Justification 5 – Pedestrian Experience

The justifications for traffic signals contain minimum required traffic volumes for both "Restricted Flow" and "Free Flow" conditions. The City of Kingston adheres to the MTO definitions for these two flow conditions as follows:

Restricted Flow (Urban) Conditions

"Normally encountered in urban areas where the traffic volumes approach or exceed the practical working capacity of the roadway and operating speeds are generally less than 70 km/h."

Free Flow (Rural) Conditions

"Normally encountered in rural areas and in communities of less than 10,000 population. The operating speeds are generally greater than 70 km/h. Even if the operating speed is less than 70 km/h, treatment of the situation as a free flow case recognizes that the driving characteristics in small communities are different than those in large urban areas."

For the above-noted reasons, the large majority of intersections in the City are analyzed as restricted flow. The City will only assess intersections as "free flow" if they are clearly located in a rural area.

The traffic volumes used in the warrant analysis should be collected on a typical day representative of the problem that the signal is expected to address. The eight hours counted during the day should reflect the volumes experienced when the lack of a traffic signal may be an issue.

A traffic signal would be considered warranted if any **ONE** of the justifications are met. The detailed warrant tables and a sample intersection are shown in Exhibit A. A description of each justification is as follows:

Justification 1 – Minimum Vehicle Volumes

A traffic signal would be considered warranted if 1A **AND** 1B are **BOTH** 100% fulfilled.

- 1A – total traffic volume on all roadway approaches
- 1B – total traffic volume on the minor road

When applying Justification 1B to **three-legged** (T-intersections), the minimum required values for the minor street are increased by 50%. This higher number is indicative of the fact that with one of the approaches eliminated, the number of potential conflicts between left turns and through movements on the minor road is reduced.

Justification 2 - Delay to Cross Traffic
The traffic signal would be considered warranted if 2A **AND** 2B are **BOTH** 100% fulfilled.

- 2A – total traffic volume on the main road
- 2B – total crossing traffic volume
  - includes the number of pedestrians crossing the main road PLUS total left-turning vehicles from both side road approaches PLUS the highest through vehicle volume from one side approach

Justification 3 - Collision Experience
A traffic signal would be considered warranted if **ALL** of the following conditions are satisfied:

- The occurrence of an average of **five or more reported collisions per year for the past three years** that most likely would not have occurred with a traffic signal in place.
- Adequate trial of other measures failed to reduce the collision history.
- Justification 1 **OR** Justification 2 satisfied to a minimum of 80%.

Justification 4 – Combination Experience
A traffic signal would be considered warranted if **TWO OR MORE** of the following conditions are satisfied:

- Justification 1A & 1B are both satisfied to a minimum of 80%.
- Justification 2A & 2B are both satisfied to a minimum of 80%.
- The occurrence of an average of **four or more reported collisions for the past three years** that most likely would not have occurred with a traffic signal in place **AND** adequate trial of other measures failed to reduce the collision history.

Justification 5 – Pedestrian Experience

In 2008, Council approved the adoption of the City of Kingston's Pedestrian Crossing Guidelines.

These Guidelines were developed in order to provide direction with respect to the installation of pedestrian crossings in the City. The City of Kingston does not adhere to the MTO warrants for traffic signals for pedestrians.

A traffic signal for pedestrians may be considered when a reasonable number of conditions in Table 1H-1 are met.

Table 1H-1 – Assessment for a Pedestrian Signal

	Actual	**Required***	**Condition Met**
Pedestrian Volume (average/h)	x	80**	Yes/No
Vehicle Volume (AADT)	x	greater than 15,000	Yes/No
Vehicle Speed (km/h)	x	greater than 60	Yes/No
Number of Lanes	x	2 or 4	Yes/No
Sidewalks Present	x	**Yes***	Yes/No
Traffic Control Within 200 meters	x	**No**	Yes/No
Number of conditions met:		**x**	
Recommendation:	Install/do not install pedestrian signal		

*These conditions must be met for safety-related reasons.

** Pedestrian volume is greater than an average of 80 per hour over the peak **6 hours** of the day. If adjacent to a **school**, pedestrian volume is greater than an average of 80 per hour over the peak **3 hours** of the day

Ranked and Prioritized List of Local Intersections

The Traffic Division maintains a ranked and prioritized list of intersections in the City that have been assessed for new traffic signals. The ranking system includes a score for each intersection based on the total number of points derived from the traffic signal warrants along with a column for the collision history. Traffic signals will not necessarily be installed at the intersection with the highest warrant score. Other factors such as operational desirability must be considered. This list will be revised on an on-going basis as traffic counts are updated and specific requests received.

The Traffic Division will continue to maintain this ranked and prioritized list of intersections for the consideration of all future new traffic signals. New traffic signals will be installed on a priority basis as schedule and budget permits.

Special Conditions for Traffic Signal Installation

It is important to note that warrants are guidelines and as such, **there are occasions when a traffic signal may be installed that does not meet the MTO warrants.** For special circumstances, engineering judgement may be used to support the installation of a traffic signal. Similarly, there is no requirement to install a traffic signal at a location that meets the warrants.

> *"Justifications should be used as a guide to determining the need for traffic control signals rather than as absolute criteria. The fulfillment of a traffic signal justification or justifications shall not in itself **require** the installation of a traffic control signal; the justifications must be used in combination with experience, professional judgment and economic analysis. The satisfaction of the signal installation justifications is only one criterion for determining the suitability of traffic control signals for any location."*

Source: Book 12, Ontario Traffic Manual, 2001

The City will consider the installation of a traffic signal at a location that **does not meet the warrants**, under the following circumstances:

- Existing sight distance issue exists that could be improved with the installation of a traffic signal.
- Traffic signal is required for transit operations.
- A neighbourhood shortcutting issue could be mitigated.
- Traffic signal(s) is required to facilitate a development. *(Note: these traffic signals are typically wholly funded or cost-shared with the developer)*
- In conjunction with planned roadway construction; if the traffic signal is expected to meet the warrants in the near future.

The City will **NOT** consider the installation of a traffic signal that meets the warrants, under the following circumstances:

- The proposed location is too close to an existing intersection that may or may not be controlled by a traffic signal.
- Existing sight distance issue that could be worsened with the installation of a traffic signal.
- The traffic signal would seriously disrupt traffic flow.
- There may not be enough space for an appropriate length of left-turn lane on major approach

Conclusions

When the requirement to assess the need for a new traffic signal arises, the City will adhere to the "Guidelines for the Installation of New Traffic Signals" in order to determine if a traffic signal is warranted. The justifications will be used as a guide to determining the need for traffic control signals rather than as absolute criteria. The fulfillment of a traffic signal justification or justifications will not in itself **require** the installation of a traffic control signal. The justifications will be used in combination with experience and professional judgement. Traffic signals will only be installed after a thorough analysis and careful consideration.

The Traffic Division will continue to maintain a ranked and prioritized list of intersections that have been assessed for all future new traffic signals. New traffic signals will be installed on a priority basis as schedule and budget permits.

References

Book 12, Traffic Signals, Ontario Traffic Manual, July 2001, Ministry Transportation Ontario

City of Kingston's Pedestrian Crossing Guidelines, April 2008

EXHIBIT A

4-LEGGED INTERSECTION
Warrant #1: Minimum Vehicular Volumes

A. All Approaches

	1 lane each way		2 lanes each way		Highest 8 Hours of the Day							
	Free Flow	Restricted Flow	Free Flow	Restricted Flow	*Hour 1*	*Hour 2*	*Hour 3*	*Hour 4*	*Hour 5*	*Hour 6*	*Hour 7*	*Hour 8*
Required min. volume for 100% score	480	720	600	900	actual volume	actual volume	actual volume	actual volume	actual volume	actual volume	actual volume	actual volume
Required min. volume for 80% score	385	575	480	720								

100% fulfilled	score	score	score	score	score
80% fulfilled					
Actual percentage if less than 80%					

Total score for 8 hours = x

Total average score for 8 hours = x/8

B. Minor Street Both Approaches

	1 lane each way		2 lanes each way		Highest 8 Hours of the Day							
	Free Flow	Restricted Flow	Free Flow	Restricted Flow	*Hour 1*	*Hour 2*	*Hour 3*	*Hour 4*	*Hour 5*	*Hour 6*	*Hour 7*	*Hour 8*
Required min. volume for 100% score	120	170	120	170	actual volume	actual volume	actual volume	actual volume	actual volume	actual volume	actual volume	actual volume
Required min. volume for 80% score	95	135	95	135								

100% fulfilled	score	score	score	score	score
80% fulfilled					
Actual percentage if less than 80%					

Total score for 8 hours = x

Total average score for 8 hours = x/8

3-LEGGED INTERSECTION
Warrant #1: Minimum Vehicular Volumes

A. All Approaches

	1 lane each way		2 lanes each way		Highest 8 Hours of the Day							
	Free Flow	Restricted Flow	Free Flow	Restricted Flow	*Hour 1*	*Hour 2*	*Hour 3*	*Hour 4*	*Hour 5*	*Hour 6*	*Hour 7*	*Hour 8*
Required min. volume for 100% score	480	720	600	900	actual volume	actual volume	actual volume	actual volume	actual volume	actual volume	actual volume	actual volume
Required min. volume for 80% score	385	575	480	720								

100% fulfilled	score	score	score	score	score	score
80% fulfilled						
Actual percentage if less than 80%						

Total score for 8 hours = x

Total average score for 8 hours = x/8

B. Minor Street Both Approaches

	1 lane each way		2 lanes each way		Highest 8 Hours of the Day							
	Free Flow	Restricted Flow	Free Flow	Restricted Flow	*Hour 1*	*Hour 2*	*Hour 3*	*Hour 4*	*Hour 5*	*Hour 6*	*Hour 7*	*Hour 8*
Required min. volume for 100% score	180	255	180	255	actual volume	actual volume	actual volume	actual volume	actual volume	actual volume	actual volume	actual volume
Required min. volume for 80% score	143	203	143	203								

100% fulfilled	score	score	score	score	score	score
80% fulfilled						
Actual percentage if less than 80%						

Total score for 8 hours = x

Total average score for 8 hours = x/8

3 OR 4-LEGGED INTERSECTION
Warrant #2: Delay to Cross Traffic

A. Major Street Both Approaches

	1 lane each way		2 lanes each way		Highest 8 Hours of the Day							
	Free Flow	Restricted Flow	Free Flow	Restricted Flow	*Hour 1*	*Hour 2*	*Hour 3*	*Hour 4*	*Hour 5*	*Hour 6*	*Hour 7*	*Hour 8*
Required min. volume for 100% score	480	720	600	900	actual volume	actual volume	actual volume	actual volume	actual volume	actual volume	actual volume	actual volume
Required min. volume for 80% score	385	575	480	720								

100% fulfilled	score	score	score	score	score	score
80% fulfilled						
Actual percentage if less than 80%						

Total score for 8 hours = x

Total average score for 8 hours = x/8

B. Traffic Crossing Major Street

	1 lane each way		2 lanes each way		Highest 8 Hours of the Day							
	Free Flow	Restricted Flow	Free Flow	Restricted Flow	*Hour 1*	*Hour 2*	*Hour 3*	*Hour 4*	*Hour 5*	*Hour 6*	*Hour 7*	*Hour 8*
Required min. volume for 100% score	50	75	50	75	actual volume	actual volume	actual volume	actual volume	actual volume	actual volume	actual volume	actual volume
Required min. volume for 80% score	40	60	40	60								

100% fulfilled	score	score	score	score	score	score
80% fulfilled						
Actual percentage if less than 80%						

Total score for 8 hours = x

Total average score for 8 hours = x/8

EXAMPLE: Taylor Kidd Boulevard & Old Colony Road

Warrant #2: Delay to Cross Traffic

A. Major Street Both Approaches

	1 lane each way		2 lanes each way		Highest 8 Hours of the Day							
	Free Flow	Restricted Flow	Free Flow	Restricted Flow	*Hour 1*	*Hour 2*	*Hour 3*	*Hour 4*	*Hour 5*	*Hour 6*	*Hour 7*	*Hour 8*
Required min. volume for 100% score	480	720	600	900	1010	1466	1129	1025	1134	1205	1276	1593
Required min. volume for 80% score	385	575	480	720								

100% fulfilled	100	100	100	100	100	100	100	100
80% fulfilled								
Actual percentage if less than 80%								

Total score for 8 hours = 800

Total average score for 8 hours = 100%

B. Traffic Crossing Major Street

	1 lane each way		2 lanes each way		Highest 8 Hours of the Day							
	Free Flow	Restricted Flow	Free Flow	Restricted Flow	*Hour 1*	*Hour 2*	*Hour 3*	*Hour 4*	*Hour 5*	*Hour 6*	*Hour 7*	*Hour 8*
Required min. volume for 100% score	50	75	50	75	121	204	90	72	91	90	86	79
Required min. volume for 80% score	40	60	40	60								

100% fulfilled	100	100	100		100	100	100	100
80% fulfilled				80				
Actual percentage if less than 80%								

Total score for 8 hours = 780

Total average score for 8 hours = 98%

EXAMPLE: Taylor Kidd Boulevard & Old Colony Road

(3-LEGGED INTERSECTION)

Warrant #1: Minimum Vehicular Volumes

A. All Approaches

	1 lane each way		2 lanes each way		Highest 8 Hours of the Day							
	Free Flow	Restricted Flow	Free Flow	Restricted Flow	*8:00*	*9:00*	*10:00*	*12:00*	*13:00*	*14:00*	*16:00*	*17:00*
Required min. volume for 100% score	480	720	600	900	1163	1755	1269	1156	1278	1356	1428	1744
Required min. volume for 80% score	385	575	480	720								

100% fulfilled	100	100	100	100	100	100	100	100
80% fulfilled								
Actual percentage if less than 80%								

Total score for 8 hours = 800

Total average score for 8 hours = 100%

B. Minor Street Both Approaches

	1 lane each way		2 lanes each way		Highest 8 Hours of the Day							
	Free Flow	Restricted Flow	Free Flow	Restricted Flow	*8:00*	*9:00*	*10:00*	*12:00*	*13:00*	*14:00*	*16:00*	*17:00*
Required min. volume for 100% score	180	255	180	255	153	289	140	131	144	151	152	151
Required min. volume for 80% score	143	203	143	203								

100% fulfilled		100						
80% fulfilled								
Actual percentage if less than 80%	60		55	51	56	59	60	59

Total score for 8 hours = 501

Total average score for 8 hours = 63%

EXAMPLE: Taylor Kidd Boulevard & Old Colony Road

Warrant #2: Delay to Cross Traffic

A. Major Street Both Approaches

	1 lane each way		2 lanes each way		Highest 8 Hours of the Day							
	Free Flow	Restricted Flow	Free Flow	Restricted Flow	*8:00*	*9:00*	*10:00*	*12:00*	*13:00*	*14:00*	*16:00*	*17:00*
Required min. volume for 100% score	480	720	600	900	1010	1466	1129	1025	1134	1205	1276	1593
Required min. volume for 80% score	385	575	480	720								

100% fulfilled	100	100	100	100	100	100	100	100
80% fulfilled								
Actual percentage if less than 80%								

Total score for 8 hours = 800

Total average score for 8 hours = 100%

B. Traffic Crossing Major Street

	1 lane each way		2 lanes each way		Highest 8 Hours of the Day							
	Free Flow	Restricted Flow	Free Flow	Restricted Flow	*8:00*	*9:00*	*10:00*	*12:00*	*13:00*	*14:00*	*16:00*	*17:00*
Required min. volume for 100% score	50	75	50	75	121	204	90	72	91	90	86	79
Required min. volume for 80% score	40	60	40	60								

100% fulfilled	100	100	100		100	100	100	100
80% fulfilled				80				
Actual percentage if less than 80%								

Total score for 8 hours = 780

Total average score for 8 hours = 98%

ENGINEERING DEPARTMENT

Appendix 1I: *Design Standards – Rural Estate Subdivisions*

1.0 Introduction

This section is for special conditions that apply to Estate Residential Developments. The developer is encouraged to prepare a design that complements the vision of the development, however the following criteria is to be considered.

The standards listed in this document will apply to the design of the subdivisions except where the following conditions are applicable.

2.0 Access

The developer will be required to make improvements to existing roads that provide access to the subdivision or secondary subdivision entrances.

3.0 Roads

Roads in rural subdivisions are to be designed using the standard road cross section for Estate Residential Local Semi-Urban 20M right-of-way. Figure 1A4 - Appendix 1J.

The following shall apply where applicable:

Rural residential streets, having a single point of access, shall be limited in length as described in Appendix 1D – 6.0. Where conditions do not permit a second access, alternative designs comprising emergency access points, increased road widths, restrictive covenants requiring all dwellings to be provided with fire sprinklers or combinations of these measures may be considered.

4.0 Streetlighting

At a minimum, streetlighting is to be designed and submitted by the developer for review by City staff.

- Streetlighting is required at all horizontal curves in the road where sight lines are a concern.
- Streetlighting is required at all vertical curves in the road where sight lines are a concern.
- Streetlighting is required at all intersections to be approved by Utilities Kingston
- Streetlighting is required at the end of all cul-de-sacs.

However, if the developer wishes to provide a higher level of lighting the criteria for street lighting is described in Appendix 2F of this document.

ENGINEERING DEPARTMENT

Appendix 1J: *Standard Drawings*

Figure 1A1 Minor Collector Street – 20m right of way

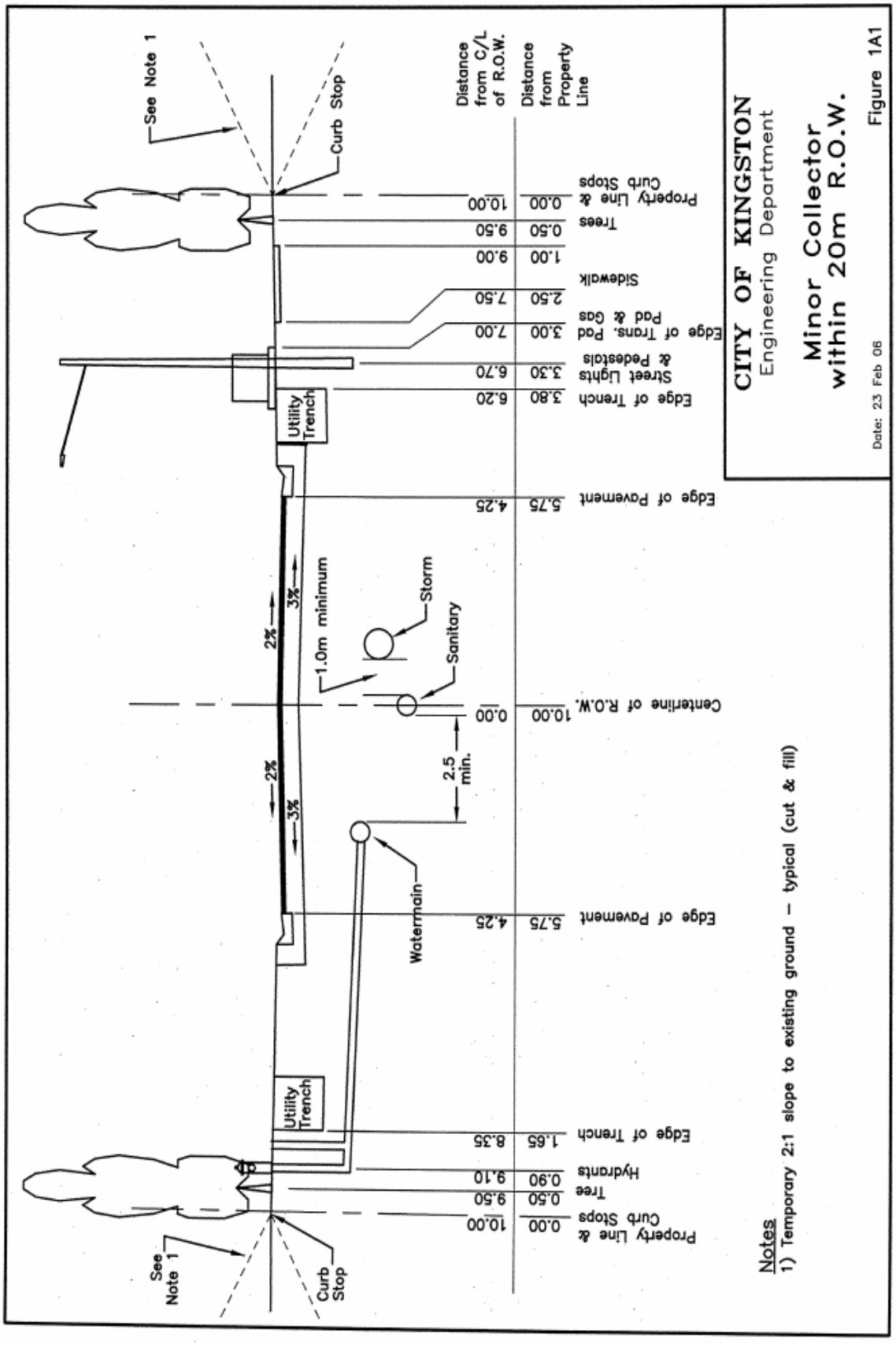


Figure 1A2 Minor Local Street – 18m Right of Way (with Sidewalk)

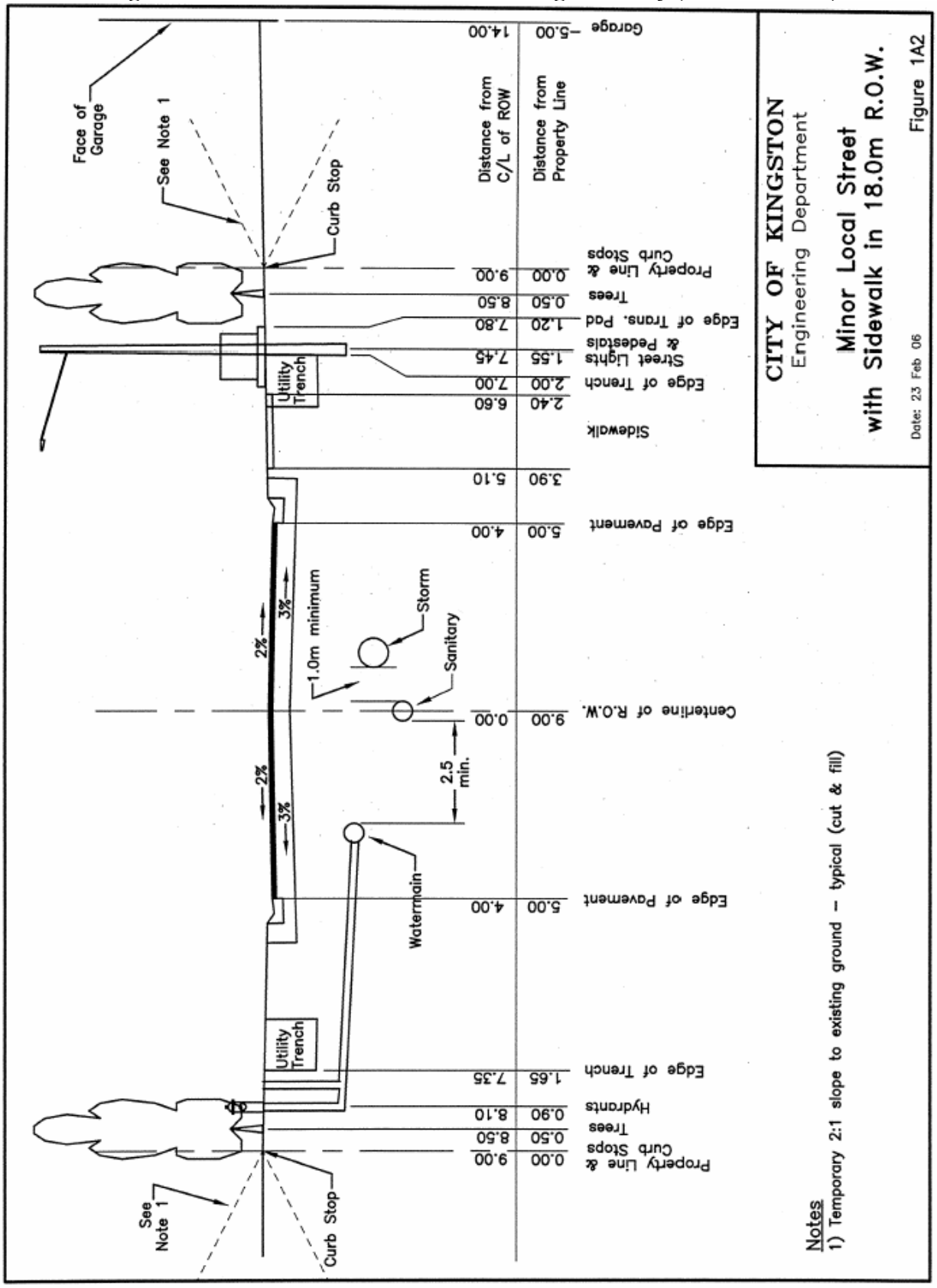


Figure 1A3 Minor Local Street – 18m Right of Way (No sidewalk)

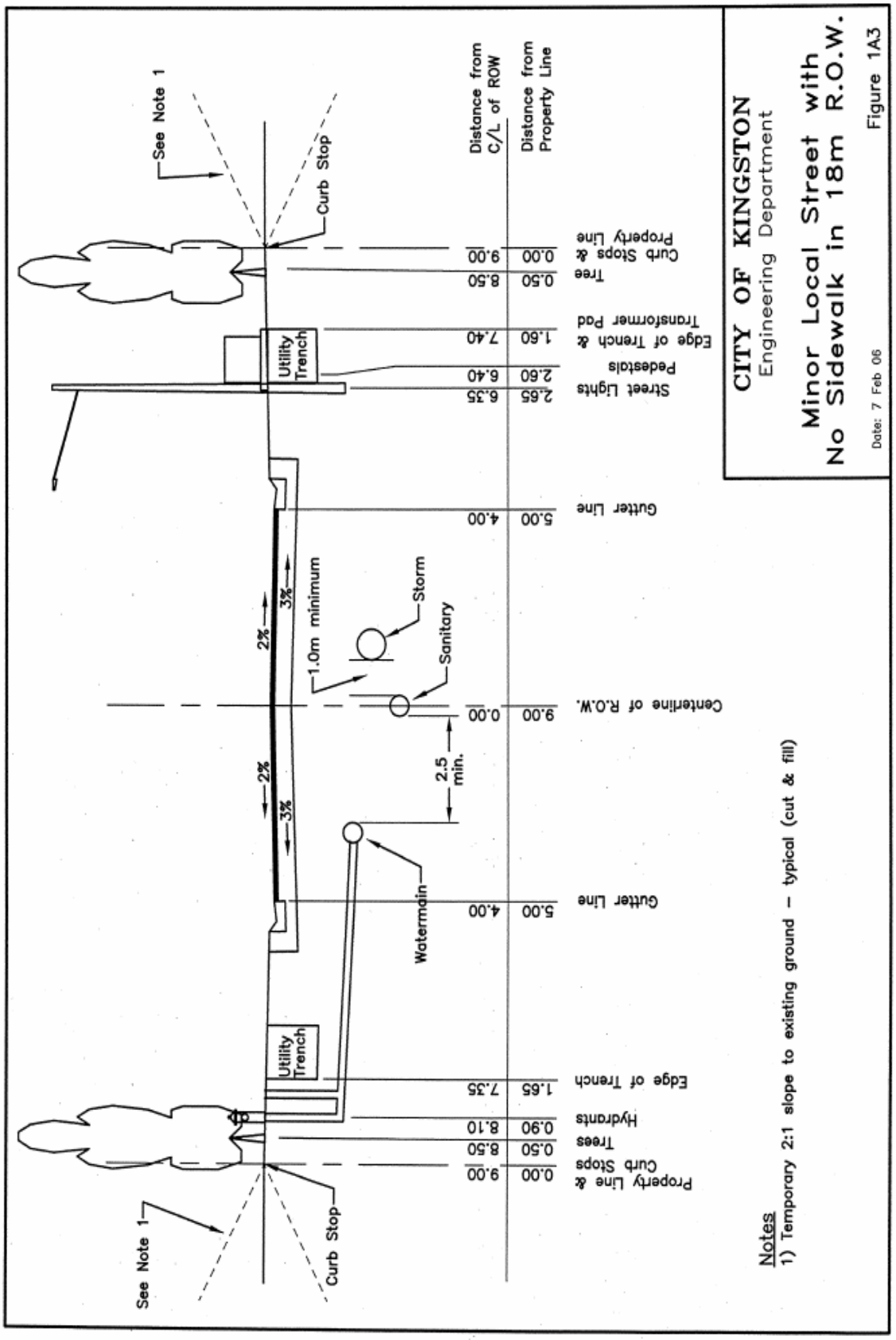


Figure 1A4 Local Semi-Urban (Estate Residential) – Street 20m Right of Way

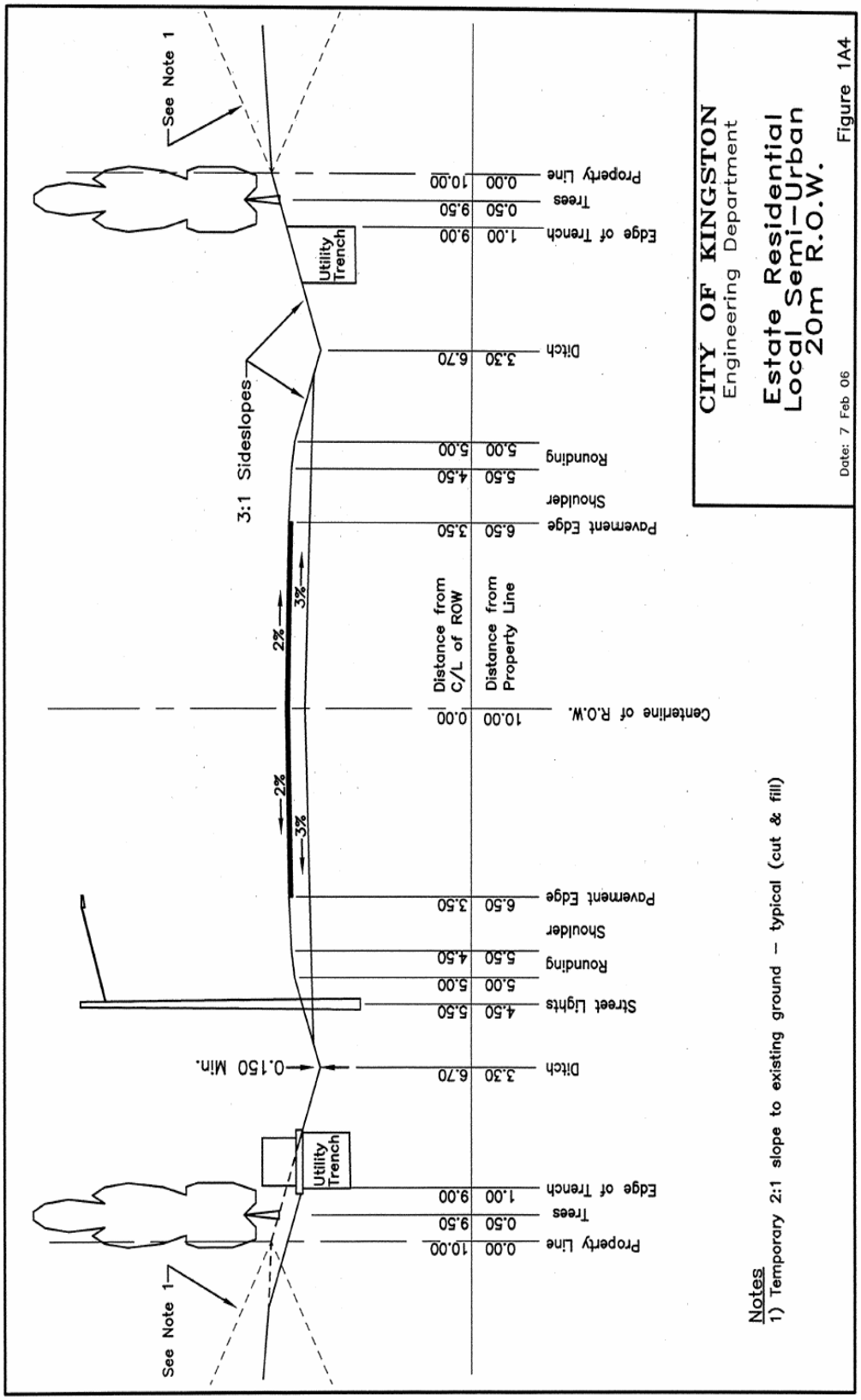


Figure 1A5 Permanent Cul-de-Sac

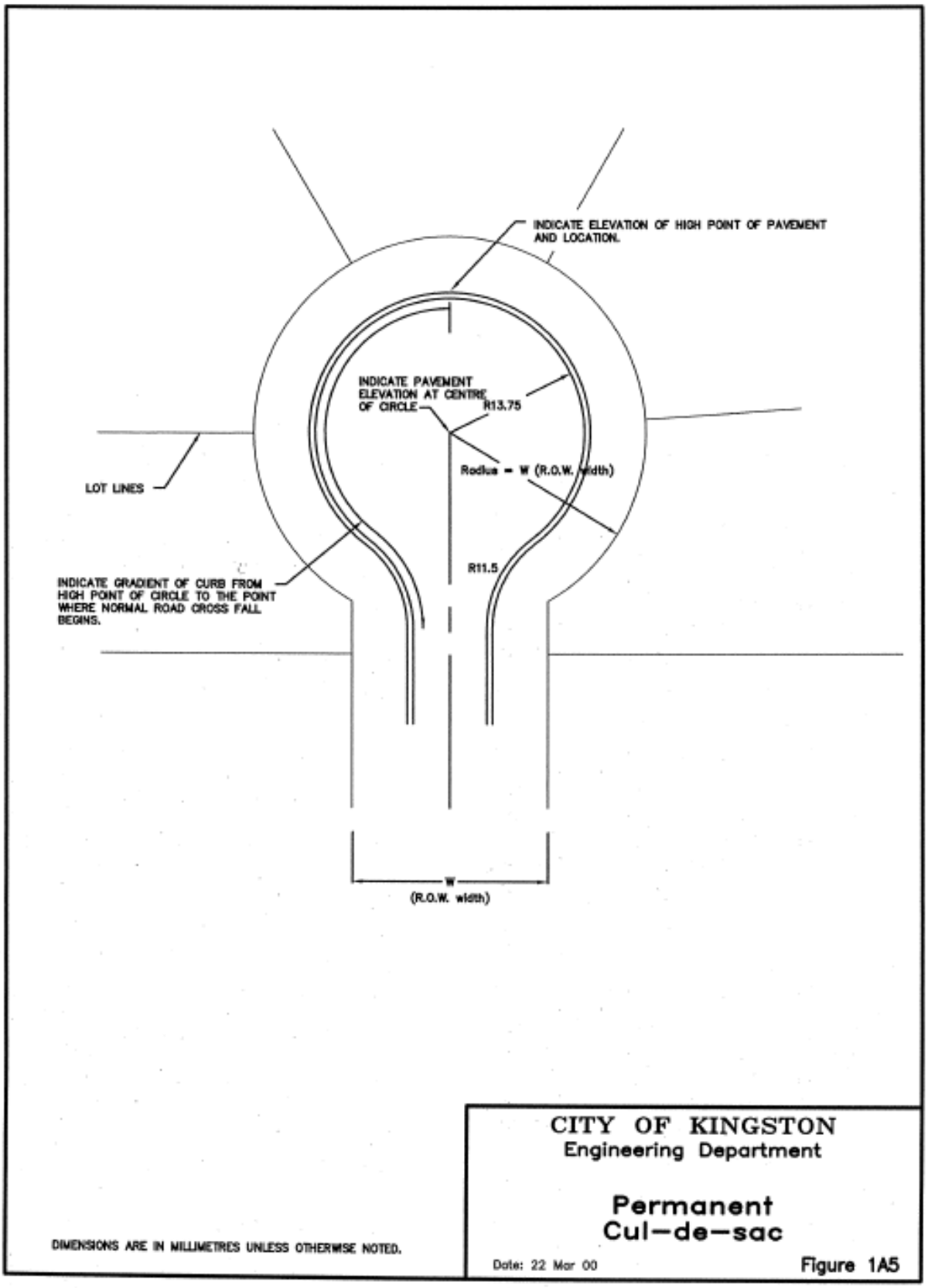


Figure 1A6 Temporary Cul-de-Sac

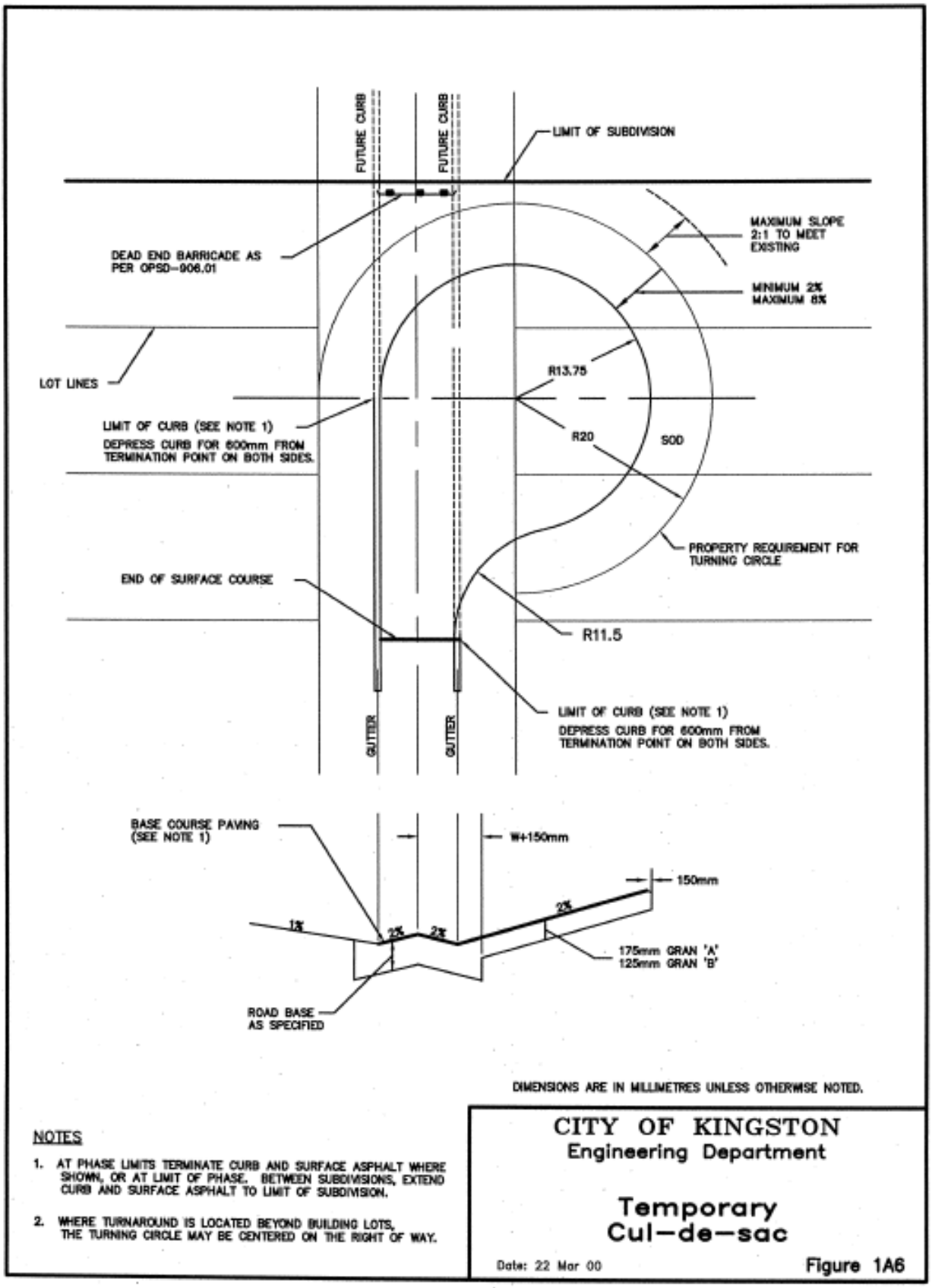


Figure 1A7 Standard Asphalt Walkway

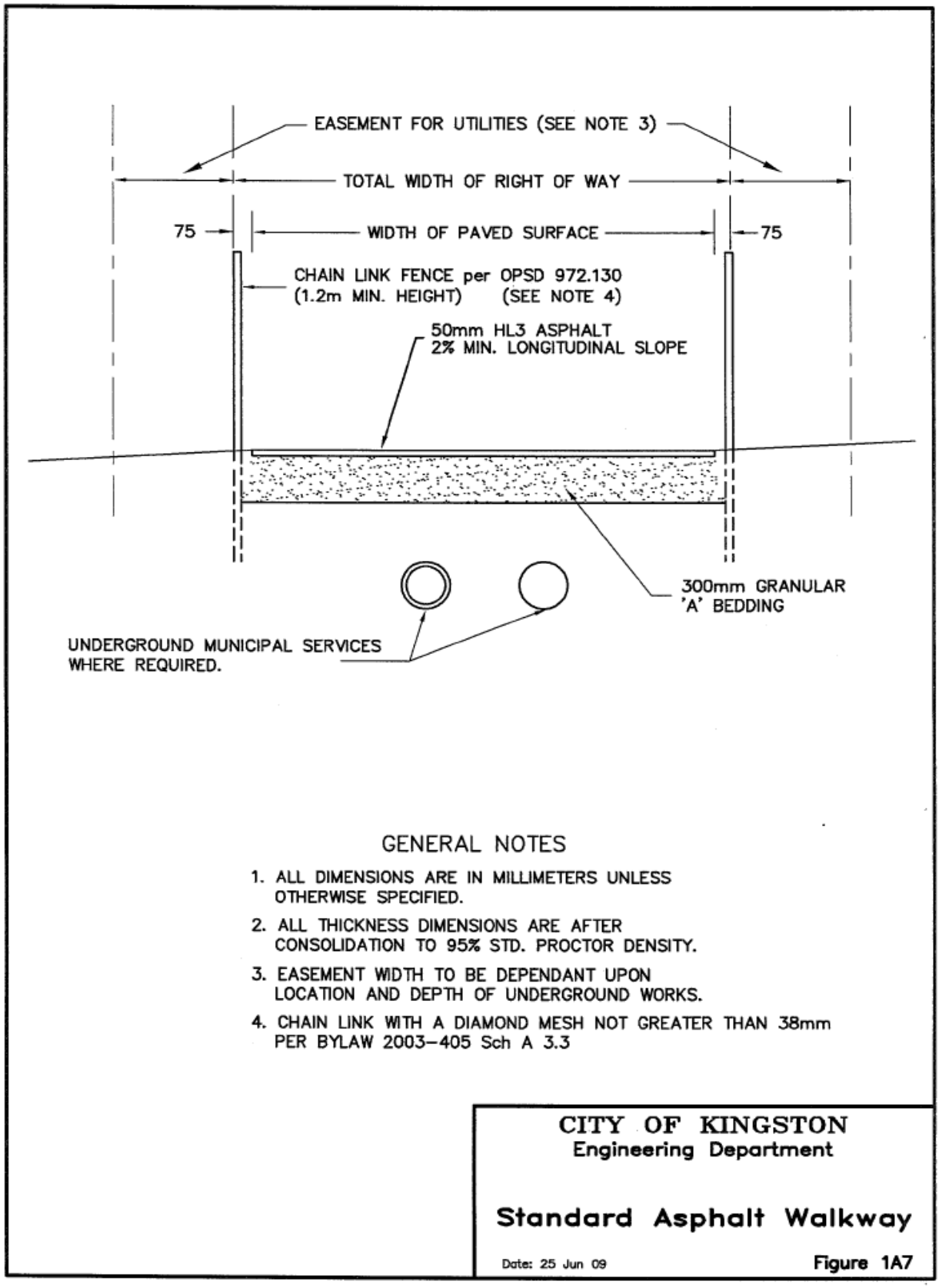


Figure 1A8 Typical Details – Canada Post Mailboxes

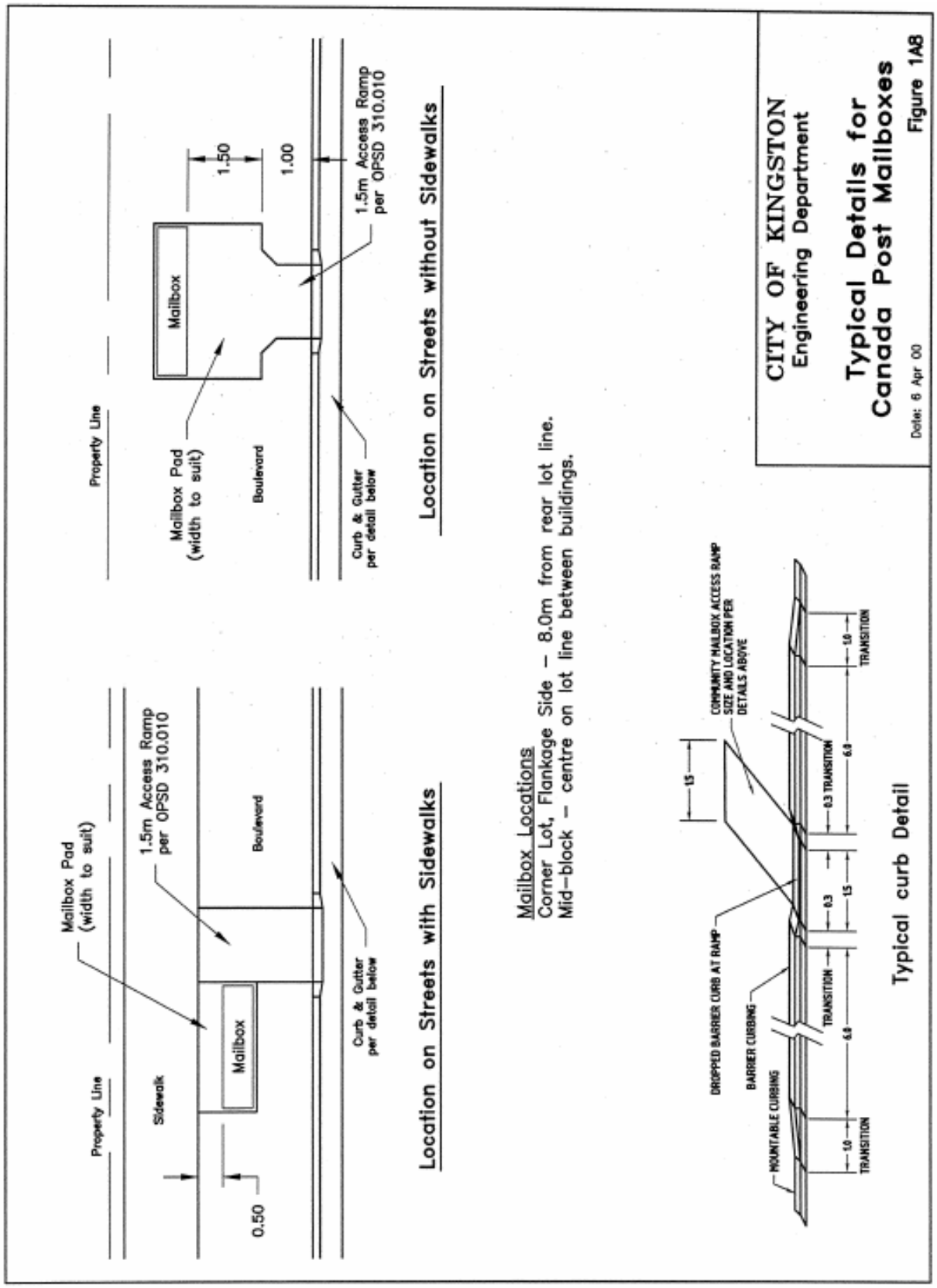


Figure 1A9 Sign Placement Detail

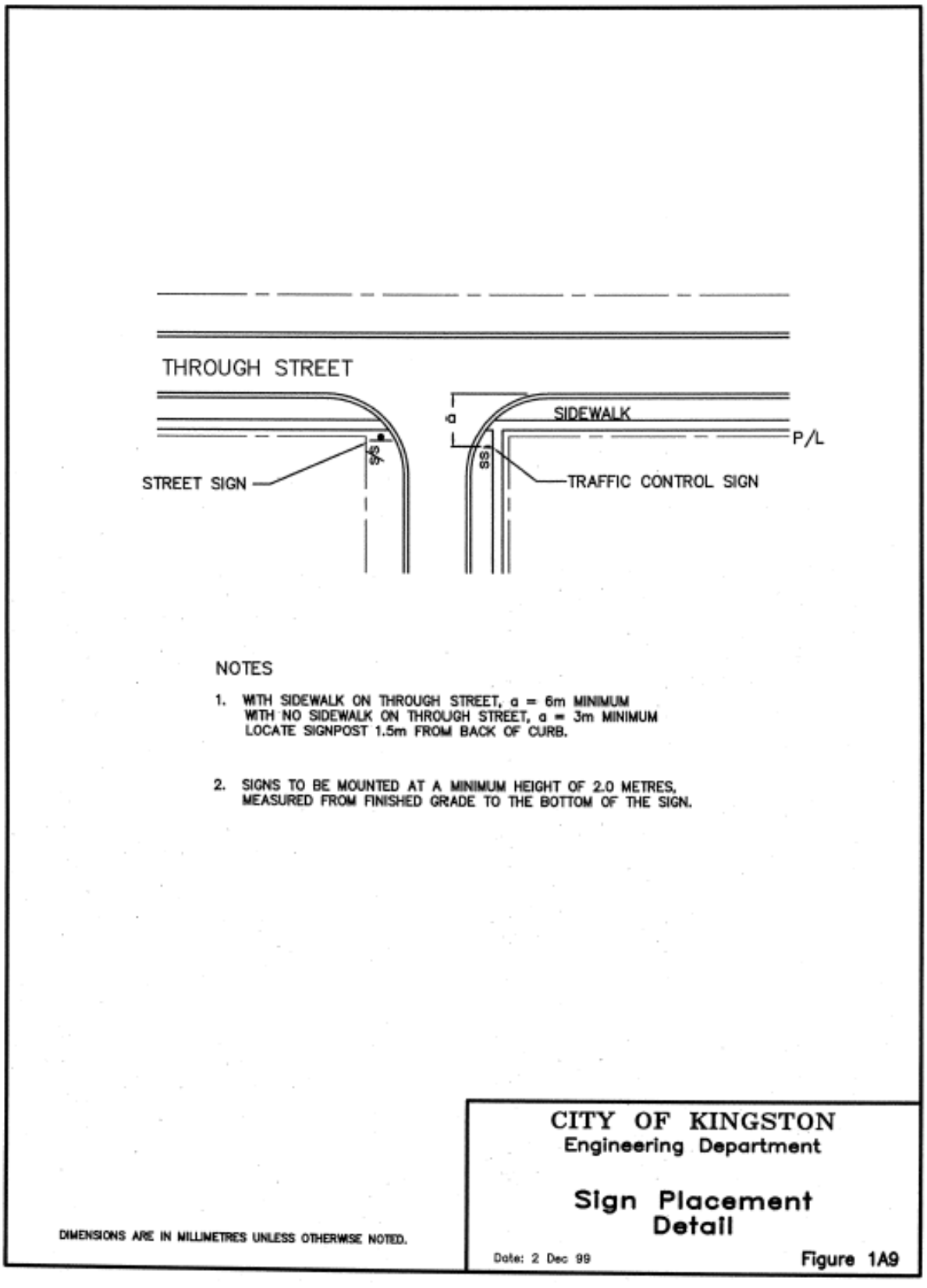


Figure 1A10 Concrete Sidewalk Joint Finishing Detail

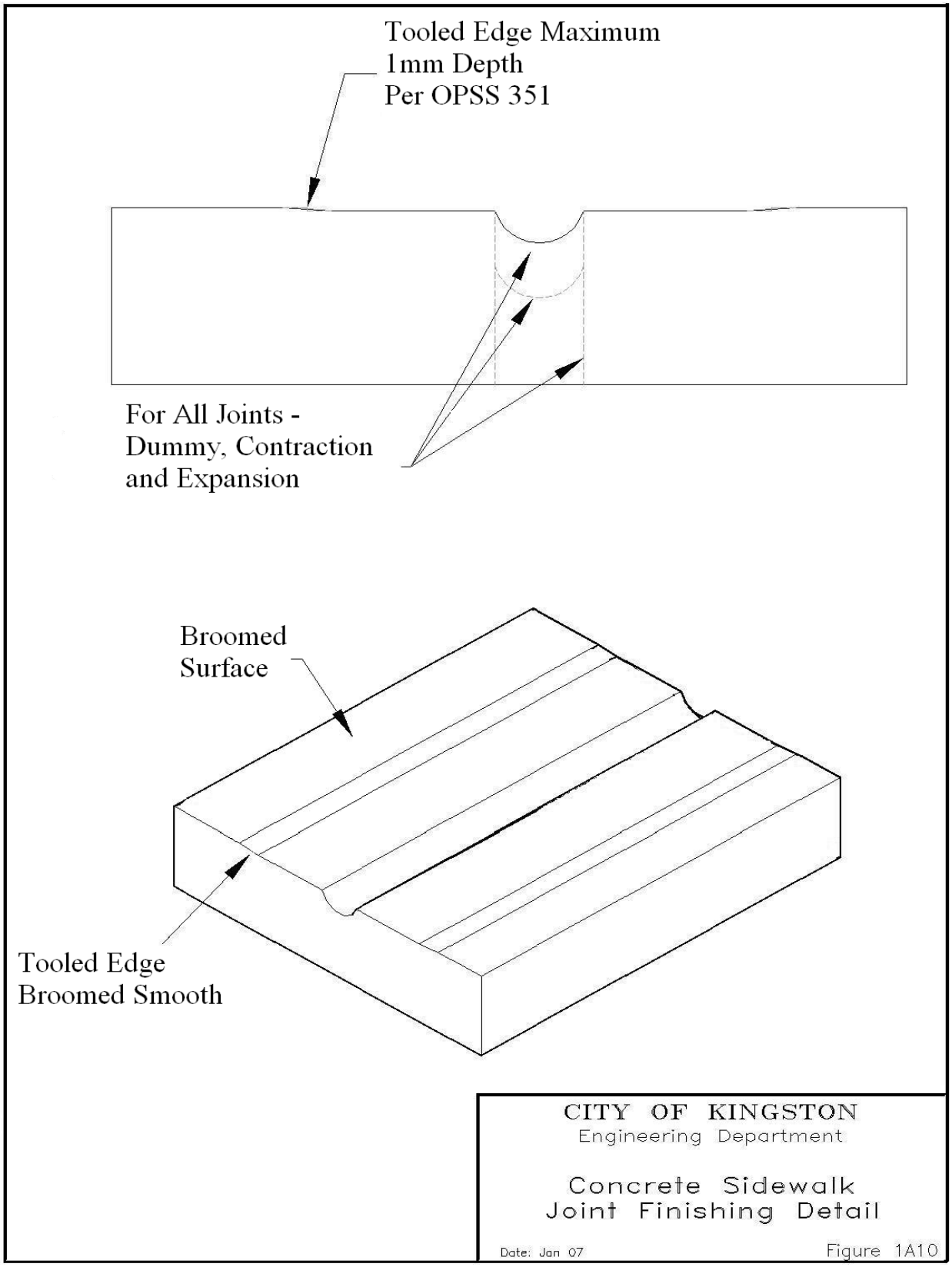


Figure 1B1 Typical Split Lot Drainage

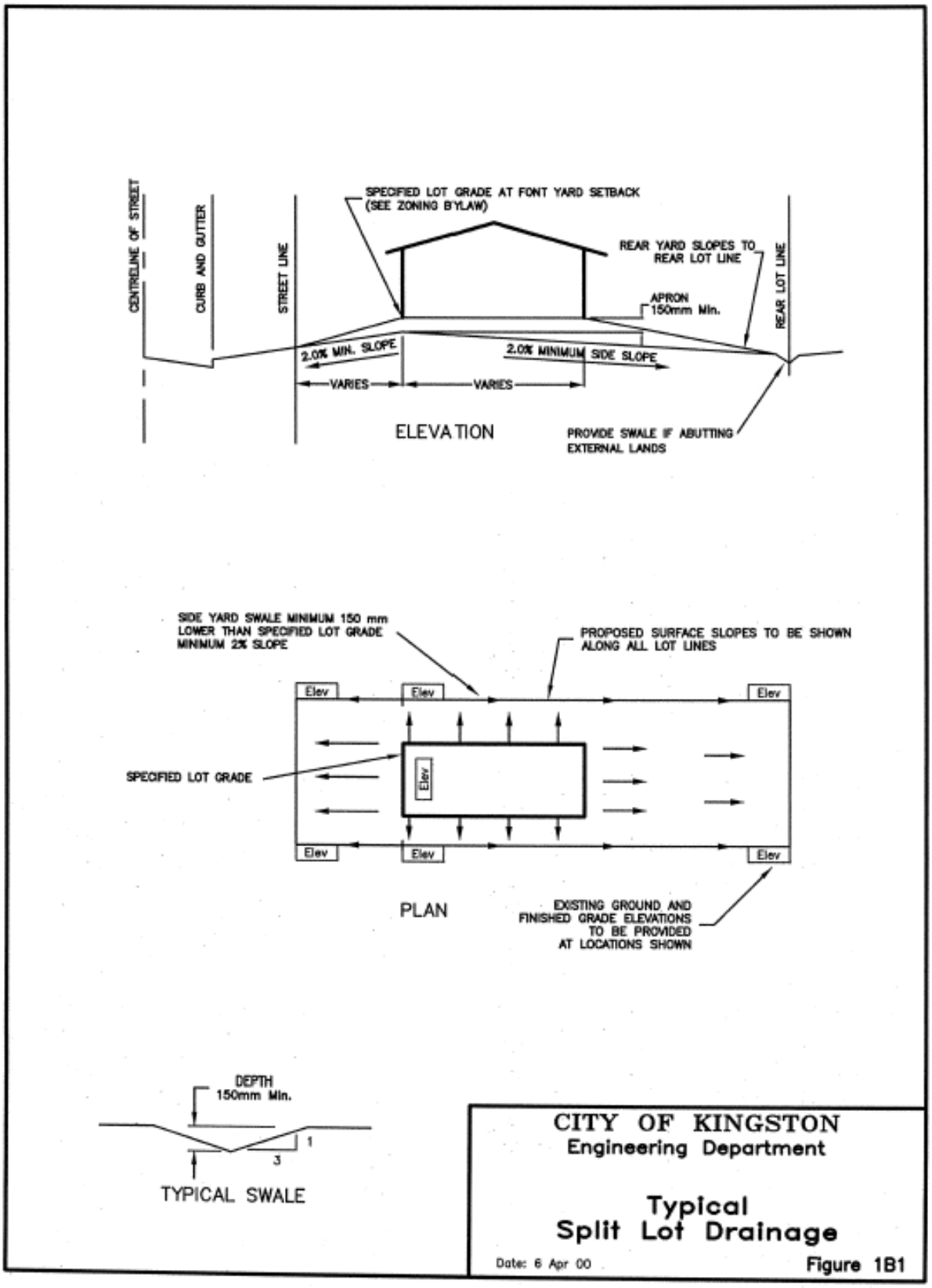
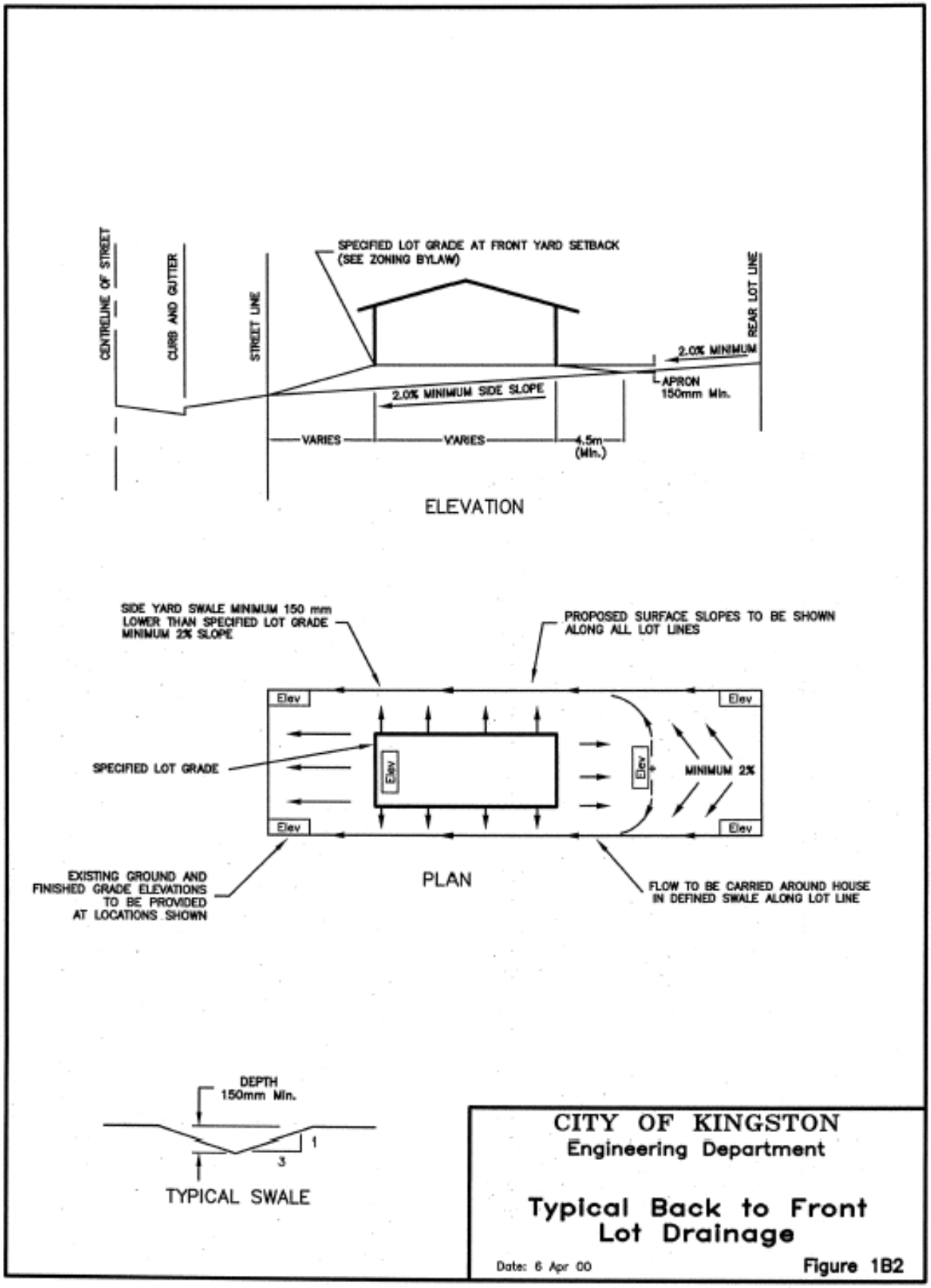


Figure 1B2 Typical Back to Front Lot Drainage



ENGINEERING DEPARTMENT

Appendix 1K: *Standard Forms*

99-001-UG – Application for Preliminary Certificate of Approval – Underground Services
99-001-AG - Application for Preliminary Certificate of Approval of the Works
Standard Letter of Credit
Standard Certificate of Insurance
Standard Storm Sewer Design Sheet

99-001-UG – Application for Preliminary Certificate of Approval – Underground Services

Subdivision Inspection Report

Application for Preliminary Certificate of Approval of Underground Services

List:

Name of Owner:	Name of Development:	Plan #:	Phase #:	File #:	Date:
Lots Affected:					
Streets: (Name in part if necessary)					

Pre-Requisites to Permit Issuance (Please confirm)

Item	Check-Yes	Inspector's Name	Remarks
1. Storm sewer system satisfactorily installed, cleaned and tested (Includes SWM ponds, major swales etc.)			
2. Sanitary sewer system satisfactorily installed, cleaned and tested.			
3. Water distribution system satisfactorily installed cleaned and tested (Customer Ready including approval of hydrant flow ratings)			
4. Rough grading substantially complete (Properties and Boulevards), including Joint Utility Trench back fill.			
5. Roads in place with base course asphalt (Includes temporary facilities, street name and traffic signs.			
6. Other (See Schedule "J" – Subdivision Agreement)			

- ☐ I hereby certify that construction of the Underground Infrastructure was inspected in accordance with City of Kingston specifications by an approved inspector under the direct supervision of a professional engineer and that sound and accepted engineering practices were followed throughout the construction.
- ☐ I hereby certify that effective on the date herein the underground services and other associated requirements in the above mentioned subdivision (or phase thereof) are deemed substantially complete in accordance with the terms of the subdivision agreement in filling the technical requirements for building permit issuance.
- ☐ Subdividers Inspection Fee is included with this application form.

Name and Address of Project Consulting Firm (Type)

_____

_____

Professional Seal

_____
Signature of Owner's Engineer

_____
Utilities Kingston approval of #2 & #3

City of Kingston –Engineering Division
Form 99-001-Rev.Oct. 2002

99-001-AG - Application for Preliminary Certificate of Approval of the Works

Subdivision Inspection Report

Application for Preliminary Certificate of Approval of the Works

List:

Name of Owner:	Name of Development:	Plan #:	Phase #:	File #:	Date:

Lots Affected:

Streets: (Name in part if necessary)

Pre-Requisites to Final Inspection (Please confirm)

Item	Check-Yes	Inspector's Name	Remarks
1. All underground utilities systems satisfactorily in place and in good state of repair and free of debris. (Includes 2nd flushing of sanitary system).			
2. Storm water facilities including SWM ponds, major swales etc. landscaped and functional. (Includes fencing of SWM facilities if required and siltation)			
3. Public roads system in place with curbing and surface coarse asphalt (Includes temporary facilities). Traffic and street name signs and barricades in place as required.			
4. Streetlight system installed, tested and connected to the power supply.			
5. Sidewalks, and public walkways (including fencing) completed.			
6. Boulevard landscaping and tree planting completed.			
7. Miscellaneous specialty items complete: (Check as applicable) ☐ Noise Barrier ☐ Railway fencing and safety barriers ☐ Park Development (including fencing) ☐ Other (List)			

☐ I hereby certify that construction of all public works was inspected in accordance with City of Kingston specifications by an approved inspector under the direct supervision of a professional engineer and that sound and accepted engineering practices were followed throughout the construction.

☐ I hereby certify that effective on the date herein all public works in the above mentioned subdivision (or phase thereof) are deemed substantially complete. In accordance with the terms of the subdivision agreement in filling the technical requirements for assumption by the municipality.

Name and Address of Project Consulting Firm (Type)

Professional Seal

Signature of Owner's Engineer

City of Kingston –Engineering Services
Form 99-001- Rev. April 12, 2002

Standard Letter of Credit

BANK OR FINANCIAL INSTITUTION LETTERHEAD & ADDRESS

IRREVOCABLE COMMERCIAL LETTER OF CREDIT

TO: The Corporation of the City of Kingston
City Hall, 216 Ontario Street
Kingston, ON K7L 2Z3

We hereby authorize you to draw on the FINANCIAL INSTITUTION, ADDRESS, Ontario, POSTAL CODE, for account of DEVELOPER up to an aggregate amount of AMOUNT WRITTEN OUT IN FULL Dollars ($AMOUNT) available by drafts at sight for 100% of invoice value as follows:

Pursuant to the request of our customers, the said DEVELOPER.

We, the FINANCIAL INSTITUTION, hereby establish and give to you an irrevocable letter of credit in your favour in the total amount of $AMOUNT which may be drawn on by you at any time and from time to time upon written demand for payments made upon us by you which demand we shall honour without inquiring whether you have a right as between yourself and our said customers to make such demand and without recognizing any claim of our said customers.

Provided, however, that you are to deliver to the FINANCIAL INSTITUTION, ADDRESS, Ontario, POSTAL CODE, at such time as a written demand for payment is made upon us, a certificate signed by you agreeing and/or confirming that monies drawn pursuant to this letter of credit are to be and/or have been expended and relate to those municipal services and financial obligations set out in the AGREEMENT between the DEVELOPER and the MUNICIPALITY.

The amount of this letter of credit shall be reduced from time to time as advised by notice, in writing, given to us from time to time by you.

Partial drawings are permitted.

Drafts must be drawn and negotiated not later than the EXPIRY DATE.

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

The drafts drawn under this credit are to be endorsed hereon and shall state on their face that they are drawn under the FINANCIAL INSTITUTION.

Letter of Credit No. Dated:

_____ _____
Assistant Manager or Other Authorized Officer Manager or other Authorized Officer

Standard Certificate of Insurance

CERTIFICATE OF INSURANCE
The Corporation of the City of Kingston

This is to certify that the insured named below is insured as described below.

PROJECT/CONTRACT/LEASE/AGREEMENT/PERMIT/TENDER to which this certificate applies – **MUST BE SPECIFIED**

NOTE: ORIGINAL CERTIFICATES SIGNED BY YOUR INSURER OR INSURANCE BROKER ONLY WILL BE ACCEPTED

Name of Insured	Telephone Number ( )- -	
Street Name (of Insured)	City	Postal Code

Type of Insurance	Insurer's Name	Policy Number	Effective Date YR	MO	DAY	Expiry Date YR	MO	DAY	Limits of Liability
Commercial general liability									
☐ umbrella ☐ excess									
☐ other:									
Motor vehicle liability									

Motor Vehicle Liability – must cover all vehicles owned or operated by or on behalf of the insured.

Commercial General Liability – Occurrence Basis, Including Personal Injury, Property Damage Broad Form Property Damage, Contractual Liability, Non-Owned Automobile Liability, Owner's and Contractor's Protective Coverage, Products – Completed Operations, Contingent Employers Liability, Cross Liability Clause and Severability of Interest Clause.

Tenants Legal Liability ☐No **OR** ☐Yes... (limit) Liquor Liability ☐No **OR** ☐Yes

AMOUNT OF DEDUCTIBLE (property damage and/or bodily injury) $

THE CORPORATION OF THE CITY OF KINGSTON, Kingston-Frontenac Library Board, the Kingston Police Services Board, Kingston Hydro Corporation., 1425445 Ontario Ltd. (Utilities Kingston) and 1425447 Ontario Ltd. have been added as **ADDITIONAL INSUREDS (not as additional named insured)**, but only with respect to their interest in the operations of the Named Insured and in respect to commercial general liability and umbrella/excess.

This is to certify that the Policies of Insurance as described above have been issued by the undersigned to the Insured named above and are in force at this time. The insurance afforded by the policies described herein is subject to all the terms, exclusions and conditions of such policies.

If cancelled or changed in any manner that would affect the City of Kingston as outlined in coverage specified herein for any reason so as to affect this certificate, thirty (30) days prior written notice by registered mail or facsimile transmission will be given by the insurer(s) to:

The Corporation of the City of Kingston
Attn: Marjorie Robinson
216 Ontario Street
Kingston, ON K7L 2Z3 FAX: (613) 546-6156

Date YR.	MO.	DAY	Name of Insurance Company or Broker (completing form)	
Street Name (Insurer or Insurance Broker)			City	Postal Code
Name of Authorized Representative or Official **(please print)**			Telephone Number ( )- -	Fax Number ( )- -

Signature of Authorized Representative or Official

Standard Storm Sewer Design Sheet

STORM SEWER DESIGN SHEET

Location												*Sewer Data*						
Street	*From*	*To*	*No.*	*Indiv. Area*	*Cumul. Area*	*R*	*Indiv. 2.78 AR*	*Cumul. 2.78 AR*	*Time of Conc. (t)*	*I (mm/hr.)*	*Peak Design Flow Q (l/s)*	*Type of Pipe*	*Pipe Size (mm)*	*Slope (%)*	*Length (metres)*	*Capacity (l/s) n = .013*	*Vel. (m/s)*	*Time of Flow (min)*
					0.00		0.00	0.00	10.0	77.30	0.00					0.00	0.0	#DIV/0!
					0.00		0.00	0.00	#DIV/0!	#DIV/0!	#DIV/0!					0.00	0.0	#DIV/0!
					0.00		0.00	0.00	#DIV/0!	#DIV/0!	#DIV/0!					0.00	0.0	#DIV/0!
					0.00		0.00	0.00	#DIV/0!	#DIV/0!	#DIV/0!					0.00	0.0	#DIV/0!
					0.00		0.00	0.00	#DIV/0!	#DIV/0!	#DIV/0!					0.00	0.0	#DIV/0!
					0.00		0.00	0.00	#DIV/0!	#DIV/0!	#DIV/0!					0.00	0.0	#DIV/0!
					0.00		0.00	0.00	#DIV/0!	#DIV/0!	#DIV/0!					0.00	0.0	#DIV/0!
					0.00		0.00	0.00	#DIV/0!	#DIV/0!	#DIV/0!					0.00	0.0	#DIV/0!
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NOTES: Q = 2.78 AIR (l / s)

Where:
Q = peak flow in litres per second (l/s)
A = area in hectares (ha)
I = rainfall intensity in millimetres per hour (mm/hr)
R = run-off coefficient

Rainfall Intensity/Duration/Frequency Curve
2 Year return period

$$I = \frac{1778}{t + 13} \ (\text{mm / hr})$$

Where:
I = average intensity in mm/hr
t = time of concentration in minutes

CITY OF KINGSTON
Engineering Division

Engineering Section

Design:
Checked:
Date:

Project:
From:
To:
Sheet No.:

08/04/2004 *STD DESIGN SHEET STORM* *Page 1 of 1*

UTILITIES KINGSTON: TECHNICAL SCHEDULE 2

Appendix 2A - Design Standards - General Requirements
Appendix 2B - Design Standards - Water Distribution System
Appendix 2C - Design Standards - Sanitary Sewer System
Appendix 2D - Design Standards - Natural Gas Servicing
Appendix 2E - Design Standards - Electricity and Other Wires Servicing
Appendix 2F - Design Standards - Street Lighting System
Appendix 2G - Blank
Appendix 2H - Standard Drawings
Appendix 2I - Standard Forms

UTILITIES KINGSTON

Appendix 2A: *Design Standards – Utilities General Requirements*

1.0 General

1.1 These standards are written to provide guidelines for the design and construction of utility systems as part of typical "greenfield" urban development. They provide a basis for preparing the related aspects of development agreements. Deviations from these standards will be considered on a case-by-case basis for justifiable engineering reasons.

1.2 The public utilities systems within the City of Kingston are the responsibility of Utilities Kingston. In the area of the former City of Kingston, Utilities Kingston is also responsible for natural gas and electricity servicing while in the former Township of Kingston and Township of Pittsburgh these services are either by Union Gas, Hydro One or Granite Power.

1.3 Water, sanitary, storm main and streetlighting design is the responsibility of the owner's engineer. Design calculations in support of main sizing shall be submitted through the Engineering Department who will forward them to Utilities Kingston for review and approval. Standards for water and sewer main and streetlighting are shown in separate appendices. Over sizing of utilities to meet other needs will be provided by the City to the Owner's Engineer.

1.4 Electricity and natural gas servicing will be designed by Utilities Kingston in those areas where the City has distribution rights to provide these utilities. Specific standards for these utilities are shown in separate appendices. In these situations the owner's engineer shall contact Utilities Kingston to co-ordinate the design in advance of the initial plan submission.

2.0 Owner's Responsibilities

2.1 The property owner is responsible for maintenance of water and sewer servicing within the property line.

2.2 In those areas where the City has distribution rights for natural gas, Utilities Kingston is responsible for maintenance of gas services to the meter outlet.

2.3 In those areas where the City of Kingston has distribution rights for electricity, Utilities Kingston is responsible for maintenance of typical underground residential services. Maintenance responsibilities for other electrical service situations vary.

2.4 It is the development owner's responsibility to co-ordinate with privately owned utilities and to ensure that their servicing is in compliance with the alignment and property

guidelines and standards set forth in this document. Maintenance of services connected to private utilities shall be in accordance with the private utility agreements.

3.0 Operation of the Underground Works

3.1 Once the "Preliminary Certificate of Approval of Underground Services" is issued, Utilities Kingston will administer operation of the underground works. In advance of the issuance of this certificate, all underground infrastructures must be installed to a standard where it can be safely used for its intended purposes. It is not necessary for all associated surface appurtenances to be set and completed to the final requirements for substantial completion to be considered. Examples of this being the installation of hydrant shock collars, final grade of valve box tops, etc.

3.2 Water and sewer services shall not be connected at the property line until such time that the "Preliminary Certificate of Approval of Underground Services" has been issued.

4.0 Engineering Responsibilities

4.1 Inspection personnel under the owner's engineer's supervision shall be "on-site" at all times when underground infrastructure is being installed.

4.2 Public utilities on typical urban residential streets will normally be aligned in accordance with the applicable standard road cross section. Where the alignment is forced to deviate from those standard locations it shall maintain the horizontal separation as detailed below. All dimensions below represent the minimum permitted distance between structures and are measured near edge to near edge of each structure.

a. Gas outside the joint utility trench shall be 0.5m from the property line, 0.5m from sidewalks, and other utility mains and services shall be separated from gas mains as set out below.
b. Joint Utility Trench 2.5m from water or sewer mains.
c. Water Mains – 2.5m from sewer mains, 2.0m from gas mains or any wire conduit, 1.5m from curb edge, 1.0m from sidewalks and 2.5 meters from the centre of any parallel drainage ditch.
d. Sanitary and Storm Sewers – straddle road allowance centreline and be separated 1.0m and 2.0m respectively from gas mains.
e. Catch Basins – 1.0m from any main, conduit, or service and if necessary insulated to provide the equivalent of 2.0m of earth cover frost protection to water mains and services.
f. Light Standards and Transformers – 1.5m from inside of barrier curb edge or 2.0 m from inside of mountable curb edge and 0.50m from sidewalks.
g. Curb Stops – at property line or at the edge furthest from the road allowance where a utility easement abuts and runs parallel to the road allowance.
h. Fire Hydrants – 1.0m from gas lines and joint utility trenches, 0.5m from sidewalks, 2.5m from curb edge and 0.9 meters from the limit of the public right of way. The fire hydrant obstruction free zone is as set out in Appendix 2B.

4.3 Separation between water and sewer mains shall conform to MOE Guidelines. Where due to construction in rock or Type 4 Soils it is proposed to use methods other than horizontal separation to protect the water main, all design of such works must be approved by the City of Kingston prior to submitting an application for a C of A.

4.4 Water and sewer services and foundation drains may be laid in the same trench subject to the provisions of the Ontario Building Code – as amended. In such cases the horizontal separation between each service shall be 0.5m. All other utility services shall be separated 2.5m from water and sewer services measured from edge of structure. Sanitary and foundation/storm service drains shall be capped and clearly marked at the property line with a wooden 2X4 projecting a minimum of 1.0 meters above ground.

4.5 All buried water and sewer mains and services shall have an appropriate warning tape laid on top of the cover material or no closer than 300mm of the top edge of the structure. Utilities Kingston shall approve such tape.

4.6 All water mains and sanitary and storm sewer mains shall be designed and installed in accordance with accepted good engineering practices and with MOE guidelines for water distribution and sanitary sewage collection. They shall be constructed in accordance with applicable Ontario Provincial Standard Specifications (OPSS) and Ontario Provincial Standard Drawings (OPSD).

4.7 Clearance between pipe or conduit crossings shall normally be a minimum of 300mm between the outside pipe barrels. Where a clearance of 300mm or less cannot be avoided, there shall be concrete encasement or non-shrink backfill of the crossing extending one metre in each direction on each pipe.

5.0 Works Ownership

5.1 All mains and services for which Utilities Kingston has distribution rights or maintenance responsibilities become the sole property of the City upon the issuance of the "Final Certificate of Approval of the Works".

5.2 Connections to any main installed to services outside the development shall only be permitted if directed or approved by the City.

6.0 Easements

6.1 Utility infrastructure that is to be assumed by the City of Kingston and services more than one property shall be situated in either a road allowance or on property deeded to the City of Kingston by easement or ownership. Easement documents shall be in the standard format prescribed by the City of Kingston.

6.2 Easements shall be five (5) meters wide for a single utility main or line. Where more than one utility main or line is in a single easement, the easement shall extend to 3m beyond the outside edge of the outside mains or lines. Easements of less width will be

considered for situations such as shallow rear yard catch basin connections, in which case the easement width shall not be less than 3.0 meters. All measurements are to be construed as being the perpendicular width. Regardless the separations as stated in the Public Utilities Act will not be compromised and sufficient width will be provided to allow for exposure of buried services using side slopes required by regulation and without the need for shoring.

7.0 Closed Circuit Television Examination of Sewers

7.1 The video examination shall extend throughout the entire length of sanitary and storm sewer systems as identified and shall include the submission of a report both in video and written form.

7.2 Prior to any video examination the systems shall be flushed and cleared of all heavy silts, clays, sludge, and other foreign material.

7.3 The examination shall be carried out prior to the application of the final lift of asphalt however not within 10 months from completion of the base asphalt. A schedule as to the timing of the examination shall be provided to the City one week in advance of the inspection-taking place.

7.4 The examination shall be carried out in the presence of the City's designated representative who shall assist in the co-ordination of the work.

7.5 Sewers shall be tested and approved as follows.

Sewers shall have a closed circuit television (CCTV) inspection according to O.P.S.S. 409 (April 1999) with the following modifications.

409.07.01 Paragraph 3 shall be removed and replaced by “A fixed camera shall be used for pipelines less than 175 mm in diameter. For pipelines equal to or greater than 175 mm a camera panning and swivel head shall be used.”

409.07.01 Paragraph 10 shall be removed and replaced by “Once the survey of the pipe run is underway an automatic update of the camera’s metre reading position in the pipeline from zero, in metres and tenths of a metre, shall be continually displayed in the middle of the bottom portion of the screen and the start maintenance hole ID number will be in the top left corner of the screen and the end maintenance hole ID number will be in the top right corner of the screen.

409.07.05 Paragraph 1 including ‘a)’,’b)’ and ‘c)’ shall be removed and replaced by “Reports shall be submitted to the City’s designated reprehensive in the following formats, with in 10 working days of the completion of the field work, with the noted number of copies.

a) 2 copies of the printed report complete with sewer location map.

b) 2 – 3.5 inch computer disks each containing the identical survey report information with the sewer.dat file in the Examiner Standard or Examiner Native format.
c) 2 copies of the VHS video recording.
d) 2 copy of the video survey on CD or DVD with each sewer run identified and in its own mpeg format.

Each lateral connection shall be inspected at the point of entry to the main using the swivel head. If the inspection indicates a build-up of material, or the presence of construction debris, the sewer section will be flushed, the debris captured and removed and the CCTV inspection repeated at the Owner expense.
e) All flexible pipe mains shall be proved with a mandrel as set forth in O.P.S.S.

All measurements are to be in metric units.

7.6 The owner's engineer shall speak to any defects with respect to the sewer installations and recommend the method of remedial work where warranted.

UTILITIES KINGSTON

Appendix 2B: *Design Standards – Water Distribution System*

Materials

1.1 Mains

Watermains shall conform to the following:

(a) Ductile Iron Pipe and Fittings

(i) Ductile Iron Pipe shall be centrifugally cast, AWWA C151/A21.51- 81 in 5.5 m lengths, Pressure Class 350 for pipe up to 300mm, Pressure Class 250 from 400mm to 500mm and Pressure Class 200 for larger pipes.

(ii) All ductile iron pipes shall be cement lined and shall be polyethylene encased as per AWWA Standard C-105.

(iii) All ductile iron fittings shall be cement lined with mechanical joints.

(iv) Every ductile iron pipe and special casting shall be coated outside with coal tar pitch varnish using a hot dip method.

(v) Wedges shall be installed at ductile iron pipe joints to ensure electrical continuity.

(b) Plastic Pipe and Fittings

(i) Plastic pipe shall conform to either;
  (a) AWWA C900-Poly (Vinyl Chloride) (PVC) Specification, SDR 18, Pressure Class (PC) of 235 or
  (b) AWWA C909-Molecularly Oriented Polyvinyl Chloride (PVCO) Specification, Pressure Class (PC) of 235

(ii) The pipe shall be homogeneous throughout, free from voids, cracks, inclusions, discolouration, and other defects.

(iii) All pipe and fittings shall be certified by CSA to meet CSA B137.3

(iv) Fittings shall be:
  (a) Ductile iron according to AWWA C153/A21.53 or
  (b) Injection moulded PVC plastic according to CSA B137.2 or
  (c) Prefabricated PVC plastic for pipe diameters 300mm and larger according to CSA B137.3

(v) The colour for all PVC pipe and PVC fittings shall be blue

(b) Concrete Pressure Pipe and Fittings

(i) Concrete Pressure Pipe shall only be allowed if so stated on the approved subdivision drawings.

(ii) Concrete pressure pipe shall be laid according to the specifications outlined in the A.W.W.A. M9 Concrete Pipe Installation Manual. The internal joint gap shall be checked to ensure the proper seating of the gasket. The interior joint gap shall then be pointed with cement mortar using a hand trowel. The joint exterior shall be protected with a diaper filled with grout installed to the manufacturer's instructions.

(c) Mechanical joints required for valves 400mm and over, shall be a mechanical joint conforming to AWWA C111/A21.11-85.

a. The interior of all pipe, fittings and other accessories shall be kept clean and free from foreign material at all times.

(a) All watermain material shall comply with OPSS 441.07.07. Cut pipes of length 1.5m or less, fittings and valves do not require end caps, but shall be field cleaned prior to installation. Pipes delivered on-site with damaged or missing caps shall be field cleaned by swabbing with a 1% chlorine solution to remove all undesirable material along the entire length of the interior of the pipe prior to installation.

2.0 Valves

2.1 **Valves shall be as follows:**

a) Three valves shall be placed on a tee intersection and four valves on a cross intersection. On straight runs isolation valve spacing shall be not more than 150m or such that 40 family dwellings units or equivalent can be isolated.
b) Valve boxes shall be adjusted to finish grade.
c) Main valves are to be located in line with the intersecting street lines, at all intersections.

2.2 **Valve Material:**

a) Valve boxes shall be of cast iron as manufactured by Bibby Ste Croix or Star Pipe Products, 112mm and shall be of sliding type, complete with grommeted hole for tracer wire, which cannot carry any surface load down to the pipe. The covers shall be of a design which prevents unauthorized entry and marked "Water", length to be 140mm to 240mm as manufactured by Bibby Ste Croix and Star Pipe Products. Special attention shall be paid to compaction adjacent to valve boxes.
b) Gate Valves for pipe shall be Clow or equal, cast iron body, resilient seated mechanical joint pattern conforming to ANSI/AWWA C509, designed for a working pressure of not less than 150 PSI. Valves shall open when turned in a clockwise direction, shall be fitted with a compound operating nut conforming to drawing Figure 2W1. All valves shall be manufacturer approved for direct bury applications.

2.3 The operation of all valves, curb stops and hydrants shall be restricted to employees of Utilities Kingston.

3.0 Fire Hydrants

Hydrants shall be installed as per OPSD and shall also conform to the following.

a) Hydrants shall be located such that the maximum road travel distance from hydrant to the center frontage of a lot shall not exceed 75m. Any deviation beyond the maximum allowable spacing shall require the approval of the City's Fire Chief.

b) Fire hydrants shall be AWWA C502-85 with mechanical joint. Hydrants shall be Clow M-67 Brigadier or Canada Valve Century.

(a)	Size	150-mm iron pipe connection
(b)	Depth of Trench	2.0 metres
(c)	Type of Boot	Mechanical Joint
(d)	Number of Connections	2 - 63mm hose connections and one 100mm I.D. Stortz steamer connection.
(e)	Direction of Opening	Clockwise
(f)	Port Threads	Connections to conform to ULC S513
(g)	Colour	Chrome Yellow

c) All hydrants shall have a breakaway flange, and a C.I. stem guide coupling at the ground line of the hydrant. Drain plugs shall be removed.

d) A 150mm valve and valve box shall be installed on each hydrant run.

e) Hydrants shall have a 1m x 1m x 150mm shock collar cast in Portland Cement Concrete (PCC), the top of which shall be 150mm below the flange.

f) Hydrants shall be set where and as directed by the Engineer. The base of each hydrant shall be packed around with at least one cubic yard of washed coarse gravel or crushed stone. A barrier approved by the Engineer shall separate the stone from other cover or backfill. Hydrants shall be installed absolutely vertical and kept vertical during backfilling operations. The hydrants shall be installed with the ground line of the hydrant at the level of the curb or the finished grade elevation on the road shoulders whichever is the highest.

g) All hydrants shall be placed in an obstruction free zone such that neither their view nor their accessibility is obstructed. In particular, no object shall be permitted within a triangle bounded by a point commencing 1.0 meter behind the hydrant, and extending at a 45º angle to the curb or roads edge. In addition, no object wider in any direction than 250mm is permitted within an area bounded by a triangle within an apex 1m behind the hydrant and sides intersecting the road edge or curb at a 10º angle. The Fire Chief shall have the final authority on the location of structures or other items which might interfere with the view or the accessibility of hydrants.

h) All hydrants shall be self-draining. Washed gravel of suitable size and quantity shall be placed around the drain holes to ensure drainage. Such material shall be topped with suitable geotextile to ensure fines do not migrate into the drainage rock.

i) Hydrants set in ditches or swales shall conform to OSPD 217.05.

j) Fire hydrants which are not in service shall be covered completely with a black plastic bag with minimum material thickness 6 mils (heavy duty trash bag), well secured by adhesive tape or other appropriate means. This covering will remain in place until the hydrant has been commissioned by Utilities Kingston staff.

k) Prior to the issuance of the Preliminary Certificate of Approval of the Underground Services each hydrant shall be flow rated by Utilities Kingston personnel in accordance with Installation,

Field Testing, and Maintenance of Fire Hydrants AWWA M17. Upon meeting the applicable standard, the flow ratings, will be forwarded to the owner's engineer prior to issuance of the Preliminary Certificate of Approval of the Underground Services. The owner's application for the Certificate shall have appended to it the hydrant ratings as provided by Utilities Kingston.

l) Utilities Kingston shall paint all hydrants Chrome Yellow, and the bonnet and nozzle caps painted as follows:

BLUE-Class AA	Flows greater than 95 L/s (1500 USGPM)
GREEN -Class A	Flows of 63 to 95 L/s (1000 to 1500 USGPM)
ORANGE– Class B	Flows of 31 to 63 L/s (500 to 1000 USGPM)
RED – Class C	Flows less than 31 L/s (500 USGPM)

4.0 Service Connections

4.1 **Service connections shall be as follows**:

a) Services shall be sized in accordance with the Ontario Building Code as amended. The minimum service shall be 25mm.
b) Service connections shall have a corporation main stop and be "goose-necked" near the water main as per the appropriate OPSD. Main stops may be set at the spring line and the gooseneck may be horizontal.
c) A ball valve type curb stop without a drain and associated valve box to finished grade shall be provided on the service connection to each premises and be located at the property line. All such service connections shall be in accordance with relevant OPSD. A stainless steel extension rod shall be used.
d) Separate services shall be provided to each building and each unit of a semi-detached or row house residential building.
e) There shall be no joints between the main stop and the curb stop and no joints between the curb stop and the building interior.
f) Service connections to PVC mains shall be by stainless steel saddle or approved equal, either of which shall be approved by Utilities Kingston.

4.2 **Service Connections Materials**:

(a) Service Pipe shall be;
  (i) Soft copper tube – Type K, meeting NSF 61
  (ii) Cross Linked High Density Polyethylene (PEX) complete with stainless steel inserts meeting NSF 14 & 61, AWWA C904, and CSA B137.5. Sizing must conform to standard copper tube size (CTS) O.D. and be compatible with standard copper tube compression fittings, with a minimum working pressure rating of 1100 kPa (160 psi) at 23^{o}C.

(b) Service connections shall utilize AWWA thread and shall be;
  (i) On PVC main either with;
    a) A manufactured molded fitting conforming to AWWA C907 and CSA B137.2, tapped coupling or

b) A single band, double stud, type 304 stainless steel service saddle complete with stainless steel nuts and neoprene gasket.

(ii) On Ductile Iron main with;

a) A Ductile Iron body, plated steel straps and nuts, services saddle complete with neoprene gasket, a single strap for services 25mm, a double strap for 38 and 50mm services.

b) A single band, double stud, type 304 stainless steel service saddle complete with stainless steel nuts and neoprene gasket.

Acceptable saddle manufacturers are Mueller Canada, Ford Meter, Smith/Blair or Robar.

(c) All brass fittings shall be manufactured from **Low Lead Alloy** C89520 or C89833.

(i) Corporation main stops shall be copper compression joint type with AWWA thread as manufactured by Mueller Canada, Ford Meter, Cambridge Brass.

(ii) Couplings and adapters shall be compression fittings or compression X Male or Female iron pipe as manufactured by Mueller, Ford Meter, Cambridge Brass.

(iii) Curb valves (stops) shall be copper compression joints type with AWWA thread and shall be stop only (<u>not</u> stop and drain) as manufactured by Mueller Canada, Ford Meter, Cambridge Brass. For 38mm and 50mm services the curb valve shall be a Mueller Mark II Oriseal or approved equal.

(d) Water service boxes shall be;

(i) For < 38mm diameter service - Mueller Cat. No. A-726 or equal complete with cast iron lid (including centre brass nut), 900mm stainless steel rod and stainless steel cotter pins.

(ii) For 38mm & 50mm diameter services– Mueller Cat. No. A-753 or equal complete with cast iron lid (including centre brass nut), 1200mm stainless steel rod and stainless steel cotter pins.

5.0 Tracer Wire and Marking of Mains and Services

5.1 All non-metallic water mains and services shall have a #12 solid tracer wire. Tracer wire shall be laid flat and affixed to the main at intervals not to exceed three (3) metres.

5.2 The main line tracer wire shall not be cut at connections to services or other points, and must be kept as continuous as possible. Connections to the main line shall be made by baring the insulation without severing the conductor. Any buried splices or connections on tracer wire shall be limited to the minimum possible. If buried splices or connections are required then they shall utilize a manufactured waterproof splicing device specifically designed for direct bury, and sized appropriately for the number of conductors. Approved splicing devices shall be;

a) 3M Splice Kit DBR or DBY, or

b) DryConn Waterproof Direct Bury Lug by King Innovation, or
c) Other approved equal.

5.3 The tracer wire shall be looped up the outside of each main line valve box as per Figure 2W2. The loop shall be extended 150mm inside the valve box through a smooth edged hole complete with grommet in the valve box approximately 50mm below the bottom of the bell.

5.4 The tracer wire loop shall extend up the barrel of a fire hydrant terminating in a Locate Station (see section 6.0 Locate Stations) immediately above the flange as per Figure 2W3.

5.5 Tracer wire shall be installed at services as specified in Figure 2W4.

5.6 All mains and services shall be marked with a 50mm wide detectable metallic tape blue in colour with the wording "Buried Water Line Below". The tape shall be SETON PRODUCT #48302 or equivalent. The tape shall be laid 300 to 450mm above the main or service.

6.0 Locate Stations

6.1 All tracer wire terminated above grade shall do so with a locate station.

6.2 Locate stations shall be "Finklet" two terminal, blue in colour as manufactured by Cott manufacturing Model # 775-B2AC or equivalent. Each station shall include 1.5m of 18mm PE conduit, also blue in colour), open on the bottom and connected at the top to the "Finklet".

6.3 For continuous PEX PE water services that require a "Finklet" Test Station, the tracer wire shall extend up through the PE conduit, barred and terminated onto one of the terminal posts on the back of the face plate. A 5.5 kg zinc anode shall be connected to the second terminal post. A removable, solid nickel plated copper bonding strap, complete with two slotted holes, one open ended, shall be attached across the two connection points on the front of the Locate Station face plate complete with stainless steel nuts to secure it in place.

6.4 For fire hydrants, the tracer wire shall be looped up the conduit and each end of the looped wire terminated onto the terminal posts on the back of the face plate. A removable, solid nickel plated copper bonding strap, complete with two slotted holes, one open ended, shall be attached across the two connection points on the front of the Locate Station face plate complete with stainless steel nuts to secure it in place.

6.5 A locate station adjacent to a building foundation shall be held securely in place during backfill to insure that it remains plumb, with the bottom of the end fitting approximately 200mm above final grade, the back of the box square and tight to the wall and the cover plate easily accessible and facing front.

6.6 A locate station connected to a hydrant barrel shall be secured such that the bottom of the "Finklet" fitting is located approximately 25mm above the flange with cover plate easily accessible and facing front.

7.0 Cathodic Protection

7.1 Tracer wire on mains shall be protected with a 2.3 kg zinc anode, at each end a maximum spacing of which shall be 500 m.

7.2 Anodes shall be cad welded to valves, metallic fittings and hydrants and shall be 10.9 kg zinc casting alloy conforming to ASTM B-418 or 14.5 kg magnesium extrusion conforming to ASTM B-843-93.

7.3 One (1), five and a half (5.5) kilogram Zinc anode shall be installed with each service Anodes shall be installed with each service as specified in Figure 2W4.

8.0 Pipe and Joint Restraint

a) General

(h) Pipe and joint restraint shall comply with OPSD 1103.01 or as set out herein.

(i) Mechanical joint restraint may be used subject to the prior approval of the Engineer.

(j) The number of joints requiring mechanical thrust restraint shall be set by the Engineer.

b) Eye Bolts and Rods

(k) Eye bolts shall be ANSI/ASME B1.1 19mm (¾ inch). Rods shall be ANSI/ASME B1.1 19mm (¾ inch) Grade 316 stainless steel. The number of rods required will be as set out below:

Number of 19mm Rods for Eye Bolt Restraint

Pipe Size	**Fitting**			
	Dead End, Tee, & Dead End Valve	**90° Elbow**	**45° Elbow**	**22.5° Elbow**
150mm	2	2	2	2
200mm	2	2	2	2
250mm	3	3	2	2
300mm	4	4	2	2
400mm	Not Permitted	Not Permitted	3	2

c) Ductile Iron Pipe Restraint

(l) Mechanical restraint for standardized mechanical joints shall be incorporated in the design of the follower gland and shall impart wedging action against the pipe, increasing its resistance as the pressure increases. The assembled joint shall maintain its flexibility after burial and shall maintain its integrity by controlled and limited expansion of each joint during the wedging action. Restraining glands shall be manufactured of ductile-iron conforming to the requirements of ASTM A 536, Grade 65-45-12. Wedging mechanisms shall be manufactured of Ductile-iron to hardness of 370 BHN minimum. Dimensions of the gland shall be such that it can be used with the standardized mechanical joint bell and tee head bolts conforming to the requirements of ANSI/AWWA C111/A21.11 and ANSI/AWWA C153/A21.53 of latest version. Twist off nuts shall be incorporated in the design of the wedge activation screws to insure proper torque during installation.

(m) The mechanical joint restraining device shall have a working pressure of 1750 kPa with a safety factor of 2.1 against separation when tested in the dead-end situation.

(n) The Mechanical joint restraining device shall be Uni-Flange series 1400 or approved equal.

d) PVC Pipe Restraint

(o) Mechanical joint restraint devices for PVC Pipe shall incorporate a series of machined serrations (cast serrations are not permitted) on the inside diameter to provide restraint, exact fit, and 360 degree contact and support of pipe wall. Restraint devices shall be manufactured of high strength ductile iron, ASTM A 536, Grade 65-45-12. Bolts and connecting hardware shall be of high strength low alloy material in accordance with ANSI/AWWA C111/A21.11.

(p) All joint restraint devices for PVC shall carry a water working pressure rating equivalent to the full rated pressure of the PVC pipe on which they will be installed, with a minimum factor of safety of 2:1 in any nominal pipe size. In addition, they shall meet or exceed the requirements of Uni–B–13-94 or ASTM F1674.

(q) Restraint Devices shall be;

(i) External Type - Uni-Flange Series 1500, 1300, 1350, 1360, 1390 or approved equal as appropriate to the application.

(ii) Pipe with Internal or Self-Restrained Joint (restraint located within the pipe bell) – approved to CSA B137 as detailed in CSA B137.3-05 Clause 7.5. Joints so restrained must have a clear and permanent visual indication on the outside of the Bell indicating that the joint is restrained.

9.0 Flushing/Swabbing and Disinfection of Watermains

(r) All Watermains shall be wet swabbed as follows;

(i) A minimum of 3 (Three) new foam swabs with a density of approximately 25 kg/m^3 and a minimum diameter of 50mm larger than the watermain shall be used.
(ii) Swabs shall have a minimum length of 1.5 times the diameter
(iii) Swabs shall be propelled through the watermain using potable water, and shall be spaced a minimum of 1.5m meter between swabs.
(iv) During the swabbing procedure the contractor is to install spool pieces in place of all butterfly valves. These shall be supplied, installed and removed by the contractor.
(v) Gate valves must be left in the open position
(vi) Swabbing shall continue until the discharge water runs clear within 10 seconds of the last swab exiting the discharge point.
(vii) All fitting, taps, valves etc. required for the introduction, propelling and recovery of the swabs, as well as the swabs are to be supplied by the contractor. The removal of all of the above at the completion of the swabbing works is the responsibility of the contractor.
(viii) Temporary swab launching as well as retrieval facilities shall be constructed in accordance with Figures 2W8 & 2W9.

(s) All water discharged by the flushing/swabbing operations shall be at an approved outlet location. The contractor shall be responsible for collecting and/or disposing of all such water, ensuring that all erosion and sediment control and de-chlorination requirements of the MOE, CRCA and various other authorities having jurisdiction are met.

(t) After flushing/swabbing is completed, water from the existing distribution system shall be allowed to flow at a controlled rate into the new pipeline. Liquid chlorine solution shall be introduced so that the chlorine is distributed throughout the section being disinfected. The chlorine shall be applied so that the chlorine concentration is 50 mg/L minimum and 200 mg/L maximum throughout the section. The system shall be left charged with the chlorine solution for 24 hours.

(u) Sampling and testing for chlorine residual will be carried out by the Engineer's Inspector. The chlorine residual will be tested in the section after 24 hours. If tests indicate a chlorine residual of 25 mg/L minimum, the section shall be flushed completely and recharged with water normal to the operation of the system. If the test does not meet the requirements, the chlorination procedure shall be repeated until satisfactory results are obtained.

e) Immediately after the system has been recharged and then additionally twenty-four (24) hours following, samples shall be taken for micro bacteriological testing. Two consecutive acceptable samples taken a minimum of twenty four (24) hours apart must be obtained. The system shall not be put into operation until clearance has been given by Utilities Kingston.

(f) A Professional Engineer shall certify that testing and the disinfecting of mains was undertaken as per OPSS. All newly constructed watermains shall be isolated

from the existing distribution system by physical separation or through the use of an appropriate backflow prevention device approved by Utilities Kingston. This isolation shall remain in place until approval of the Utilities Engineer is granted for permanent interconnection.

10.0 Design Considerations

10.1 Design flows shall be as follows:

a) Average day per capita – 350L per person / day.
b) Maximum day 2.75 times the average day.
c) Peak Hour Rate factor shall be 4.25 unless approved otherwise by Utilities Kingston.
d) Sizing shall be based on needed fire flow plus maximum day flow or peak hour flow alone, whichever is largest.

10.2 Design fire flows shall be in accordance with Water Supply for Public Fire Protection, A Guide to Recommended Practices 1977, by Insurance Bureau of Canada.

10.3 The maximum and minimum pressure under normal operating conditions shall be 700 kPa and 280 kPa respectively. The minimum system pressure under fire flow conditions shall not be less than 140 kPa.

10.4 The following Hazen-Williams "C" value shall be used for design:

Diameter (mm)	C
50-300	120
Over 300	130

10.5 The minimum pipe size for water mains shall be 200mm with exception that dead-end mains on cul-de-sacs of 20 or less dwelling units may be 150mm.

10.6 All mains shall be looped except those servicing cul-de-sacs with not more than 40 dwelling units.

10.7 A suitable means for flushing such as a hydrant or a blow off shall be provided on mains larger than 50mm. Such flushing devices shall not be connected to any sewer. **Devices other than hydrants shall be approved on a case-by-case basis**.

10.8 A Kupferle 88 Sampling station with pedestal (or approved equal) shall be placed at the phase limits of each new subdivision or as specified by Utilities Kingston. Each sampling station shall fitted with one ¾ " NPT x 1" copper compression, brass fitting (or 45° bend as required).

10.9 Water mains shall be evenly graded and hydrants or air release valves shall be placed at high points.

10.10 The minimum depth of cover measured from the top of a main or a service connection gooseneck shall not be less than 1.7m.

10.11 Pipe bedding and cover shall conform to those requirements as set forth in OPSD 802 series for storm sewer mains. Bedding and cover shall be Granular "A".

10.12 Water mains and water services shall not be used as an electrical ground in new buildings

UTILITIES KINGSTON

Appendix 2C: *Design Standards – Sanitary Sewer System*

1.0 Mains

1.1 Pipe bedding shall be as set forth in OPSD 820 series. Bedding and cover shall conform to Granular "A" as set forth in OPSS.

1.2 All pipe and fittings supplied shall carry CSA certification to the appropriate CSA standard sewer grade. The following pipe shall be used for sewers:

a) Reinforced concrete pipe per OPSS 1820 according to CSA A257.2 Class 65-D with rubber gaskets or;
b) Type PSM polyvinyl chloride (PVC) pipe with elastomeric gasket per OPSS 1841 and CSA B182.2 M1990. Profile type pipe such as those meeting CSA 182.4 and CSA 182.6 shall not be used for sanitary sewer applications.
c) Sanitary Mains to be DR 35 pipe
d) Sanitary Laterals to be DR 28 pipe

1.3 **Design Considerations**

1.3.1 Sewer Mains

Sewer mains shall conform to the following:

a) No decrease in pipe size downstream shall be allowed unless otherwise approved by Utilities Kingston.
a) The minimum sanitary main size shall be 200mm.
b) The maximum design velocity at peak design flow in the sanitary sewers shall be 3.0 m/s. The minimum design velocity at peak design flow shall normally be 0.6 m/s at design flow. Consideration will be given on a case-by-case basis for design flow velocity less than 0.6 m/s but in no case shall slopes be less than shown below and in no case shall pipe size be increased so as to reduce the minimum slope.
c) Minimum Slopes:

Size/ Condition	Minimum Slope
Top reach (MH to MH)	1.0%
Top 25 dwelling units	1.0%
200mm	0.4%
250mm	0.3%
	MOE Guidelines

e) The minimum cover for sanitary mains shall be 1.5 meters from the finished grade.
f) The crown of the main at the point where the service is connected shall be a minimum of 1.0 m below the lowest floor grade of the buildings being serviced except where connection is by a pumped sewage connection with back flow prevention installed to protect the building being connected.

g) The Manning's roughness coefficient for design purposes shall be 0.013 unless otherwise specified.
h) Design flows shall be 350 L/d per person. Population design density based on gross population per ha will be provided by Planning Division. Contributing industrial, commercial and institutional design flows shall be considered on a case-by-case basis. Infiltration shall be 0.00014m^3 per second per hectare of contributing area.
i) Peaking factors shall be 2.75 for maximum flow and 4.0 for minimum flow as derived from the Harmon formulae.
j) Sewers shall be air tested with services extended to the lot line based upon OPSS 410, modified so that the pressure drop does not exceed 3.5 kPa over a time in minutes equal to the volume in cubic meters multiplied by 1.25.
k) Sewers shall be tested for deflection as per OPSS 410.
l) Design sheets shall be submitted in spreadsheet format (Excel or equivalent) in accordance with the attached City standard, in both hard copy and digital format containing formulae used in arriving at the calculations. See standard format contained herein. Drainage Plan is also to contain pipe design data.
m) Sewers shall be flushed immediately prior to the closed circuit TV inspection and again just prior to the issuance of the Preliminary Certificate of Approval of the Works. See Engineering Department Section 6.9.

1.3.2 Maintenance Holes

All sanitary maintenance holes (MH) shall be as follows:
a) All MH shall conform to OPSD 700 standards.
b) MH spacing shall be at a distance not greater than 90 meters unless increased spacing is determined appropriate by Utilities Kingston.
c) Where pipes of different sizes are connected to a MH, the crown of the inlet pipe(s) shall not be lower than the crown of the outlet. The difference in invert elevations between inlets and outlets shall be as indicated in MOE Guidelines.
d) MH shall be tested for leakage in accordance with OPSS sect 407.
e) Sampling maintenance holes shall be installed in accordance with the City of Kingston Sewer Use Bylaw

1.3.3 Sanitary Service Laterals

All public sanitary service laterals shall be as follows:
a) Separate services shall be provided to each building and each unit of a semi detached or row house residential building.
b) Service laterals from the building line to the main shall be laid at a minimum of 2% from the building line to the main sewer.
c) The first 40 service laterals connected to a 200mm main shall be set above the spring line of the sewer main with proper "Y" fittings and with long radius bends. Service laterals connected to larger mains may be by tee connection with the side of the tee rotated at between 22 ½ degrees and 45 degrees above horizontal.
d) Service laterals shall not be connected directly to maintenance holes unless authorized by Utilities Kingston.
e) Service laterals from adjacent properties shall not be connected to each other.

f) Service laterals shall be sized to meet the Ontario Building Code as amended and shall be minimum of 125mm. The colour shall be green.
g) The minimum cover for service laterals will normally be a minimum of 1.5m from the finished grade. Services with less than 1.5m cover may be permitted on a case-by-case basis. In such cases frost protection must be equivalent to 1.5m of cover. Services with less than 1.0m of cover are not permitted.
h) Service laterals shall not be connected to a storm main.
i) Unconnected sanitary and other drain services shall be brought to the property line, properly capped and clearly marked such that an installer will not cross connect services. Caps must withstand air testing of sewers including services to the lot line. Capped services shall be appropriately marked with a "2X4" extending from the pipe invert to at least 1.0 meter above finished grade level.

UTILITIES KINGSTON

Appendix 2D: *Design Standards – Natural Gas Servicing*

1.0 The purveyor of natural gas within the former boundaries of the City of Kingston is Utilities Kingston. In other areas the purveyor is Union Gas.

2.0 All design and installation in the area in which Utilities Kingston has distribution rights shall be the responsibility of Utilities Kingston and all associated construction costs to the property line shall be borne by the owner.

3.0 For those areas where the City does not have distribution rights, gas mains and servicing will conform to these guidelines and standards for alignment and for property requirements. Regardless, in no case shall a gas service or main be placed within 2.0m of other parallel-aligned water and sewer mains or services in accordance with the Public Utilities Act, unless prior approval is received for the owner of each utility.

UTILITIES KINGSTON

Appendix 2E: *Design Standards – Electricity & Other Wire Servicing*

1.0 The purveyor of electricity within the former boundaries of the City of Kingston and parts of Barriefield Village is Utilities Kingston. In other areas the purveyor is Hydro One or Granite Power.

2.0 In those areas where Utilities Kingston is the purveyor of electricity, the following shall apply:

a) The design shall be approved by Utilities Kingston.
b) The owner shall be responsible for all costs.
c) The owner shall install conduits, transformer pads and necessary grounding.
d) All electrical wiring, including primary, secondary, streetlight and traffic signal wiring, shall be pulled in ducts supplied and installed by the owner, with the exception of the following which may be direct buried to minimize congestion:
   - Secondary service wiring installed in the public right of way in the top of a joint utility trench.

Refer to the latest revision of Utilities Kingston "Specification for Installation of Underground Electrical Plant for Subdivisions" for further details.

3.0 For those areas where Utilities Kingston does not have distribution rights, the electrical distribution and servicing requirements shall conform to the standards of the purveyor.

4.0 Regardless of ownership, all wire services under roads shall be placed in conduit extending on either side of the road to the edge of the joint utility trench. If no joint utility trench exists, the duct shall extend to a point 1.5 meters behind the back of curb in the case of urban roads and 0.5 meters behind the shoulder in the case of semi-urban roads.

5.0 Utilities Kingston may install a fibre optics conduit at no expense to the owner in the joint utility trench. (See Appendix 2H – Figure 2E1)

UTILITIES KINGSTON

Appendix 2F: *Design Standards – Streetlighting Guidelines*

1.0 Street Lighting Design and Installation Requirements

1.1. Glossary

ANSI/IESNA RP-8-00 - Illuminating Engineering Society of North America's American National Standard Practice for Roadway Lighting, issued June 27, 2000 and reaffirmed in 2005.
Conduit - is a rigid PVC raceway conforming to CSA C22.2 No. 211.2-06 suitable for direct burial, concrete encasement or surface mounting (above ground).

Luminance Design – A design based on the amount of light which is reflected from a surface and reaches the eye of the observer. It is based on the "light" the observer sees at a given point and is based on the reflectance of the surface and the angle and distance of the observer from the point observed. See RP-8-00, Annex G. page 57 for further information on luminance.
Illuminance Design - A design based on the amount of light which incident on a surface. Illuminance ignores the surface upon which the light falls. See RP-8-00, Annex G. page 56 for further information on illuminance.
Pedestrian Conflict Area Classification – Road classifications describe general conditions of vehicular traffic conflict in urban areas. A second type of conflict is the vehicular/pedestrian interaction. Pedestrian activity is nearly always related to the adjacent land uses. There are three levels of pedestrian conflict used by RP-8-00, high, medium and low. For the purposes of this manual, the pedestrian conflict level is assumed to be low or medium (adjacent to schools only) unless otherwise determined by the City. High PC Areas are areas with significant numbers of pedestrians on the sidewalks or crossing the streets during darkness. Examples are downtown retail areas, areas near theatres, concert halls stadiums and transit terminals. Medium PC Areas are areas where fewer pedestrians use the streets at night. Examples are downtown office areas, areas with libraries, apartments, neighbourhood shopping and streets with transit lines. Low PC Areas are areas with low volumes of pedestrian traffic at night. Examples are suburban streets, low density developments and rural or semi-rural areas. See RP-8-00, pages 4 & 5 and 9 & 10 for further information of pedestrian conflict classifications.

Pavement Classifications – Luminance calculations require information about the directional surface reflectance of the pavement. There are four general pavement classifications given in RP-8-00; R1, which is concrete or old asphalt pavement; R2, which is asphalt with a relatively high level of gravel or light coloured aggregate; R3, which is asphalt with a normal aggregate mix and normal age and wear – this is the typical road classification for roads and the pavement classification to be used in Kingston unless otherwise directed by the City.

1.2. General

The City of Kingston owns the street lighting and related appurtenances located within the public road allowances within the City of Kingston. Utilities Kingston, as the City's agent, is responsible for the operation and maintenance of the streetlight infrastructure.
Street lighting design in the City of Kingston shall be generally based on ANSI/IESNA RP-8-00. Modifications to RP-8-00 have been made in certain areas to better conform to the City's requirements. This manual shall be used together with RP-8 (latest revision).
Street lighting design in Kingston must provide uniform lighting at a level that is adequate and comfortable for vehicular and pedestrian movement on the City's roads and sidewalks. All street lighting systems in the City of Kingston shall be designed by a qualified lighting designer using the illuminance method as described in RP-8-00 (unless noted otherwise), as well as incorporating the City's standards and specifications. Street lighting design in Kingston must meet all of the approved luminaires of a given type in order to allow interchangeability of luminaires during maintenance operations.

It is the responsibility of the street lighting designer to ensure they have the latest revisions of these street lighting standards and specifications prior to designing the street lighting system.
All street lighting design and construction is subject to Electrical Safety Authority (ESA) inspection and approval.
Decorative street lighting may be used in the City only with City of Kingston and Utilities Kingston approval and in accordance with the City's requirements and specifications.
Only with the approval of Utilities Kingston may any variance to the specifications or requirements included in these guidelines be permitted.

1.3. Development Lighting Policy

Utilities Kingston reviews development applications on behalf of the City of Kingston. Utilities Kingston will require development applicants to review existing lighting, and provide designs for new lighting.

1.4. Review Existing Lighting

The applicant will be requested to provide a complete review of existing lighting and provide illumination calculations showing that the changes the development is proposing will meet or exceed the requirements of this document. This may include bringing non-conforming illumination up to the current standard.

1.5. New Lighting Design

Where no lighting exists and lighting is required, for example new subdivisions, the applicant will be requested to provide a complete street lighting design that meets the requirements of this document.

1.6. Determination For New or Upgrades to Street Light Installations

Factors that are considered by Utilities Kingston for new street light installations include, but are not limited to:

- Pedestrian traffic/potential growth
- Schools/churches/institutions (existing or proposed)
- Comparison to surrounding areas, gaps in lighting
- Vehicular traffic, arterial roads
- Intersection marker lighting
- Posted speed limits
- Accidents attributable in police reports due or in part to lighting/illumination
- Pedestrian or cyclist and vehicular accidents reported to Police
- Existing or proposed zoning on adjacent vacant lands

2.0 Design Criteria

The design requirements for luminance and illuminance given below in Table 1 are taken from ANSI/IES RP-8-00. The values given for luminance shall govern; the values given for illuminance are for use in intersection and sidewalk designs.

2.1. Illumination Levels

Illumination levels shall meet those criteria set out by the Illuminating Engineering Society (IES), as summarized in the following table:

Table 1 - RP-8-00 Illumination Design Levels

Road Classification	Area Classification	Average Maintained Illuminance (Lux)	Illuminance Uniformity Ratio, Ave. to Min.
Arterial	Commercial	17	3:1
	Intermediate	13	
	Residential	9	
Collector	Commercial	12	4:1
	Intermediate	9	
	Residential	6	
Local	Commercial	9	6:1
	Intermediate	7	
	Residential	4	

2.2. Definitions (from IES)

Arterial - The part of the roadway system that serves as the principal network for through traffic flow. The routes connect areas of principal traffic generation and important rural highways entering the city.
Collector - The roadways serving traffic between arterials and local roadways. These are roadways used mainly for traffic movements within residential, commercial and industrial areas.
Local - Roadways used primarily for direct access to residential, commercial and industrial areas. They do not include roadways carrying through traffic. Long local roadways will generally be divided into short sections by a system of collector roadway systems.
Commercial - A business area of a City where ordinarily, there are many pedestrians during night hours. This definition applies to densely developed business areas outside, as well as within, the central part of a City. The area contains land use, which frequently attracts a heavy volume of night-time vehicular and pedestrian traffic.
Intermediate - Those areas of a city, characterized by frequent moderately heavy night-time pedestrian activity, as in blocks having libraries, community recreation centers, large apartment buildings, industrial buildings or neighbourhood retail stores.
Residential - A residential development, or a mixture of residential and small commercial establishments, characterized by few pedestrians at night. This definition includes areas with single-family homes, town houses and small apartment buildings.

2.3. Special Considerations

Average maintained illuminance shall be increased by 50% through intersections, railway crossings, school areas, and bridges. The lighting of tunnels is to be designed as per the IES recommendations for tunnel lighting.

2.4. Design Requirements

The street lighting design shall be completed by a qualified lighting consultant, (e.g. P.Eng.), utilizing these design standards and guidelines. The design and supporting documentation shall be included in the design submission for subdivision approval. Submission requirements include:

- luminaire type and wattage;
- manufacturer name(s); specification sheets, catalogue numbers and supplier contacts for proposed equipment;
- photometric files used in calculations;
- light loss factor utilized;
- copy of design calculations and computer printout using one of the three (3) computer programs: a) Lithonia's Visual; b) Canlyte's Genesys; c) AGI32; or d) alternate program approved by Utilities Kingston;
- pole types and heights;
- drawings indicating existing streetlight poles as well as new pole locations, as illustrated within the composite utility plan;
- proposed power supplies, circuiting, estimated demand load, conductor and duct sizes, ground rod locations, and voltage drop calculations.

2.5. Completion Of Project

Street lighting installed on behalf of a developer, under a plan of subdivision, shall be constructed in accordance with the approved plans, City standards, and the terms of the Subdivision Agreement. All other street lighting works shall be constructed in accordance with the approved plans, City standards, and the terms established in the contract document between the City and the Contractor.

2.6. Attachments To Poles

No signs, banners, advertisements, or attachments of any kind may be attached to any poles without the written authority of the Director of Utilities Engineering. Any party wishing to install such attachments must provide dead and live load calculations, prepared by a licenced engineer, to confirm the attachment(s) will not impact the structural integrity of the poles.

3.0 Material Specifications

All street lighting equipment used in the City of Kingston must meet these street lighting standards and specifications and the appropriate CSA standards and specifications.

3.1. Street Light Poles

Street light poles used in the City of Kingston must meet the pole specifications below. Poles are available for purchase through Utilities Kingston.

3.1.1. Standard Round Concrete Street Light Poles

Concrete street light pole shall be a direct buried Class B pre-stressed round concrete pole with provision for electrical ground, natural concrete finish and suitable for use with a 1.8m or 2.4m tapered aluminum bracket.

- 9.1 metre (25.0 ft.) Class B Centrifugally Cast Round Concrete Pole
- 9.9 metre (32.5 ft.) Class B Centrifugally Cast Round Concrete Pole

3.1.2. Decorative Black Concrete Street Light Poles

Black octagonal tapered concrete street light pole shall be a direct buried Class B pre-stressed concrete pole with provision for electrical ground.
For all areas outside of Woodhaven subdivision; use this pole with Lumec MPTR, MPTC Post Top fixtures and Domus support arm mounted fixtures:

- USI or equivalent 8.2m (27ft) Octagonal Concrete Pole
- Pole Code: WE-270-A-3-BE-30
- Colour: Black Eclipse
- Finish: Etched and Acrylic Sealed
- Tenon: 4” O.D. x 4” Galvanized Steel

To maintain consistency in Woodhaven Subdivision:

- USI 5.5m (23ft) Octagonal Concrete Pole
- Pole Code: PA-230-A-3-BE-30
- Colour: Black Eclipse
- Finish: Etched and Acrylic Sealed
- Tenon: 4” O.D. x 4” Galvanized Steel

3.1.3. Base Mounted Octagonal Heavy Duty Steel Poles:

- 9.1 metre (25.0 ft.)
- 9.9 metre (32.5 ft.)
- 10.7 metre (35.0 ft.)

3.2. Luminaires

The following luminaires are approved for use in the City of Kingston. Luminaires are available for purchase from Utilities Kingston.

3.2.1. Cobra Head Luminaires

The following cobra head luminaires have been approved for use in the City of Kingston:

a) 100W HPS Equivalent - 53W LED comes with a twist lock photo control receptacle and electronic photo control. Cree XSP Series PN: XSPA02GA-U R
b) 150W HPS Equivalent - 65W LED (101W with dimmer set to position E) comes with a twist lock photo control receptacle and electronic photo control. Cree XSP Series PN: XSPA02HXE-U RQ
c) 250W HPS Equivalent - 101W LED comes with a twist lock photo control receptacle and electronic photo control. Cree XSP Series PN: XSPA02HA-U R

3.2.2. Decorative Luminaires

The following decorative luminaires have been approved for use in the City of Kingston:

a) Lumec MPTR: MPTR-80W48LED4K-ES-LE3-120-DMG-RC-WC10-BK in 80W HPS and 55W.
b) Lumec MPTC: MPTC-80W48LED4K-ES-LE3-120-DMG-RC-WC10-BK in 80W HPS and 55W.
c) Lumec DMS50: DMS50-35W-32LED4K-R-LE2F-120-SMA-DMG-RC-WC10-BK in 55W and 35W.

3.3. Support Arms

All street light support arms/brackets used in the City of Kingston must be manufactured in accordance with the specifications as given below (latest revision). Support arms can be purchased through Utilities Kingston.

3.3.1. Cobra Luminaire Support Arms

Tapered Elliptical Aluminum Brackets Standard street light brackets for use with "cobra-head" luminaires must be manufactured in accordance with "ANSI C136.1", latest revision.
The brackets shall be a 1.8 m (6 ft.) or 2.4 m (8 ft.) tapered elliptical aluminum bracket.

3.3.2. Decorative Luminaire Support Arms

For all areas outside of Woodhaven subdivision, the decorative bracket to be used with the Lumec Domus fixture is the Lumec VR4-1A.
To maintain consistency in Woodhaven Subdivision; Use Cyclone part number: CP3263-C1-F1-RALXXXXTX

3.4. Load centres

To meet ESA requirements, the City requires a disconnect for any street lighting system. The disconnect is provided by means of a service entrance rated load centre (pedestal type for underground systems, and pole-mounted unit for overhead systems) with weather proof enclosure.

3.4.1. Pedestal (typically used in subdivisions)

- Pedestal supplied by Composite Power Group PN: 2SL702VE or approved equivalent

- See Utilities Kingston Drawing K03-03-102 Street Light Distribution Pedestal

3.4.2. Type 1 Disconnect

Type 1 Disconnect is typically used at traffic intersections where the disconnect feeds the traffic signals and street lighting circuits. The street lighting circuits are contactor controlled with blockers installed in the connected luminaires. Type 1 Disconnects are also to be used on Collector and Arterial streets where the supply is only feeding street lighting. The Type 1 disconnect will meet all specifications of OPSD 2440.010.

3.4.3. Pole mounted disconnect

In some installations a simple disconnect can be used to feed a single circuit or double circuit using the following products installed to meet ESA requirements:

a) Square D Panel Q02L70RB NEMA E3R (Service Entrance) with:
   - 70A Double Pole Breaker

b) Square D Panel Q02L70RB NEMA E3R (Distribution) with:
   - 1 x 40 A Breaker and 1 x 30 A Breaker OR
   - 2 x 30 A Breakers

3.5. Street Light Cable Conduit

Conduit will be rigid PVC raceway conforming to CSA C22.2 No. 211.2-06 suitable for direct burial, concrete encasement or surface mounting (above ground). No DB2 or Flex conduit will be accepted. All ducts must meet CSA specifications and are subject to ESA inspection and approval.

3.6. Street Light Wiring from the Handhole to the Luminaire

Street light wiring from the handhole to the luminaire shall be 2 -#12 copper NMWU with ground, CSA approved and will include a fuse holder and fuse. Fuses shall be 600 Volt rated, amperage to suit lamp size complete with insulated boot fuse holder with breakaway feature. Fuses to be Ferraz Shawmut type ATM while holder to be Ferraz Shawmut type FEB BA, or Amerace 65 fused connector kits.

3.7. Street Light Distribution Cable from Load centre to Street Light Poles

Wiring shall be sized to suit load and voltage drop. Maximum voltage drop at the end of the circuit shall not exceed 5% of the supply voltage. As a minimum, the street light cable from load centre to luminaire and from luminaire to luminaire shall consist of 3 - #8 copper RWU triplexed 1000 volt conductors (black/white/green), CSA approved.

3.8. Street Light Power Supply Cable from Transformer to Load centre

The street light supply cable feed from transformer to the street light load centre shall be 3 - 1/0 aluminum secondary cable unless otherwise directed. The contractor shall obtain approval for the type of secondary cable before installation. Note that the 60 amp main breaker in the street light load centre accepts cable sizes from #12 to 2/0 al/cu.

3.9. Connections

All connections shall be made with CSA approved copper split bolts and taped with mastic sealing tape and black vinyl electrical tape or copper SX-4,6 compression connector taped with mastic sealing and black vinyl electrical tape .

3.10. Grounding Rods and Plates

Ground rods shall be solid steel, 19 mm diameter, 3 m long, copper clad for the full length and shall be according to CSA C22.2 No 41.
Ground plates shall present not less than 0.2 m of surface to exterior soil and be not less than 6 mm thick as per the Electrical Code. The plates shall be made of hot dip galvanized solid steel. Steel shall be according to CAN/CSA G40.20/G40.21, Grade 230G and shall be galvanized according to CAN/CSA G164.

3.11. Underground Servicing

Typically, all new street lighting shall be serviced with underground wiring placed in conduit between poles. Conduit shall be sized to suit wire sizes, with a minimum of 50 mm diameter. Road crossings shall be in conduit to Municipal standards. Underground wiring shall be a minimum #8 RWU for load and neutral conductors and #6 or #8 for ground conductors.

3.12. Frangible Bases

Frangible bases are only to be used on roads posted at 80km/h or greater or when directed by the Ministry of Transportation.

3.13. Alternating Circuits

Alternating circuits must be maintained from pole to pole to ensure 50% illumination upon loss of one circuit feeder for all arterial and collector areas of commercial and intermediate roadways.

3.14. Purchasing Equipment

There are two options for the developer to supply the street lighting equipment;

Option A
Purchase the poles, support arms and luminaires through Utilities Kingston and have the developer's contractor install the equipment. As soon as energization of the streetlights occurs (before the Final Approval of Works Certificate (FCAW) is issued), Utilities Kingston will assume ownership and responsibility including costs for any issues arising out of warranty, maintenance or repair for the installation.

Option B
The developer's contractor will supply and install the lighting equipment. The developer owns and has responsibility including costs for any issues arising out of warranty, maintenance or repair for the installation until the Final Approval of Works Certificate (FCAW) is approved, at which time Utilities Kingston will assume it.

4.0 Installation Specifications

4.1. General

The contractor shall ensure that the construction and installation of the street lighting system will be completed in a good and workmanlike manner and in accordance with the latest revisions of the specifications, standards and drawings of the City of Kingston.

Street lights shall be located on the boulevard in accordance with the City of Kingston's standard cross sections and as shown on the trenching plans and typical road sections while maintaining proper clearances from fire hydrants, driveways, transformers, switching units and trees or any other services.
The street lighting power supply is to be supplied to each streetlight load centre in accordance with the Supply Authority distribution specifications.
The entire street light installation is subject to inspection and approval by the ESA. The contractor is responsible for applying for and obtaining ESA inspection.

4.2. Cable

The cable shall be installed in 50 mm (2") direct buried duct. As per the Electrical Code, a 6" wide red plastic warning tape is to be installed with black lettering stating "ELECTRIC LINE BURIED BELOW". This warning tape is required to be installed midway between the topmost conductor and final grade above all conductors within the trench.
Cables are to be inserted into the poles via the cable access ports and the ground wire shall be #6 connected to the internal ground lug at the hand hole by means of a 6 AWG compression connector lug. All connections to ground and to the luminaire conductors are to be made at the hand hole and taped or otherwise insulated after installation.

4.3. Street Light Cable Conduit

In general, the street light duct shall be placed in the common trench on the same level as the secondary and/or communication cables, and on the road side of the trench, with a minimum of 600 mm cover.
When street light ducts are placed under driveways, the top 300 mm of the backfill shall be compacted to 100% Standard Proctor Density with granular "A".
When street light ducts are placed under road ways or adjacent to roadways, ducts shall be placed with a minimum of 750mm cover.
A ¼" polypropylene fish rope is to be pulled into each duct.

4.4. Poles

Installation of street light poles is to be in accordance the manufacturer's requirements.
In general, poles are to be installed in augured or vactored (high pressure water evacuation method) holes; the bottom of the hole must be cleaned of loose material before placing the pole.
The Contractor shall take care to ensure that no damage occurs to the electrical or street lighting system or other utilities during the installation of street light poles.

4.5. Grounding

Two ground rods must be installed adjacent to the street light pedestal, at least 0.3 m below final grade and connected to the bonded neutral block of the service entrance and must be spaced no less than 3 m apart in accordance with the Electrical Code requirements.
Alternatively, a ground plate must be installed adjacent to the street light pedestal at least 0.6 m below final grade level and connected to the bonded neutral block of the service entrance.
Ground rods/plates to be provided at the end of each circuit feeder and every fifth pole in between.

5.0 Energization Process

The developer/contractor shall provide the following documentation to Utilities Kingston when they wish to have their street lights energized:

- Letter requesting energization;
- As-built drawings clearly showing street light wiring;

- As-built one-line-diagram;
- List of lights to be energized along with location, ESA certificate #, Transformer # and Wattage of light information;
- Up-to-date ESA certificates of inspection. ESA certificates are valid for 6 months. Any request to energize with out of date ESA certificates will not be accepted;

When Utilities Kingston has received and accepted all required documents and materials, Utilities Kingston will perform an inspection of the installation. If required, a deficiency list will be provided back to the developer/contractor indicating the deficiencies. When the installation passes the inspection, Utilities Kingston will send a request to energize the lights to the Supply Authority.

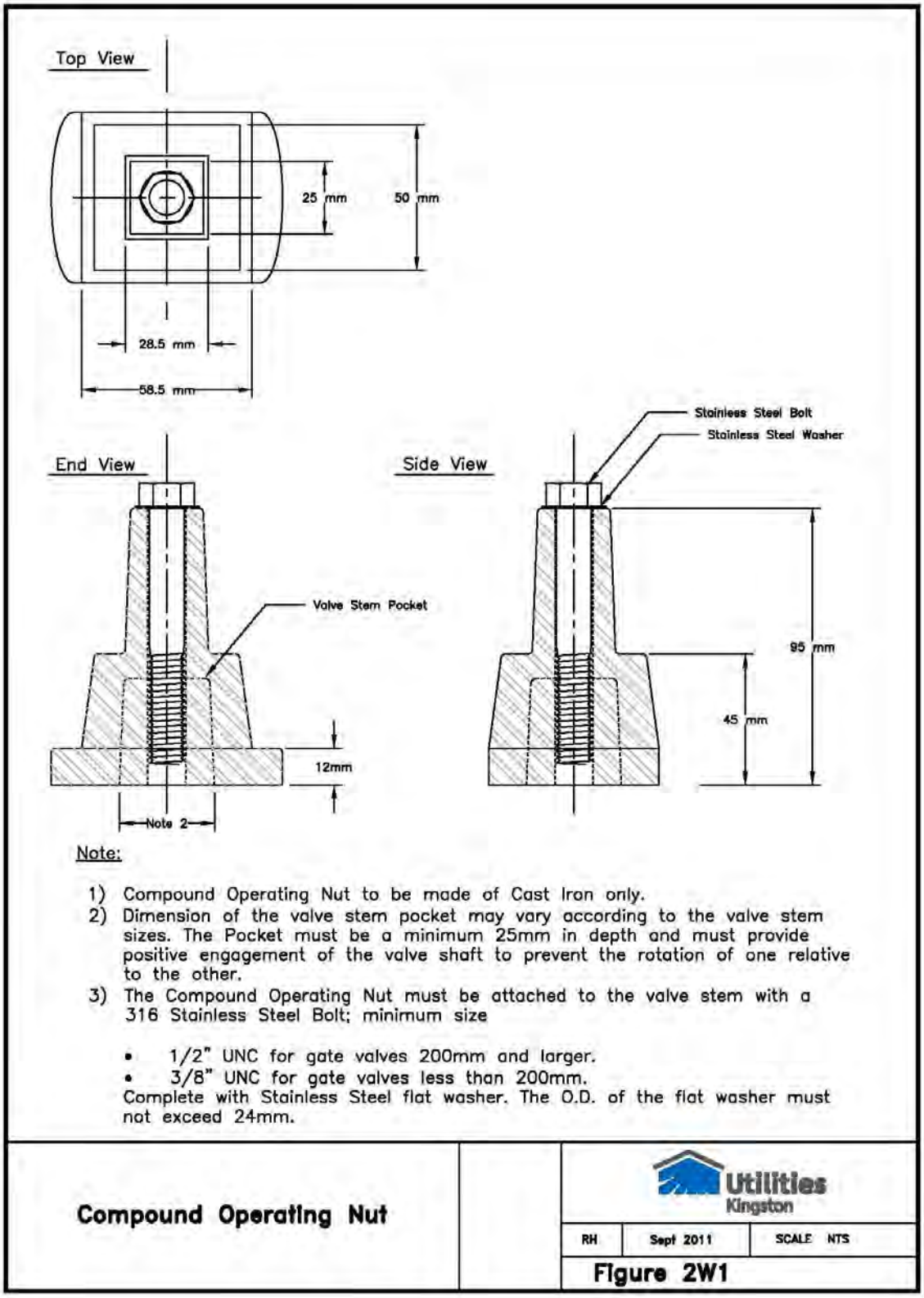
UTILITIES KINGSTON

Appendix 2G: Blank

UTILITIES KINGSTON

Appendix 2H: *Standard Drawings*

Figure 2W1 Compound Operating Nut



Note:

1) Compound Operating Nut to be made of Cast Iron only.
2) Dimension of the valve stem pocket may vary according to the valve stem sizes. The Pocket must be a minimum 25mm in depth and must provide positive engagement of the valve shaft to prevent the rotation of one relative to the other.
3) The Compound Operating Nut must be attached to the valve stem with a 316 Stainless Steel Bolt; minimum size

   - 1/2" UNC for gate valves 200mm and larger.
   - 3/8" UNC for gate valves less than 200mm.

   Complete with Stainless Steel flat washer. The O.D. of the flat washer must not exceed 24mm.

Compound Operating Nut		Utilities Kingston
		RH | Sept 2011 | SCALE NTS
		Figure 2W1

Figure 2W2 Tracer Wire Arrangement At Valve Box For PVC or CPP Watermain

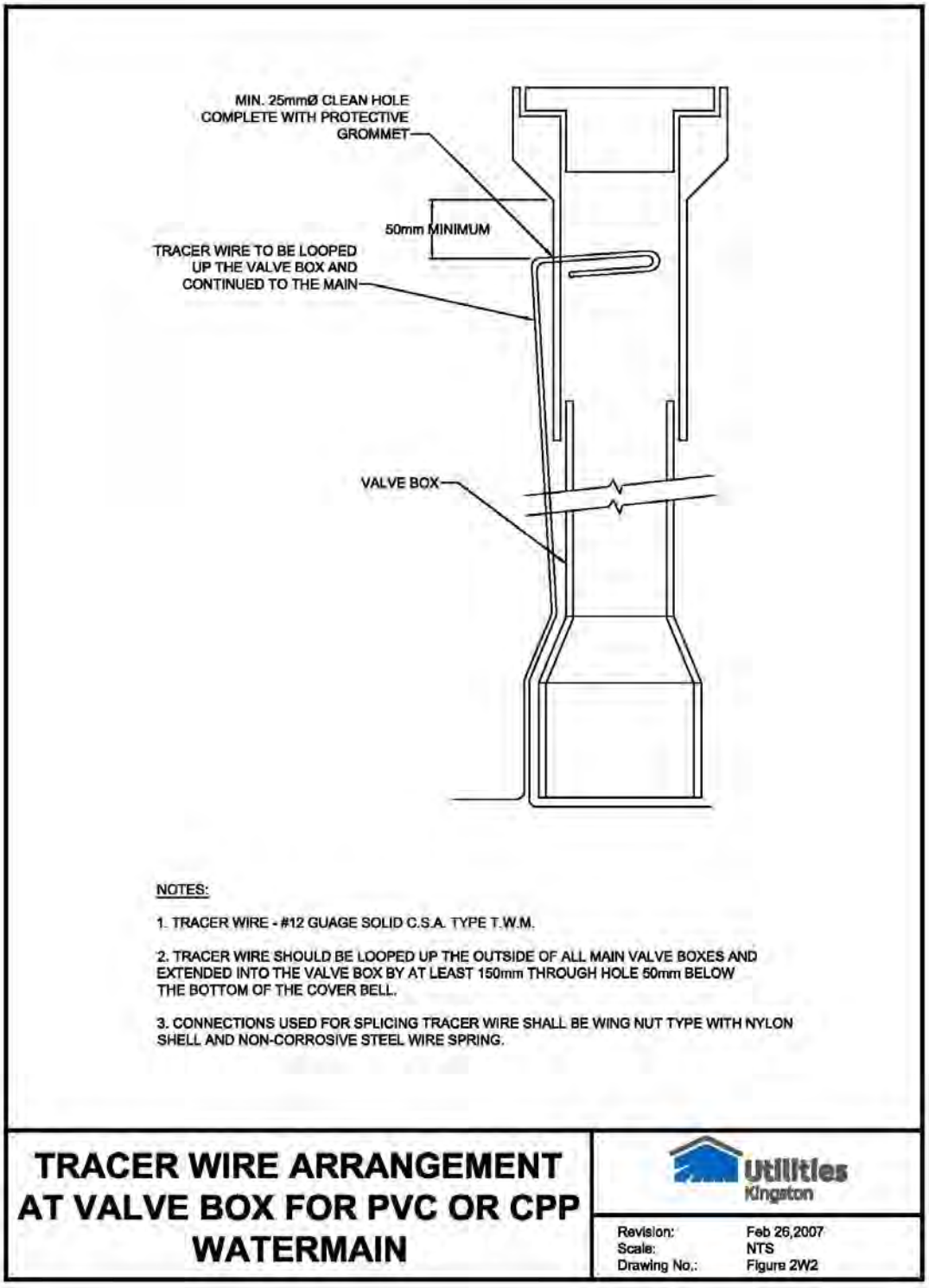
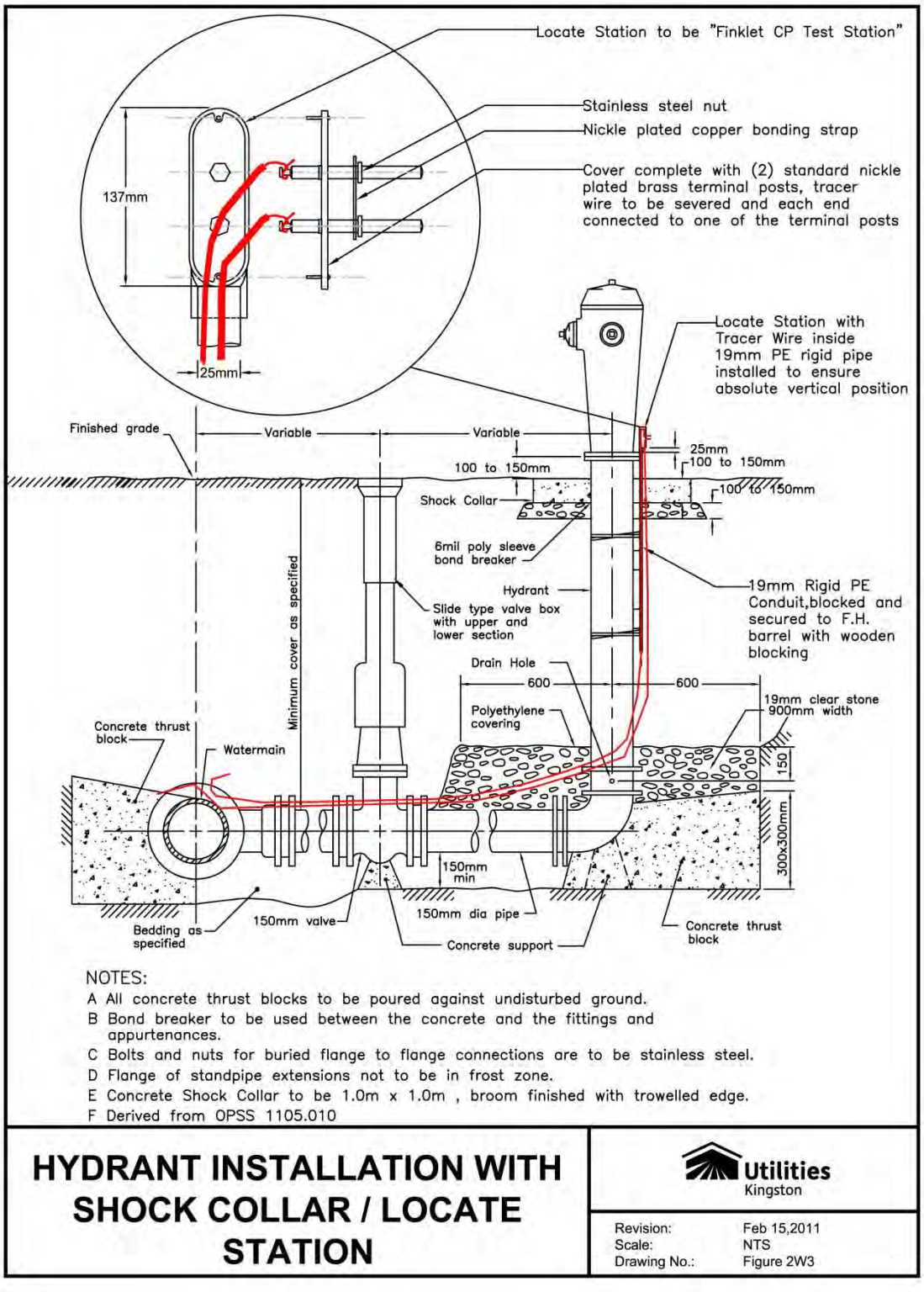


Figure 2W3 Hydrant Installation With Shock Collar / Locate Station



NOTES:

A All concrete thrust blocks to be poured against undisturbed ground.
B Bond breaker to be used between the concrete and the fittings and appurtenances.
C Bolts and nuts for buried flange to flange connections are to be stainless steel.
D Flange of standpipe extensions not to be in frost zone.
E Concrete Shock Collar to be 1.0m x 1.0m , broom finished with trowelled edge.
F Derived from OPSS 1105.010

HYDRANT INSTALLATION WITH SHOCK COLLAR / LOCATE STATION

Utilities Kingston

Revision:	Feb 15,2011
Scale:	NTS
Drawing No.:	Figure 2W3

Figure 2W4 Tracer Wire and Anode Placement for Water Services

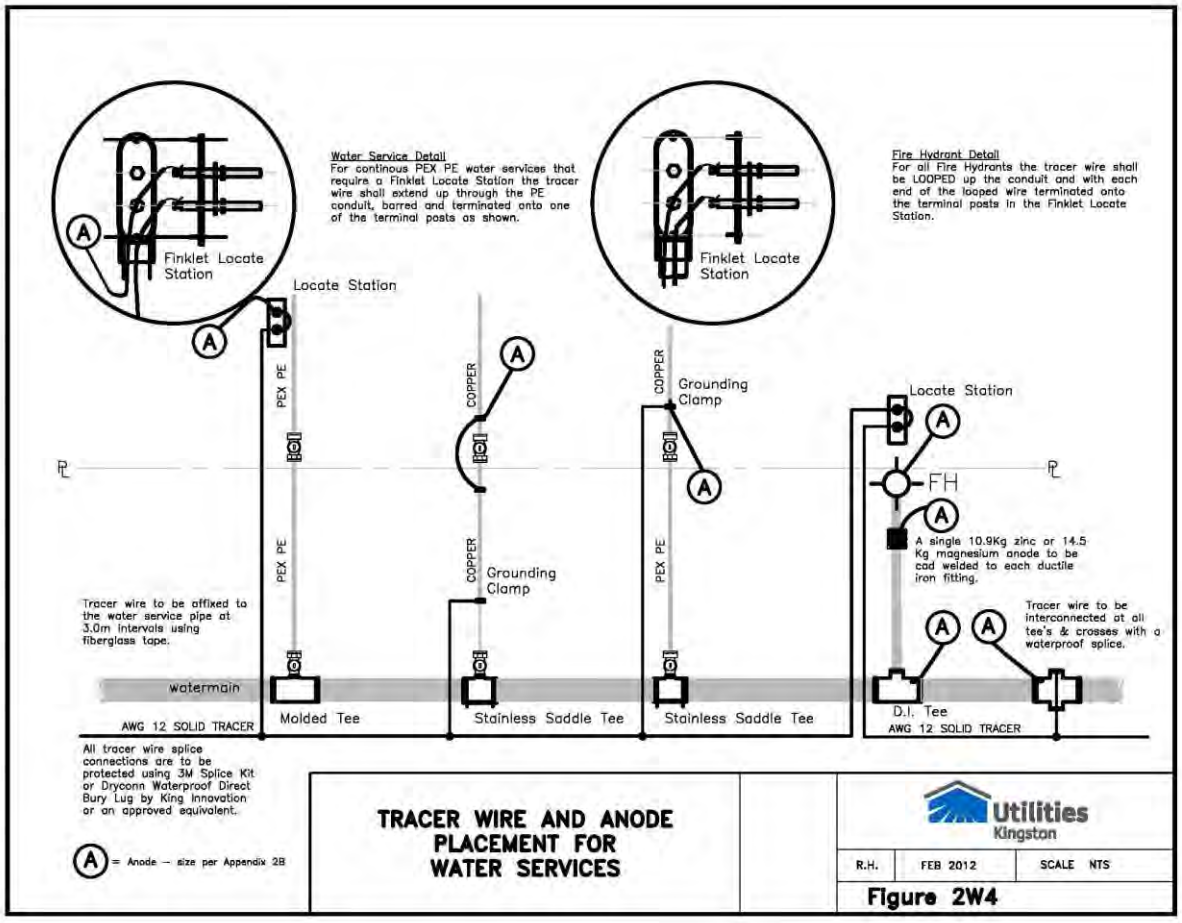


Figure 2W5 Plastic Water Service Connections with Locate Station

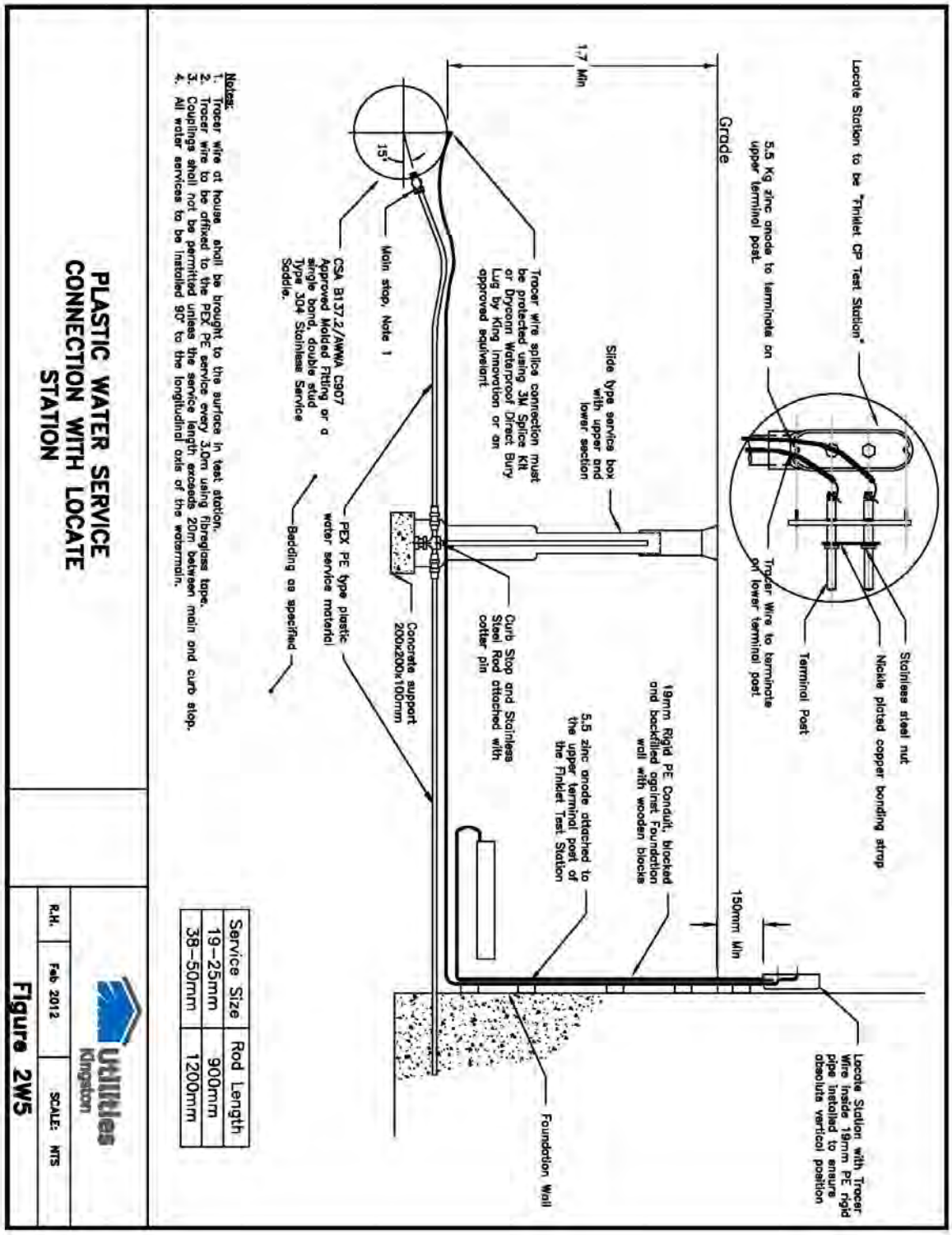


Figure 2W6 Typical Anode Installation

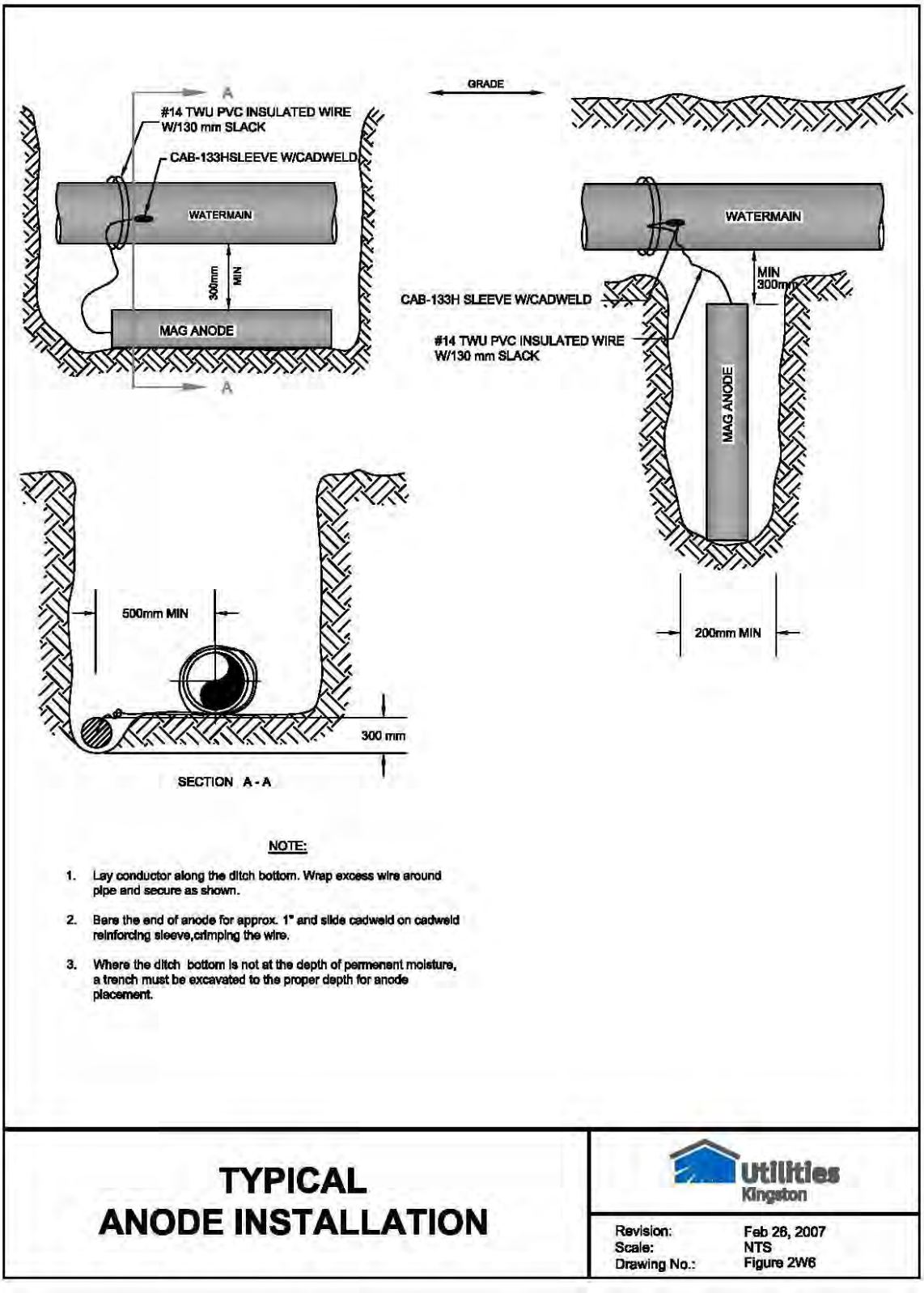


Figure 2W7 Cutting in New In-Line Water Valve – Typical

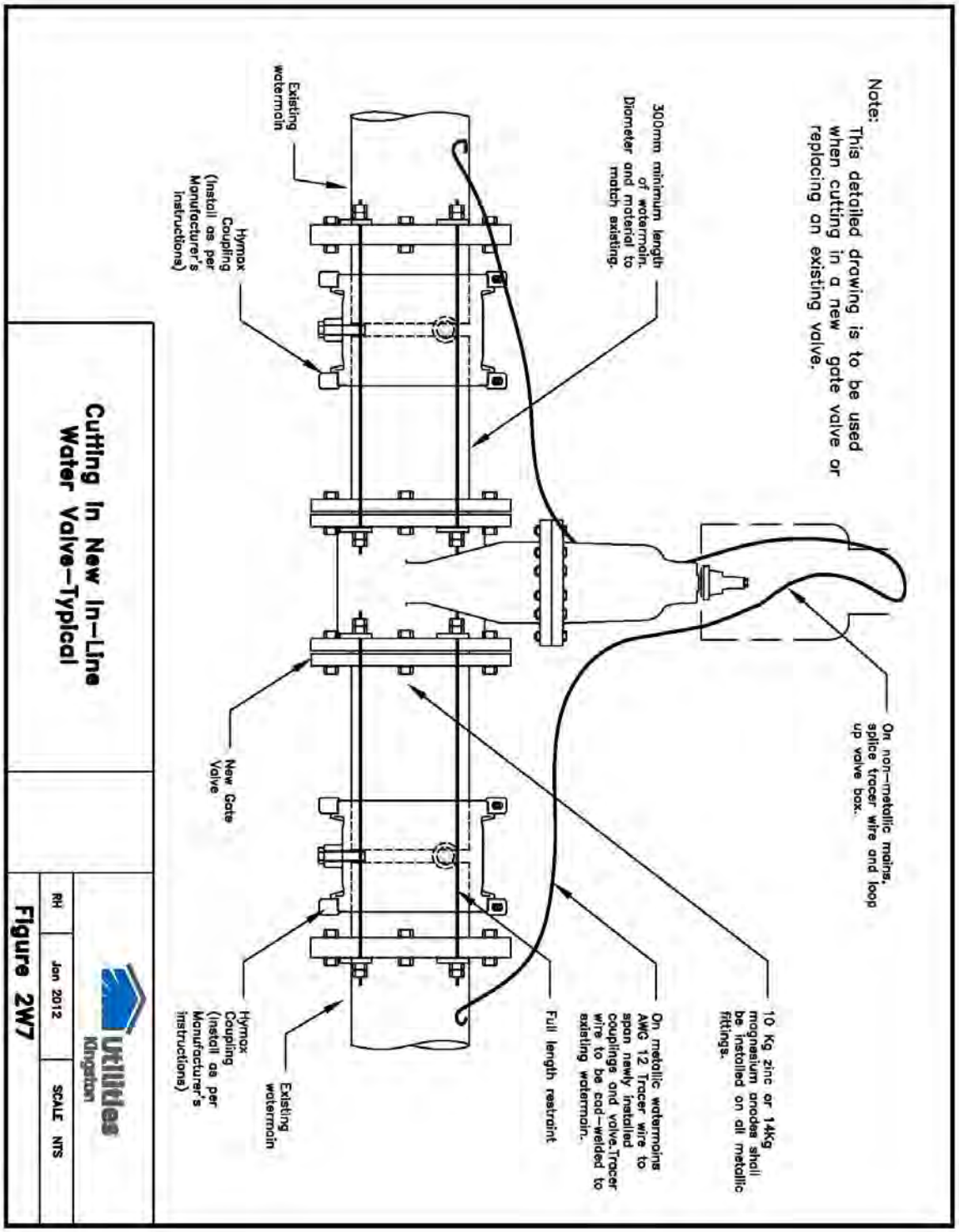


Figure 2W8 Temporary Flush/Swab Launch and Testing Detail

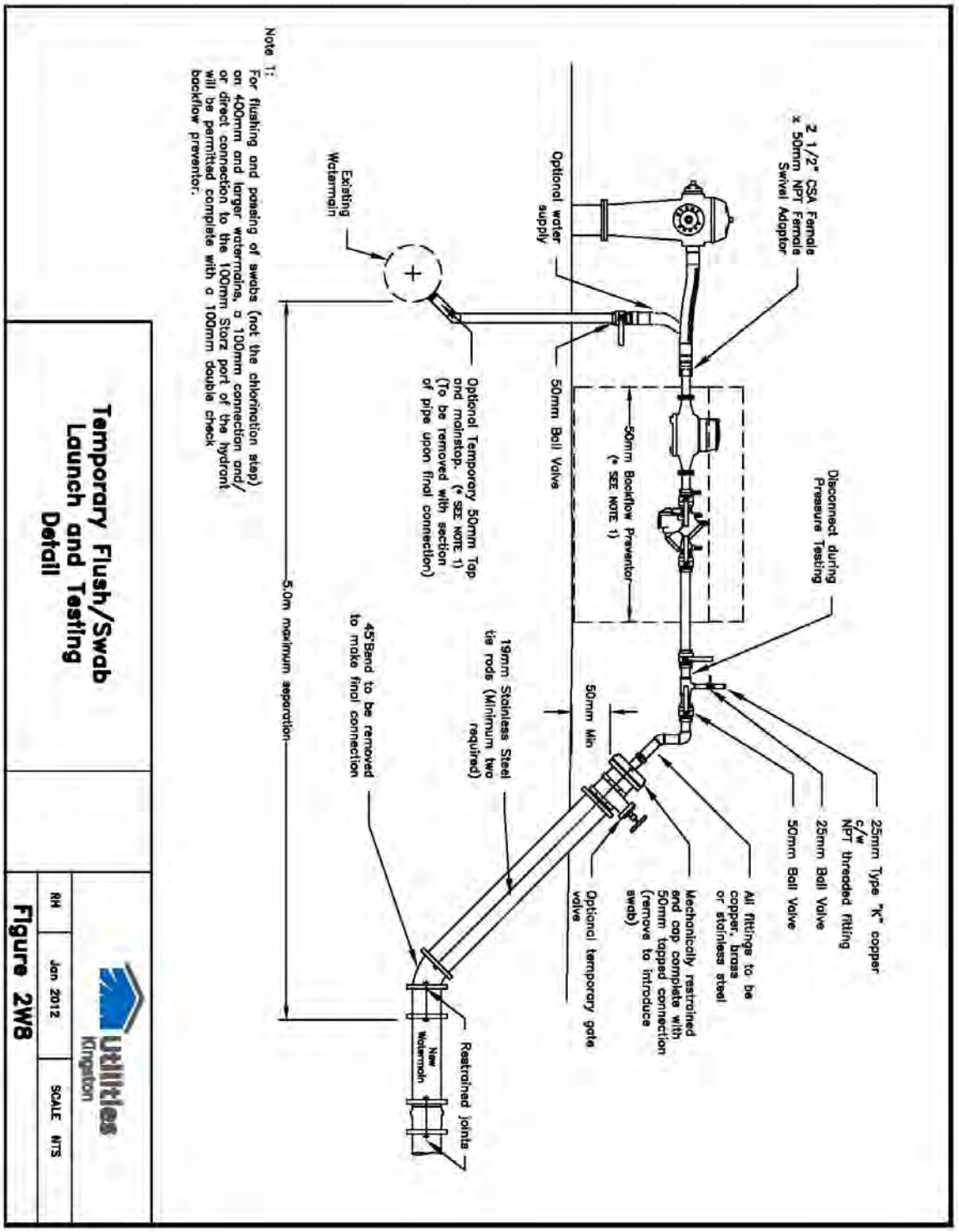


Figure 2W9 Temporary Flush/Swab Retrieval and Testing Detail

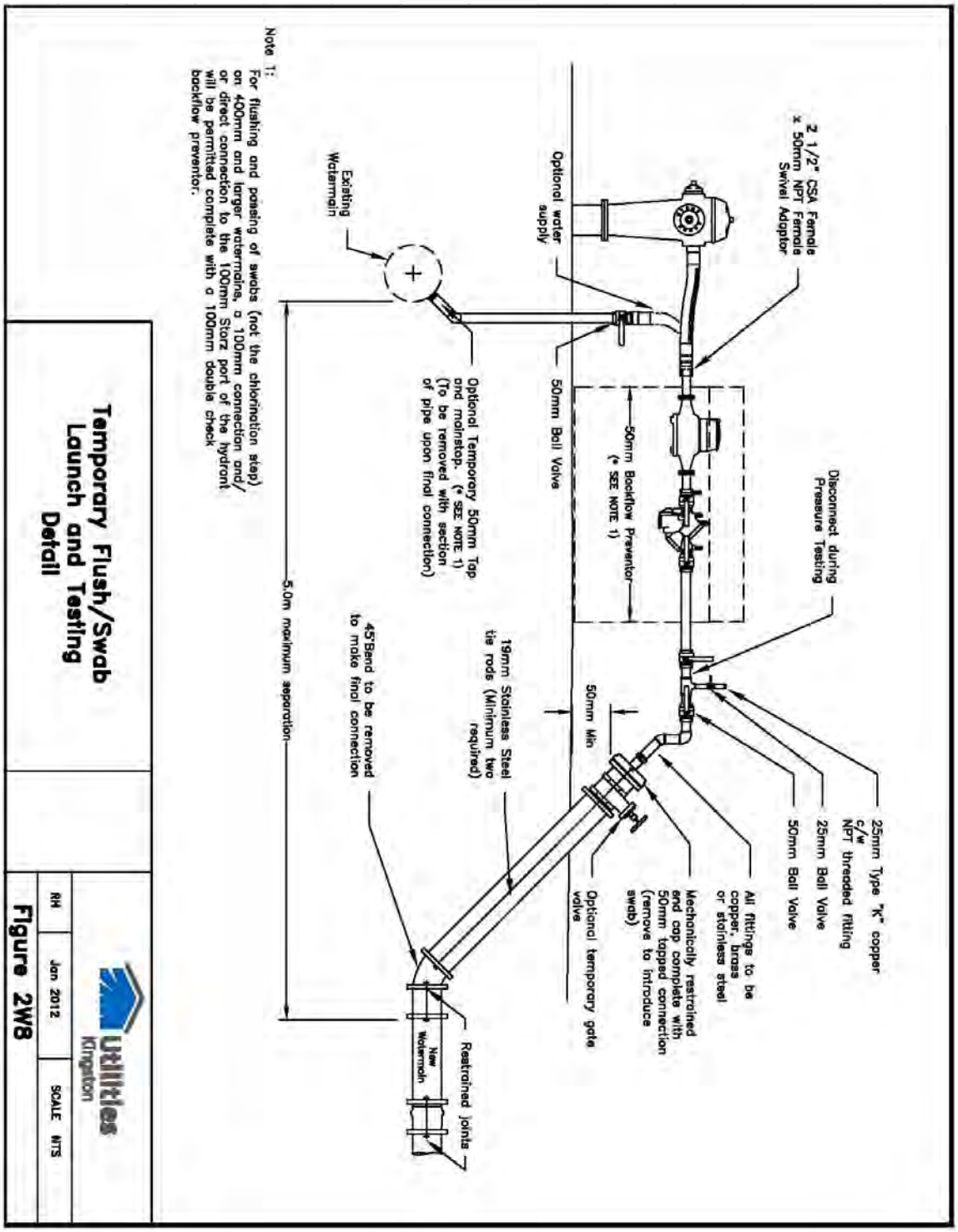


Figure 2WS1 Single Sanitary Storm and Water Services in Common Trench

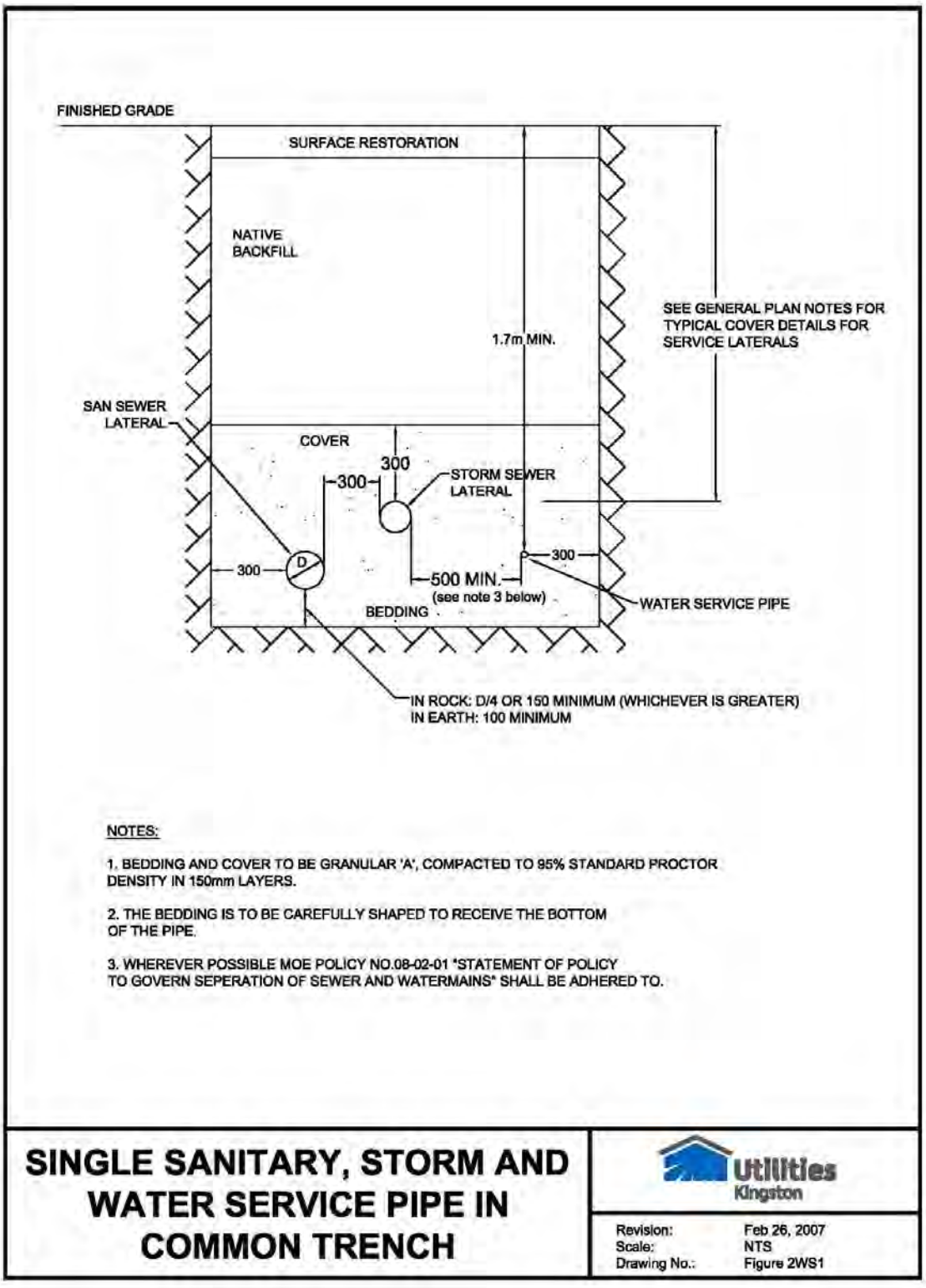


Figure 2WS2 Double Sanitary Storm and Water Services in Common Trench

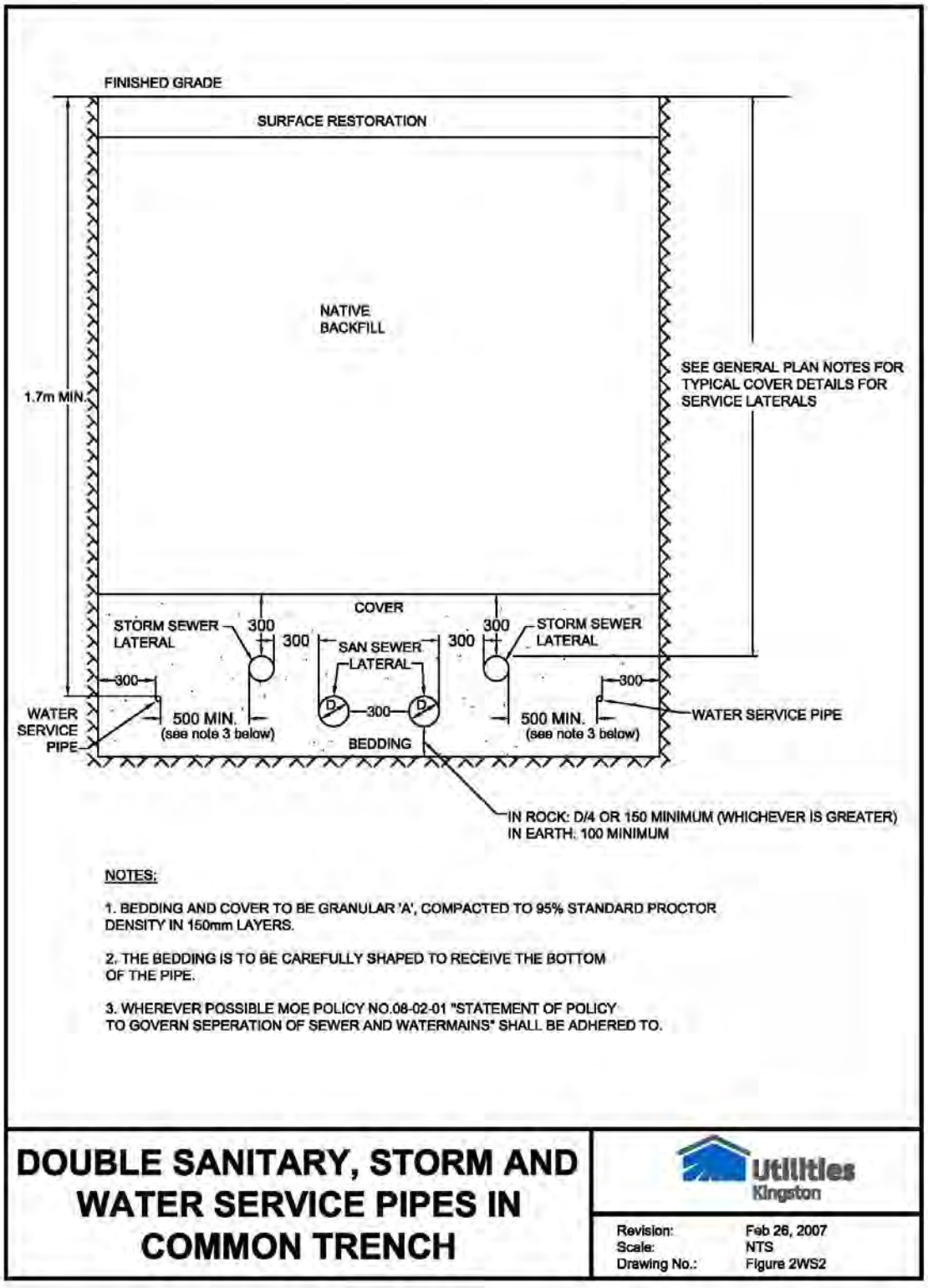
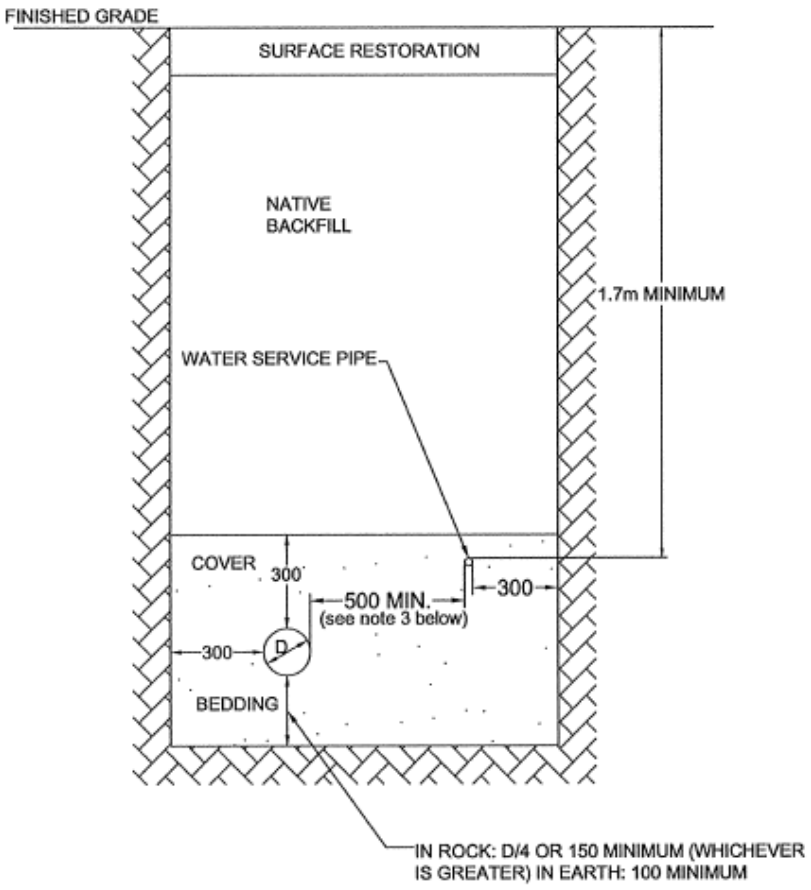


Figure 2WS3 Single Sanitary and Water Service in Common Trench



NOTES:

1. BEDDING AND COVER TO BE GRANULAR A, COMPACTED TO 95% STANDARD PROCTOR DENSITY IN 150mm LAYERS. COVER TO EXTEND A MINIMUM OF 300mm OVER HIGHEST UTILITY.
2. THE BEDDING IS TO BE CAREFULLY SHAPED TO RECEIVE THE BOTTOM OF THE PIPE.
3. WHEREVER POSSIBLE MOE POLICY NO. 08-02-01 "STATEMENT OF POLICY TO GOVERN THE SEPERATION OF SEWERS AND WATERMAINS" SHALL BE ADHERED TO.

CITY OF KINGSTON
Engineering Division
Planning & Development Services

Single Sanitary and Water Services in Common Trench

Date: Apr. 14, 2004 Figure 2WS3

Figure 2E1 Joint Utility Trench

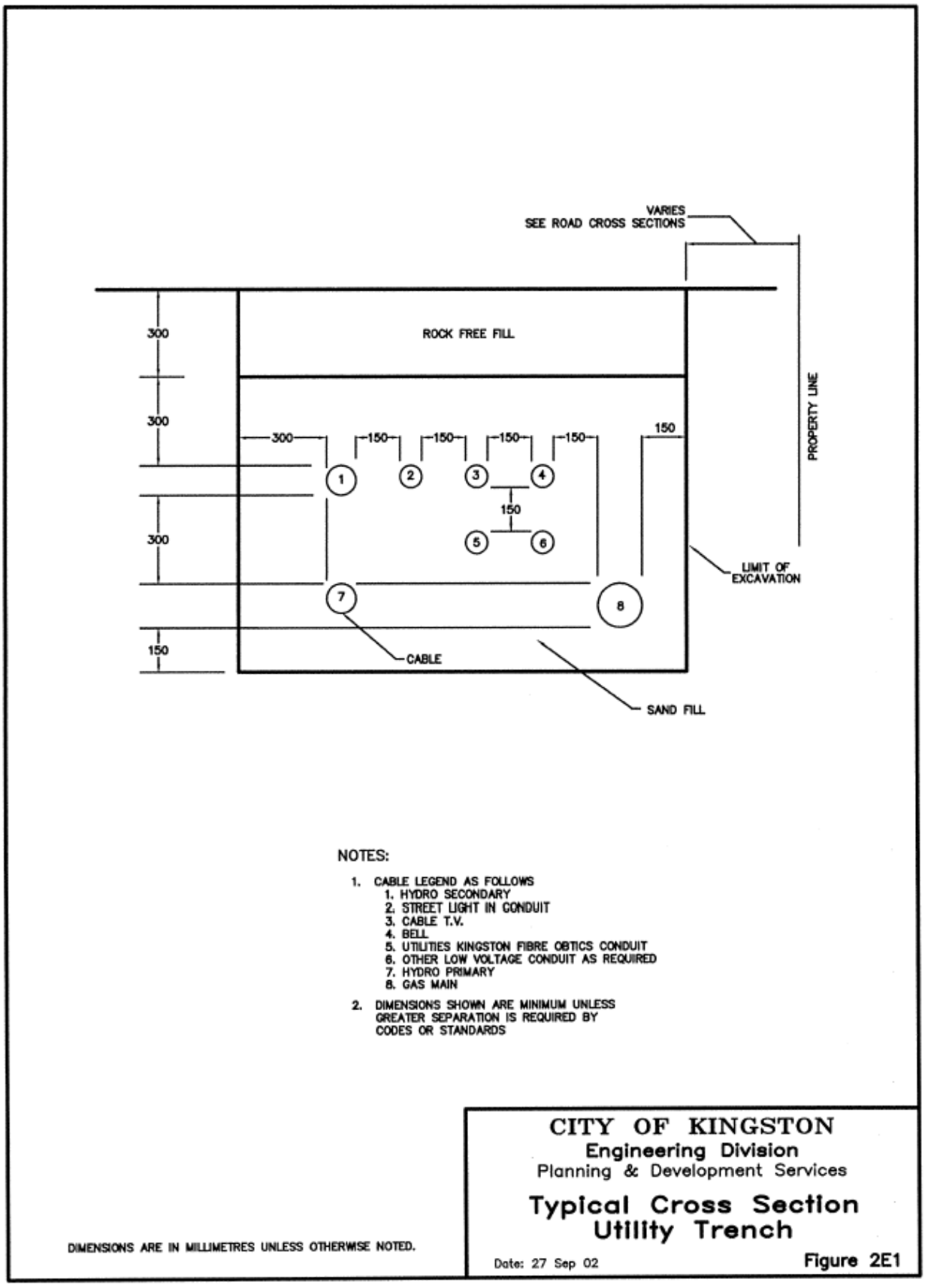


Figure 2F1 Street Light Distribution Pedestal Notes

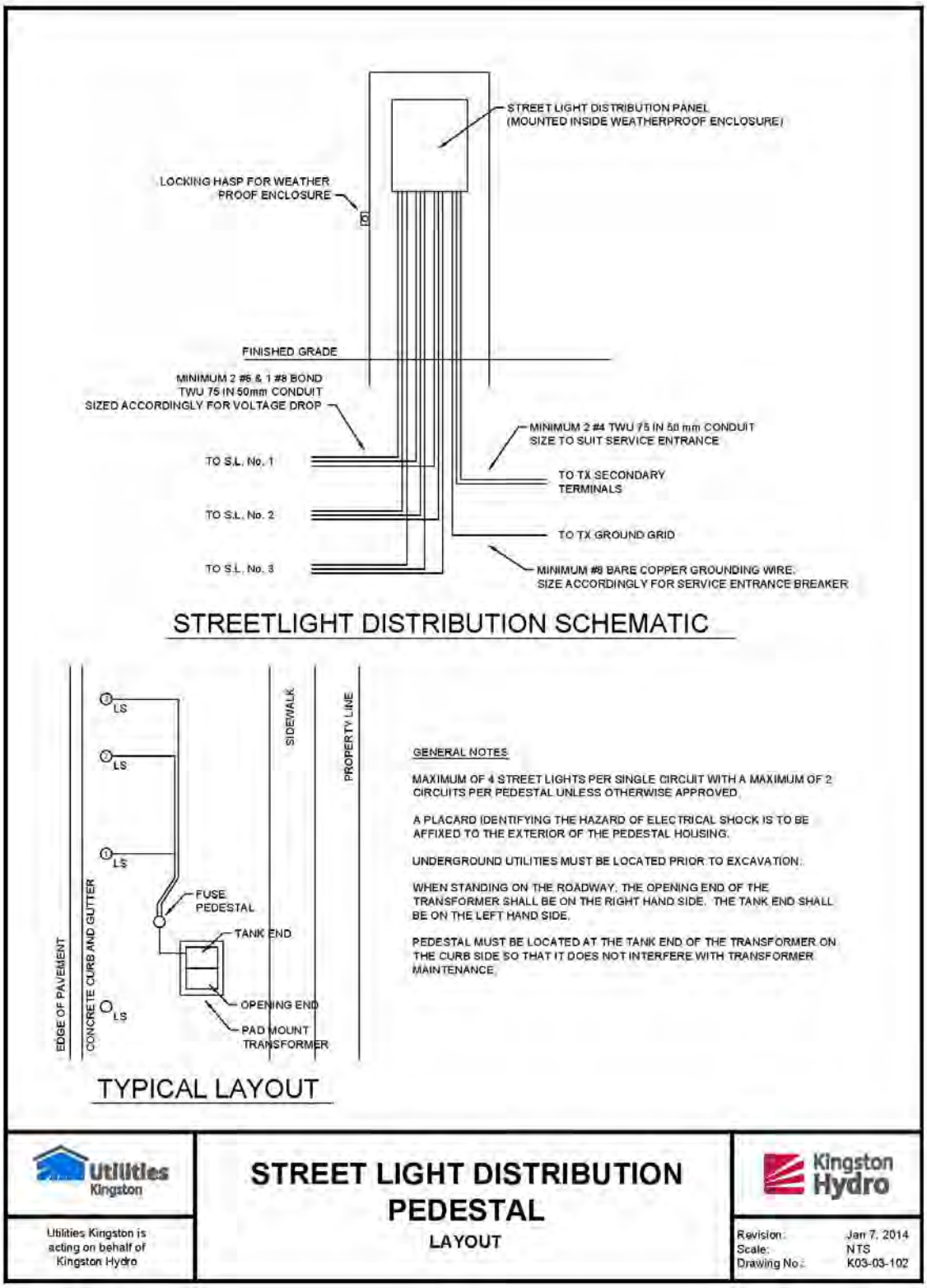


Figure 2F2 Street Light Distribution Pedestal-General Notes

STREET LIGHT PEDESTAL SPECIFICATION

SUPPLIER: COMPOSITE POWER GROUP INC. (TEL: 905.629-7355; FAX: 905.629-7350) OR APPROVED EQUIVALENT
SAMPLE ORDERING CODE: 2SL702VE
DESCRIPTION: AG-15 BASE & COVER C/W DOUBLE LOCKING DEVICE, PENTA HEAD BOLT, VENTILATION AND SECONDARY LOCK PROVISION AND CUTLER-HAMMER LOADCENTRE
MAIN PROTECTION: 70AMP-1 POLE BREAKER (SUPPLIED WITH INTERNAL JUMPER ON BUS FOR 120V SERVICE)
SUPPLY: 120V, 2WIRE
BRANCH CIRCUITS: FOUR 15AMP 1POLE CIRCUITS PROTECTED BY TWO 15AMP- 2POLE DUPLEX BREAKERS
SERIES COMBINATION FAULT RATING: 10KA OR 22KA (SPECIFY AT TIME OF ORDERING)
CSA APPROVALS: SERVICE ENTRANCE APPROVED (CONSULT SUPPLIER FOR SUPPORTING DOCUMENTS)

STREET LIGHT PEDESTAL INSTALLATION INSTRUCTIONS

CONSULT THE SUPPLIER FOR COMPLETE PEDESTAL INSTALLATION INSTRUCTIONS

THE AVAILABLE FAULT CURRENT OF THE SUPPLY TRANSFORMER SHALL BE COORDINATED WITH THE STREET LIGHT PEDESTAL FAULT RATING

CONDUITS SHALL BE SEALED WITH DUCTSEAL TO PREVENT INGRESS OF MOISTURE

A VAPOUR BARRIER SHALL BE INSTALLED INSIDE THE STREET LIGHT PEDESTAL BASE TO PREVENT THE INGRESS OF MOISTURE. CONSULT THE SUPPLIER FOR FURTHER INSTALLATION INSTRUCTIONS (I.E. APPLICATION OF SELF LEVELLING SILICONE - CSL SILICONES INC. PRODUCT NO. CSL-506)

STREET LIGHT CABLES SHOULD BE TAGGED WITH THE PEDESTAL AND CIRCUIT NUMBER. UTILITIES KINGSTON WILL NUMBER THE STREET LIGHT POLES AFTER THE INSTALLATION IS COMPLETE.

THE CONTRACTOR DOES NOT NEED TO SUPPLY A LOCK FOR THE PEDESTAL. PEDESTALS WILL BE INSPECTED BY UTILITIES KINGSTON PRIOR TO ENERGIZATION. UTILITIES KINGSTON WILL INSTALL A SNAP-OFF LOCK AT THE TIME OF ENERGIZATION

Utilities Kingston

Utilities Kingston is acting on behalf of Kingston Hydro

STREET LIGHT DISTRIBUTION PEDESTAL
LAYOUT

Kingston Hydro

Revision:	Jan 7, 2014
Scale:	NTS
Drawing No.:	K03-03-102

UTILITIES KINGSTON

Appendix 2I: *Standard Forms*

Subdivision Lot Servicing Detail Sheet

Sanitary Sewer Design Sheet – Utilities Kingston

Water Valve Inspection Sheet – Utilities Kingston

Subdivision Lot Servicing Detail Sheet

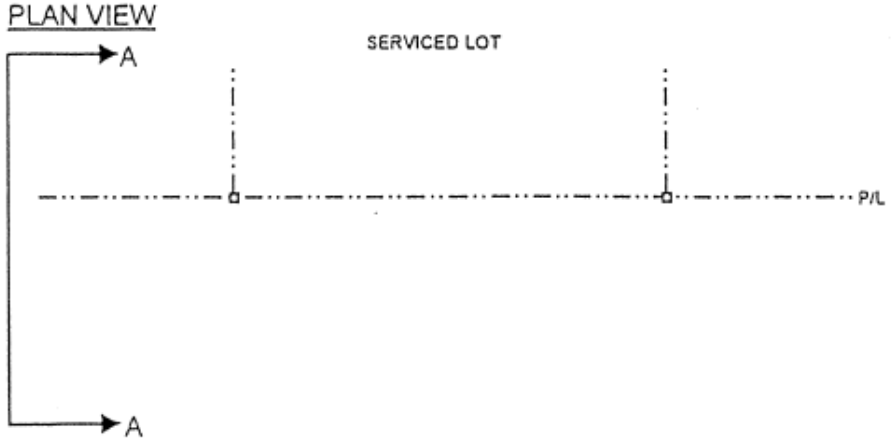
SUBDIVISION LOT SERVICING DETAIL SHEET

Civic Address _____

Subdivision _____

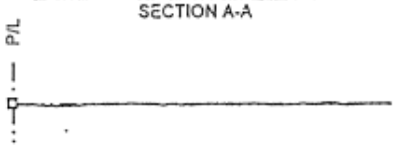
Lot # _____

PLAN VIEW



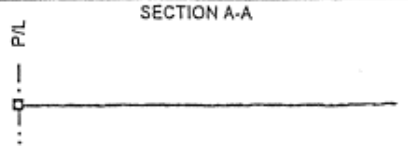
SHOW MAINS AND SERVICE LOCATIONS. INDICATE DISTANCE TO EACH SERVICE AT THE PROPERTY LINE TO A PROPERTY CORNER SURVEY MARKER.

SANITARY SERVICE PROFILE
SECTION A-A



INDICATE INVERTS, SLOPES, FITTINGS, AND HORIZONTAL DISTANCES.

FOUNDATION DRAIN SERVICE PROFILE
SECTION A-A



INDICATE INVERTS, SLOPES, FITTINGS, AND HORIZONTAL DISTANCES.

MATERIALS:

WATER SERVICE SIZE_____mm, MATERIAL_____, DEPTH @ P/L_____m

SANITARY SERVICE SIZE_____mm, MATERIAL_____, COLOR_____

FOUNDATION DRAIN SIZE_____mm, MATERIAL_____, COLOR_____

Sanitary Sewer Design Sheet – Utilities Kingston

UTILITIES KINGSTON SANITARY SEWER DESIGN SHEET

Location			Individual				Cumulative							Sewer Data									
Street	From	To	No.	pop per ha	Area (ha)	Pop	Area (ha)	Pop	Peak Factor M	Peak Sewage Flow Q(p) (l/s)	Peak Extran. Flow Q(i) (l/s)	Peak Design Flow Q(t) (l/s)	Minimum Design Flow Q(t) (l/s)	Length (m)	Pipe Size (mm)	Type of Pipe	n	Slope (%)	Capacity (l/s)	Full Flow Velocity (m/s)	Design Flow Velocity (m/s)	Design Flow Depth (mm)	Minimum Velocity (m/s)

NOTES:
M = peaking factor
= where P is in thousands
M is limited between 2 and 4
P= total population
q = average daily per capita flow -350L/(pers*day)
i = unit of peak extraneous flow of 0.2 L/(ha*sec) for existing development
and 0.1 L/(ha*sec) for new development

$$M = 1 + \frac{14}{4 + \sqrt{P}}$$

$$Qp = \frac{PqM}{86400} \quad (l/s)$$

Design:
Checked:
Date:

(SEAL)

Project:
From:
To:
Sheet No.:

Water Valve Inspection Sheet – Utilities Kingston

Water Valve Inspection Sheet

Subdivision Name and Phase	Date:
Water Valves (mainline valves)	
Total number of valves	
Total number of **open** valves	
Number of closed valves	
Reason for valves being closed and exact location	
Valve	Location and Explanation
Additional Comments	
Contractor's signature	Utilities Kingston's signature

utilities kingston
water sewer gas electricity networks
all your utility services under one roof

TREES & PARKLAND DEVELOPMENT: TECHNICAL SCHEDULE 3

Appendix 3A –	Street Tree Requirements
Appendix 3B –	Inspection/Review Schedule by Tree Inspector
Appendix 3C –	Tree Preservation and Protection Plan
Appendix 3D -	Parkland Development
Appendix 3E -	Parks and Open Space Categories/Maintenance Levels
Appendix 3F -	Fencing Adjacent to Parks and Open Space
Appendix 3G	Planting Details
Appendix 3H	Tree Conservation By-Law *No. 2007-170*
Appendix 3I	DC Parks Process Implementation Chart

TREES & PARKLAND DEVELOPMENT

Appendix 3A: *Street Tree Requirements*

Trees are required to be planted in conjunction with subdivisions by the developers according to approved plans reviewed by Culture, Parks and Recreation staff. The intent of the review is to provide for a diverse and healthy urban forest that is easy to maintain which will add to the quality of life in the City.

To provide a balanced and canopied streetscape the trees should be located an equal distance back from the curb on both sides of the street. The requirement is that the trees be planted on the public right-of-way so that the stock is managed as part of the city's urban forest system and included in the forestry data bank.

The 2002 edition of the subdivision guidelines required developers to plant street trees 1.5 metres onto private property. This has become problematic for city forestry staff, the developers, landscape contractors and the homeowners. With smaller yard widths and front yard depths the trees are being located within 3 meters of the house foundation walls. This is not ideal from a streetscape aesthetics perspective. Other issues that have arisen from the private property planting are:

- Homeowners often have existing foundation planting or trees planted by the time the developer puts in his required trees. The homeowners' trees or shrub beds interfere with the placement of the required tree.
- Homeowners prevent landscape crews from entering their private property.
- Homeowners also remove 'their tree' after the warranty period is over. This results in a treeless or sporadic "treescape."

The rationale for moving the trees back onto public lands is that the City owns the trees, maintains and replaces them as necessary to ensure that the streetscape is 'treed.'

The developer shall submit a Street Tree Planting Plan prepared by a Landscape Architect to the satisfaction of the City as part of the first engineering submission. The plan shall list in a table format, the selected species by common and cultivar name, size, planting state and include in the notes all required specifications as per 2.0 below including any additional ones that are specific to the site. As a guide the table below sets out the spacing and placement of trees:

1.0 Tree Spacing and Location Table

***** subject to separation criteria in section 2.0

Residential Dwelling Type	Lot Frontage	Spacing	Front Yard Depth	Location
Single Family Dwelling	9m or greater	1 tree per lot	> 6metres < 6 metres	Within the public right-of-way, respecting service separation requirements and a minimum of 7.5 meters from the foundation of any house
Single Family Dwelling	< 9 m	1 tree every second lot	As Above	As Above
Duplex/semi detached dwelling	9 m or greater	1 tree per lot	As Above	As Above
Duplex /semi detached dwelling	< 9 m	1 tree per lot	As Above	As Above
Triplex dwelling	9m or greater	1 tree per lot	As above	As above
Town houses	< 7m	1 tree every third lot	As above	As above
Apartment building	> 30 m	Trees 8m on centre	6 m or greater < 6m	Within the public right-of-way, respecting service separation requirements and a minimum of 7.5 meters any foundation walls.
Corner Lots **Exterior side yards**	Lot depth	2-3 trees equally spaced between sight triangles on properties	Lot depth 30 m or greater (60 m block length)	Between property line and curbing depending on servicing trench and sidewalk location.

2.0 Separation Criteria

The location of trees on the public right of way shall be as per the approved standard cross-section and subject to on-site relocation as impacted by service locates.

- Street lights 3.0 metres
- Sidewalks 0.5 metre
- Curbs 1.5 metres to back of curb
- Driveways 1.25 metres
- Other trees 8.0 metres
- Electric transformers 3.0 metres from the access hatch side
- Hydrants 1.5 metres
- Water/sewer lines 2.0 metres
- Hydro lines 1.0 meter from line or as required by Hydro One or Utilities Kingston

3.0 Species Selection

A total of 5 different species of trees are to be selected for tree planting from the tables of approved street trees below. It is to be noted that trees are to be planted so that no two species of the same type are side by side unless otherwise approved by City of Kingston staff as stated in the Tree Conservation By-Law (Appendix 3H).

The recommended planting order is based on 5 species of trees being planted in the following order: **A, B, C, D, E, A, B, C etc**…with each tree species being reflected by a letter.

A. Street Shade Trees for Residential Streets

Common Name	Latin name
Freeman Maple	Acer x freemani
Emerald Queen Maple	Acer Plantanoides 'Emerald Queen'
Parkway Maple	Acer Plantanoides 'Parkway'
Red Maple	Acer rubrum var. Morgan/Red Sunset
Hackberry	Celtis occidentalis
Honey Locust	Gleditsia triacanthos var. Shademaster/Skyline
Maidenhair tree (male only)	Gingko biloba
Red Oak	Quercus rubur
Linden	Tilia var cordata Glenleven/ Euchlora (Crimean)

B. Street Trees Recommended for Small Lots, Cul-de-sacs or where Servicing Limits Space.
Note: single leader trees only -no multi-stem stock.

Common Name	Latin name
Katsura Tree	Ceridiphyllam japonicum
Amur Cork tree	Phellodendron amurense
Ornamental Pears /Bradford, Redspire	Pyrus calleryana
Ivory Silk Tree	Syringa amurensis japonica 'Ivory Silk'
Serviceberry	Amelanchier canadensis
Amur Maple	Acer ginnala
Thornless Cockspur Hawthorn	Craetaegus crusgalli 'inermis'

C. Planting in Natural or Adjacent to Environment Protection Areas
Where considered appropriate by the Culture, Parks and Recreation Tree Inspector, whips may be used for mass plantings within or adjacent to naturalized areas.

The following trees and shrubs are not recommended to be planted to adjacent natural areas or environmental protection areas. The alternative species are also good trees/shrubs to consider adjacent to storm water retention pond sites.

Invasive Tree Species	Effects on Natural Area	Alternatives to consider
Norway Maple	Dominates forest Canopy.	Native maple species
Horsechestnut	Invades forest, Tends to dominate	Native Chestnut
Tree of Heaven	Dominates early successional forest	Black Walnut
Amur Maple	Competes with early successional forest species	Native Mountain Maple, Hop tree
Russian Olive	Invades meadows and shrub communities	Native Viburnums, redbud, native pin cherry, chokecherry
White Mulberry	Hybridizes with rare red mulberry	Native Witch-Hazel, Native Serviceberry, pin cherry , chokecherry

Lilac	Dominates forest edge	Native red Mulberry, pin cherry, chokecherry
Burning Bush	Invades forest understorey	Native serviceberry, native highbush cranberry, elderberry, nannyberry, native euonymus.
Scots Pine	Invades meadows	White Pine, Red Pine, White Spruce

4.0 Tree and Planting Specifications

- **Appearance –** All trees furnished shall be well branched according to species and well rooted with a uniform straight trunk. No double leaders will be accepted.
- **Caliper** – The minimum caliper tree shall be 60mm as measured 150mm above the root ball.
- **Pruning** – All trees shall show evidence of pruning and shall be free of mechanical injuries, disfiguration, sunscale, frost cracks, broken bark, broken and dead branches, or any other objectionable features.
- **Topsoil –** Topsoil shall consist of loose friable loam, free of subsoil refuse or other deleterious material, and shall not contain less than 5% nor more than 20% organic matter.
- **Tree Wound dressing –** Paint for wounds or cuts shall be approved tree wound dressing compound, containing no ingredient harmful to the plant cambrium. Cuts or wounds measuring 25mm in diameter and greater, and all exposed wood or scars resulting from previous work or damage shall be painted with any approved tree wound dressing.
- **Anchoring Stakes** – Stakes for anchoring tree guy wires shall be spruce, 50mm x 750 mm, pointed at one end and notched at the other to securely hold the guy wires.
- **Wrapper material** – Wrapping material for trees shall be approved kraft, waterproof paper, type 30-30-30 in 100mm strips, pre-approved burlap in 150mm strips.
- **Wire –** Wire used for bracing the tree shall be Number 12 galvanized steel wire. All wire shall be new and free from bends or kinks.
- **Hose** – Hose to be used with the wire bracing shall be 17mm diameter (5/8 inch) rubber or plastic garden hose.
- **Tree Stakes** – All trees are to be staked according to detail with 2 steel "t" bars not less than 2m long hammered into the ground free of the disturbed soil.
- **Root Pruning –** Ensure that the ends of all broken or damaged roots of 6mm diameter or larger are pruned with a clean cut.
- **Pruning** – Dead wood and broken or dead branches of 25mm in diameter and greater shall be removed.
- **Planting Balled and Burlapped Stock** – All trees and evergreens shall be balled and burlapped (B & B) complete with wire basket and shall be dug in a manner that they may be lifted with the necessary roots in an earth ball. Tree balls shall be wrapped and burlapped using 5 oz burlap and shall be drum laced. Tree ball size shall be approximately 80cm in diameter.
- **Tree Holes** – Tree holes shall be dug to a diameter greater in width and depth than the root ball. Surplus excavated material shall be removed from the site.

5.0 Specialty Plantings or Entrance Features

Any landscape upgrades within road allowances that include perennial/annual shrub beds or entrance gates/walls shall be the responsibility of the developer or assumed by the local Neighbourhood Association once build out has occurred. Public Works staff will be responsible for the care and maintenance of street trees and parkland areas within subdivisions.

TREES & PARKLAND DEVELOPMENT

Appendix 3B: *Inspection/Review Schedule by Tree Inspector*

Item	When	Action	Outcome
Review of Tree Preservation and Protection Plan	At first detailed design submission or prior to any site work commencing	In field assessment of existing trees as it relates to submitted plan	Approval of P & P Plan
Tree Preservation and Protection Plan inspection	Any time after approval of plan	On site inspection to see if trees are being preserved and protected as per approved plan	Proper tree protection and preservation
Review of Street Tree Plan	1st submission until plan is approved	Assessment of local vegetation and soils	Trees will thrive
Tree Locates	When developer/landscape contractor indicates that service locates are done and tree locations are staked based on separation criteria	Assessment of proper location based on plan and separation criteria (2 above)	Trees that will grow and not interfere with infrastructure or foundations
Inspection of Tree Stock	When landscape contractor calls and indicates trees are arriving on site	Assessment of quality of stock as per section 2.0	Trees that will be structurally sound and free of disease
Inspection of Tree planting	When landscape contractor calls and indicates trees are ready to be planted	Assessment of planting, staking and mulching/adherence to specifications in 4.0	Trees that should survive the 24 month warranty period
Final Inspection and assumption of Trees	When developer or agent indicates that the warranty period is up and wishes to hand over tree care to the city	Assessment of trees to ensure we are acquiring trees in good condition/ Replacement of trees that are not in good condition	Trees that will be structurally sound/free of disease and promote an attractive streetscape
As Planted Street Tree Plans'	When the City is ready to assume the street trees	An as planted street tree plan will be submitted by the developer at the time the city assumes the care of the tree stock	Accurate records and data collection for tree inventory and management plan.

Financial Security: As part of the financial security for completing the "works' the owner is required to post security in the amount of $350 dollars per tree.

Note: If the total number of trees on the approved plan cannot be accommodated on site because of technical matters, then the security held for those trees will be transferred to the city's tree bank account. A cheque in the appropriate amount will be forwarded to the Supervisor of Forestry.

Warranty: The developer shall provide a warranty on all plant material supplied and planted according to the approved specifications for a period of not less than two full years from the date of completion of the inspected tree plantings.

Assumption of Stock:
All dead, dying or diseased planted material shall be replaced at no cost to the city in the event that the plants are deemed to be in an unsatisfactory condition at the end of the warranty period. The owner shall supply and plant healthy stock equal in size and species with the defective plant material being replaced. All replacement stock will be subject to the approval of the Tree Inspector.

TREES & PARKLAND DEVELOPMENT

Appendix 3C: *Tree Preservation & Protection Plan*

1.0 General

The City of supports the preservation, establishment and growth of a vital and well managed urban forestry system comprised of the retention of existing woodlots, specimen trees and new tree plantings in parks, open spaces, private/public lands and along streets.

The developer is asked to comply with the requirements of the Tree Conservation By-law, By-Law 2007-170 (Appendix 3H), as amended, as it pertains to the City of Kingston's urban forest. Tree replacement, reforestation and monetary compensation are options that may be required to improve damaged urban trees.

Where considered appropriate by the Supervisor of Forestry or the Tree Inspector, whips may be used for mass plantings within naturalized areas.

A required note on the Tree Preservation and Protection Plans shall read as follows:

"This Tree Protection and Preservation Plan is consistent with proposed grading and infrastructure works as submitted by the consulting engineer."

The intent of this statement is that the Preservation & Protection Plan is a **viable plan** and not negated by the terminology such as," all trees will be protected where grading permits".

2.0 Tree Preservation and Protection Plan (Required Prior To Plan Registration)

- The Tree Preservation and Protection Plan must accurately locate and identify all trees over 150mm in caliper or grouping of trees 150mm in diameter or larger (measured 1.4m from the ground) on the subject property.
- The plan shall identify each tree by number and in table format indicate the number, species, the caliper of the tree, the condition, and whether the tree is to be preserved or removed and the rationale for the action.
- The plan shall also include details and written specifications for tree protection and preservation.
- The Tree Preservation & Protection Plan must be stamped by an ISA certified arborist.

3.0 Standard notes to be included on all tree preservation plans

1. All existing trees, which are to remain, shall be fully protected with staked/anchored snow fencing to City standards, erected 1.5m beyond the "drip line" at the discretion of City staff.
2. Groups of trees and other existing plantings to be protected shall be treated in a like manner with snow fencing around the entire clump(s). Areas within the protective fencing shall remain undisturbed and shall not be used for the storage of building materials or equipment.
3. No rigging cables shall be wrapped around or installed in trees. Surplus soil, equipment, debris or materials shall not be placed over root systems of the trees within the protective fencing.

4. No contaminants will be dumped or flushed where feeder roots of trees exist.
5. The developer or his/her agents shall take every precaution necessary to prevent damage to trees or shrubs to be retained.
6. Where limbs or portions of trees are removed to accommodate construction work, they will be removed carefully in accordance with accepted arboriculture practices.
7. Where root systems of trees are exposed directly adjacent to or damaged by construction work, they shall be trimmed neatly and the area backfilled with appropriate material to prevent desecration.
8. Where necessary, the trees will be given an overall pruning to restore the balance between roots and top growth or to restore the appearance of the trees.
9. Trees that have died or have been damaged beyond repair, shall be removed and replaced by the owner at the developer's own expense with trees of equal size and species.
10. If grades around trees to be protected are likely to change, the owner shall be required to take such precautions as dry welling, retaining walls and root feeding, to the satisfaction of the Public Works Supervisor.

TREES & PARKLAND DEVELOPMENT

Appendix 3D: *Parkland Development*

1.0 Requirement for Parkland or Cash in-Lieu of Parkland

It is the intent of the City of Kingston to acquire functional parkland and natural open space areas in accordance with the needs of the community as allowed for under the Planning Act. As determined through the draft plan process, Culture & Recreation Staff will consider parkland contributions, land or cash-in-lieu of parkland, based on known need for Neighbourhood and Community Parks or Recreational Trails/Pathways. (identified in the Cycling and Pathways Study or by other studies or policies approved by Council.)

The Developer/Owner shall be advised, officially, at the **draft plan stage** whether the City will either require the payment of cash-in-lieu of parkland or parkland as a condition of draft plan approval. It is in the best interest of the developer to pre-consult with Culture and Recreation staff on the need for parkland prior to submitting the draft plan. The parkland rate shall be at a minimum of 5% of the total land area for the subdivision. Lands within 1:100 year flood plains, stormwater blocks, hazard lands, sites known to contain contaminants or walkway blocks from street to street will not be accepted for active parkland or recreational trails.

The City, in accepting active/passive recreational lands for neighbourhood and community parkland, will require parcels that accommodate access by maintenance equipment, and are configured to ensure good sight lines in and through the park from the abutting streets. New parks are subject to a review the Kingston Police Force through their Crime Prevention Through Environmental Design process. (C.P.T.E.D.)

2.0 Process for Parkland Development

See Appendix 3I, New DC Parks Process Implementation

3.0 Deeding of Parkland/Conditions of Acceptance

If Culture, Parks and Recreation has indicated a need for dedicated parkland or open space at the draft plan stage the City will require parcel(s) of land to be deeded in an environmentally clean state with all natural hazards removed.

The definition and the expectations of '**CLEAN'** are as follows:

- The park site shall meet the requirements of the Environmental Protection Act. To limit the risk of liability and provide a safe environment for interim and future leisure and active recreational use.
- The park site shall have been subject to an Environmental Assessment (Class 1) and associated clean-up (if noted as a requirement of draft plan or subdivision agreement).
- The clean up of all litter, garbage**,** construction debris, and environmental hazards as identified under Environmental Assessment and by Culture, Parks and Recreation staff.

The deeding of the parkland will occur after the subdivision plan is registered. Two copies of the deed are to be forwarded to Culture & Recreation for records, tree assessment, and pre-engineering works as well as a CD of the approved plans.

All land to be transferred to the City of Kingston for public parkland shall be left in an untouched or natural state. All vegetation is to remain within the limits of the park site including any significant trees at the property line. Existing grades/elevations are to be maintained at the property lines and within the park itself unless approval for site alterations is received in writing from the Director of Culture & Recreation or designate.

The developer shall be required to enter into a Site Access Agreement with the City of Kingston to permit City Culture, Parks and Recreation staff or consultants to access the park site to complete pre-engineering, survey and design works for the park. If necessary this agreement will terminate once the city is deeded the land under final plan approval.

Prior to final approval, the Director of Culture & Recreation shall be in receipt of a clearance memo from the Manager of Environment indicating that the park site is environmentally clean as documented through the Phase 1 ESA process or subsequent requirements of that process.

Prior to the physical assumption of parkland, the Director of Culture & Recreation or designate will inspect the park site to ensure that the park is in a clean/natural state**.** The conditions on the site must be satisfactory to the Director of Culture & Recreation prior to transfer of title and the removal of the snow fencing. Should the park blocks be in an unsatisfactory state, the Developer shall be held responsible and be required to reinstate the site to the city's satisfaction.

3.0 Cash-in-lieu of Parkland

If cash-in-lieu of parkland is required for a plan of subdivision, the cash-in-lieu will be taken after the subdivision agreement is registered and prior to any building permits being taken out. This does not include any permits for model homes.

The value of the contribution (Minimum 5%) shall be based on the requirements of By-Law 2004-256, *A By-Law to Establish Development Charges for the City of Kingston,* as amended: (Values as of July 2005)

- Larger Blocks of residential land in fully serviced areas-$34,000 an acre/or $84,000 per hectare;
- Larger Blocks of residential unserviced land- $4,500 and acre or $11,200 per hectare;
- Single Lots in areas serviced by water or water and sewers- $30,000/Lot;
- Single Lots in unserviced areas- $30,000/Lot;
- Cash-in-lieu for single lots in unserviced rural areas is set at $975 per lot.

Other:

- Where there are unique parcels of land (i.e. waterfront property or mixed use of land-commercial /residential/industrial) where the above figures may not be valid, it will necessitate the applicant obtain an independent appraisal for the land based on the value the day before issuance of a building permit.
- Should there be a disagreement with the above quoted figures or typical land values, that the developer has the option of obtaining an independent appraisal, at their cost, in order to establish a land value for the purposes of calculating the cash-in-lieu of parkland contribution.

4.0 Services Required to Park Boundary

The developer will be responsible to install from the street right-of-way to the park property line connections for a water service and an electrical service. A 50-mm water service is required for all parks unless a larger service is identified as being required based on the functions and size of the proposed park. The cost of a water service over 50mm will be considered oversized and therefore funded by impost.

5.0 Drainage and Easements through Parks

All residential lot drainage shall occur on private lands and no drainage ditches or swales will be permitted on city parkland unless approved by the Director of Culture & Recreation or designated supervisor.

No underground services will be permitted under the deeded park land unless authorized by the Director of Culture & Recreation. This includes hydro transformers and Bell boxes.

Any catch basins or culverts in municipal parks that are required as part of an overall surface drainage plan will be the responsibility of Utilities Kingston to maintain, clean out and replace if required.

The Culture, Park and Recreation Division will maintain, replace and clean out all drains, catch basins, culverts and ditches that are stand alone drainage facilities for the park or any facilities within the park.

TREES & PARKLAND DEVELOPMENT

Appendix 3E: *Park & Open Space Categories/Maintenance Levels*

1.0 Natural Area

This type of area is defined as a parcel of land which because of its proximity to sensitive environmental protection areas, water courses, known AINSI's (Areas of Natural and Scientific Interest) or unique physical characteristics will be retained in its existing natural state. This rationale for these types of areas is to preserve natural resources and their aesthetic quality, and to provide in some instances buffering between active recreation areas, roadways or developments.

Maintenance by City

Where land has been deeded to the City as a natural area, Culture, Parks and Recreation crews will **only attend to risk management issues** and will not perform any regular maintenance on these parcels. A warning clause shall be included in any subdivision agreement alerting future home owners of this category of open space and the expectations of the City crews in terms of maintenance levels.

2.0 Woodlots

A woodlot is a parcel of land that contains a mix of trees species, and because of the quality and/or numbers of the trees is considered an asset to the community and will be retained for the provision of shade, the quiet enjoyment of nature and the retention of habitat for bird and animals.

Maintenance by City

The woodlot will be managed by the Forestry Unit and governed by good forestry practices and risk management procedures. A warning clause shall be included in any subdivision agreement alerting future home owners of an adjacent woodlot and the expectations of the City crews in terms of maintenance levels.

3.0 Tot Lots

A small park designed to serve a 2-3 block area and generally a population of up to 2,500. Tot lots are 0.5 to 1.0 acres in size. Tot lots generally contain the following types of recreation facilities: equipped play areas, benches, open space landscaping, and picnic tables. Tot lots may be used in areas where it is difficult to acquire sufficient land for a neighbourhood park.

Maintenance by City

The city will do regular maintenance of these types of parks. A warning clause shall be included in any subdivision agreement alerting future home owners of this category of park, the potential facilities within it and the expectations of the City crews in terms of maintenance levels.

4.0 Neighbourhood Park

A park that provides for both passive and active recreational uses that may include play equipment, playing fields for both organized and impromptu games, court games, skateboard ramps, water play features, pathways, lighting, seating and picnic areas, natural and maintained landscaping, gardens plots, or senior citizen areas. Neighbourhood parks are generally 1 to 5 acres in size and are accessible by foot or bicycle and a service population of up to 5,000 persons.

Maintenance by City

The city will do regular maintenance of in these types of parks. A warning clause shall be included in any subdivision agreement alerting future home owners of this category of park, the potential facilities within it and the expectations of the City crews in terms of maintenance levels.

5.0 Community Park

A park that provides a diverse range of recreational, passive and leisure activities and may contain areas of environmental or aesthetic quality (natural areas or woodlots). Facilities and activities may include, but are not limited to: athletic fields, community centers, public event spaces and buildings, access roads and parking areas, lighting and any facilities associated with neighbourhood parks. A community park is typically a "drive -to" facility from five to 25 acres in size that services the needs of up to 25,000 people. Community parks are ideally located near collector or arterial roads to accommodate adequate access and should be well-buffered from adjacent residential areas.

Maintenance by City

The city will do regular maintenance in these types of parks and will do additional or specialized work based on programming and events held in the park. A warning clause shall be included in any subdivision agreement alerting future home owners of this category of park, the potential facilities within it and the expectations of the City crews in terms of maintenance levels.

Note: A community park can also have a dual function as a neighbourhood park or tot lot when it provides facilities similar to these park types and its proximity to residential areas allows residents to walk or ride bicycles to the park.

6.0 Special Facilities

Special recreation and leisure facilities are generally identified as buildings and supporting lands that can accommodate the needs of the public for activities and events that are unique in function and purpose. Examples of special facilities include public golf courses, areas for field sports, nature trails, boat ramps, beach access points, community sports complexes, and other single-purpose or unique facilities. While development standards are available for such facilities, special facilities are based more on the desires or unique characteristics of a community and will be subject to policies and studies undertaken by the City.

Maintenance by City

The city will, as part of its standard operating procedures, develop specialized maintenance and operational plans for these facilities.

7.0 Linear Recreation Spaces

Linear recreation lands are continuous aligned open spaces that provide travel routes for one or more types of recreational or non motorized vehicles such as bicycling, roller blading, strolling, hiking, or jogging. In rural areas such activities as horseback riding would be permitted. The potential for linear recreation spaces are identified in Official Plans and are also set out in the Cycling and Pathways Study. Pathways and trails may be developed in association with natural areas or stormwater ponds.

Maintenance by City

The city will do regular maintenance in linear park systems. Mowing or turf maintenance may be restricted to grassed areas immediately adjacent to the path itself depending on the adjacent land categories. A warning clause shall be included in any subdivision agreement alerting future home owners of this category of open space, the potential path system within it and the expectations of the City crews in terms of maintenance levels.

8.0 Waterfront or Shoreline Access

Access points to waterfront or shoreline areas allow residents and visitors who do not own waterfront homes to enjoy recreation opportunities and natural beauty associated with the City's waterfront areas. The City Of Kingston is fortunate to have a variety of waterfront reaches in its jurisdiction. (Lake Ontario, the Great Cataraqui River, the St Lawrence River, the Rideau Canal, small portions of Loughborough and Collins Lakes) Access points may include existing access points created by natural landforms, manmade ramps, docks, launches or beaches, access points or vistas at street ends, the creation of boardwalks and pedestrian paths, parking facilities, picnic areas, showers and restrooms, and observation areas depending on the location. Other park classifications may also serve as beach/shoreline access points when abutting an aquatic resource.

Maintenance by City

The city will do maintenance in active and natural waterfront parks and access points as dictated by the level of use on a case by case basis and as dictated by risk management practices. A warning clause shall be included in any subdivision agreement alerting future home owners that an area for waterfront access has been accepted by the City and that the public will be allowed access to the shoreline area.

9.0 Open Space Associated with Stormwater Ponds

The City has acquired through the subdivision process parcels of lands that are used for stormwater purposes and form integral parts of stormwater management systems for the City. These stormwater parcels are not accepted as dedicated parkland but because of their location adjacent or within municipal parks or open spaces may contain ancillary amenities for recreational uses.

Maintenance by City

The City will do risk management assessment and follow-up maintenance to stormwater ponds lands (above the high water levels) that are within or adjacent to municipal parks. These parcels of land may include linear recreation

trails/paths. Mowing or turf maintenance may be restricted to grassed areas immediately adjacent to the path itself depending on the adjacent type of pond. A warning clause shall be included in any subdivision agreement alerting future home owners that a stormwater facility and open space area is nearby and that maintenance will be on a risk assessment basis unless a trail is associated with the pond lands.

TREES & PARKLAND DEVELOPMENT

Appendix 3F: *Fencing Adjacent to Parks & Open Space*

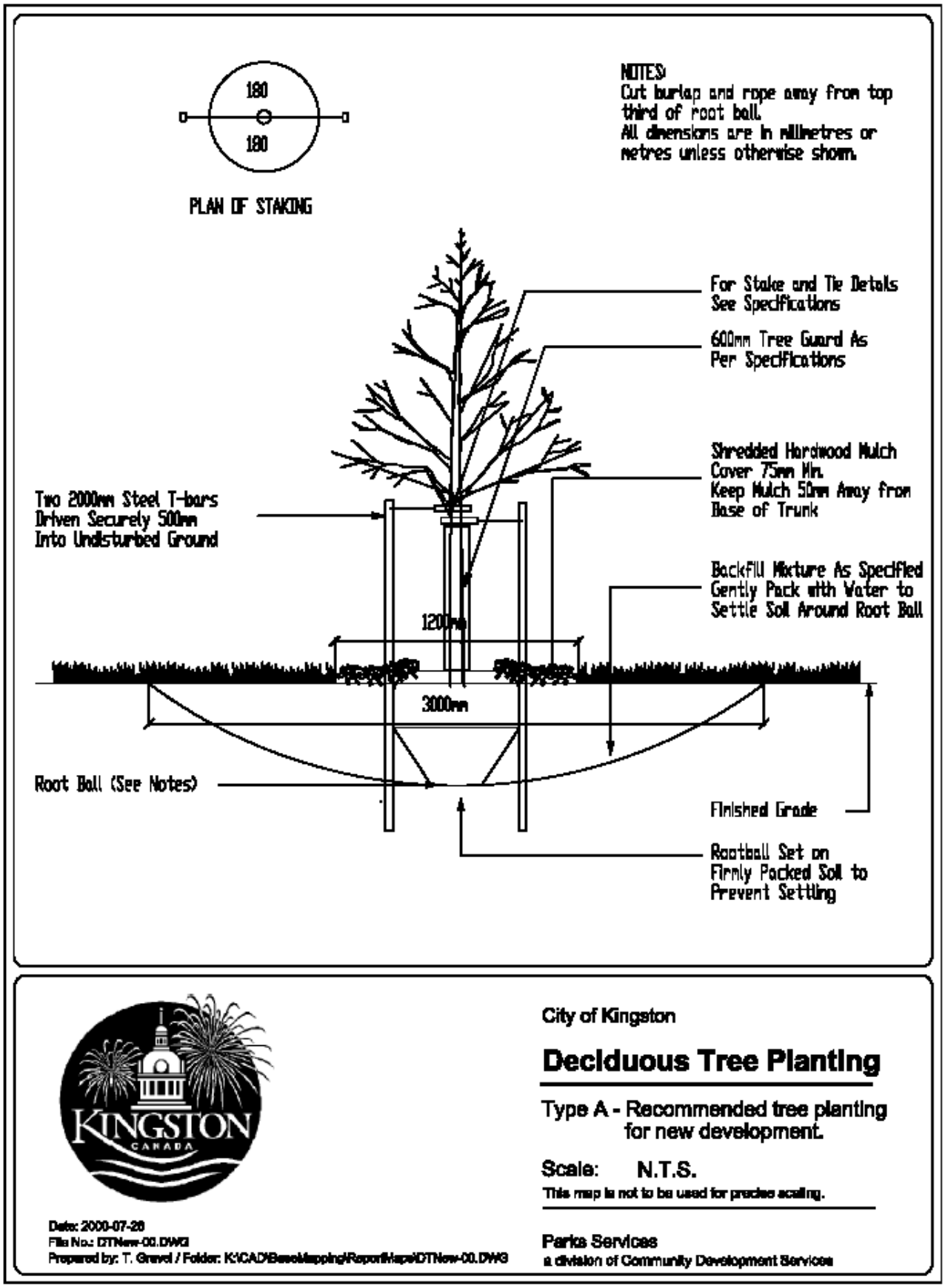
The City of Kingston will, through development charges reserve funds, install 4 foot high chain link fencing, wholly on public lands, adjacent to all linear open spaces systems that contain active, paved recreational trails.

The City of Kingston, may, through development charges reserve funds, install 4 foot high chain link fencing, wholly on public lands, adjacent to parks where active recreational or sports fields requires such an element. Additional protective fencing or higher fencing may be installed where needed.

Gates within the fencing will be permitted, subject to approval by Culture & Recreation staff and the owners signing a waiver that absolves the municipality for repairs required as a result of the gate being installed or damages to it. The cost of the gate will be the homeowner's responsibility.

All Chain link fencing shall comprise of a chain link with a diamond mesh not greater than 38mm as per By Law 2003-405 Schedule A – 3.3.

Appendix 3G: *Planting Details*



Appendix 3H: *Tree Conservation By-Law*

CITY OF KINGSTON

Ontario

BY-LAW NO. 2007-170

TREE BY-LAW

PASSED: September 4, 2007

As Amended By By-Law No:

By-law No.	Passed On:
2008-184	October 21, 2008
2009-42	March 3, 2009
2009-88	June 16, 2009

(Office Consolidation)

- 2 -

(Updated: August 13, 2009)

City of Kingston "TREE" BY-LAW No. 2007-170

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(Updated: August 13, 2009)

Tree By-law No. 2007-170

BEING A BY-LAW TO REPEAL AND REPLACE BY-LAW NO. 2005-289; BEING A BY-LAW TO PROHIBIT AND REGULATE THE DESTRUCTION OR INJURY OF TREES IN THE CITY OF KINGSTON.

PASSED: September 4, 2007

WHEREAS Section 135(1) of the *Municipal Act*, R.S.O. 2001, S.O. 2001, c. 25, as amended, permits the enactment of a By-Law by the Council of the Corporation of the City of Kingston to prohibit and regulate the destruction or injury of trees;

AND WHEREAS Council may also require that a permit be obtained for the injury or destruction of trees within the City of Kingston, and may prescribe the fees for the permit, the circumstances under which a permit may be issued, and the conditions to such a permit;

AND WHEREAS Planning Committee held two public information sessions on February 17, 2005 and March 23, 2005 for the purpose of discussing the City's need for a Tree By-Law;

AND WHEREAS the maintenance of mature tree cover is recognized as contributing to human health and quality of life;

AND WHEREAS trees were identified as an important element of the City's natural and cultural landscape for the following reasons:

(a) The aesthetic value of woodlands and trees;
(b) Providing recreational opportunities;
(c) Reducing airborne pollution;
(d) Protecting natural heritage features and areas;
(e) Maintaining and enhancing water quality;
(f) Preventing soil erosion and water run-off;
(g) Providing habitat for wildlife;
(h) Providing cooler air temperatures in the summer; and,
(i) Reducing the effects of global warming.

AND WHEREAS it was found to be desirable to prepare a Tree By-Law for the purposes of:

(a) Regulating and controlling the removal, maintenance, and protection of trees;
(b) To support the goal of increasing the City's urban forest; and,
(c) Promoting Good Forestry Practices and Good Arboricultural Practices that sustain healthy woodlands and the urban forest.

AND WHEREAS Planning Committee held a public information meeting on November 17, 2005 regarding a draft copy of a Tree By-Law;

AND WHEREAS Council passed By-Law No. 2005-289 at its meeting held on November 22, 2005, being a Tree By-Law;

AND WHEREAS it was deemed necessary to refine some of the provisions of the By-Law, in order to provide further clarification regarding the purpose and intent of the By-Law;

NOW THEREFORE the Council of the Corporation of the City of Kingston hereby enacts as follows:

DEFINITIONS

1. In this By-Law, the following definitions apply:

(1) "Agricultural Operation" means the conduct of Agriculture as a business activity that is carried out with the expectation of gain or reward, and includes the production of maple syrup, honey, eggs, milk or cream, and the operation of machinery and equipment, and may include a hobby farm.

(2) "Agriculture" means the science, art, or practice of preparing and cultivating the soil; growing field crops, greenhouse crops, mushrooms, nursery stock, and turf grass; and growing, producing or raising livestock, poultry, ratites, fur-bearing animals, cultured fish, deer and elk, game animals and birds, and honey bees.

(3) "Applicant" means the person who submits an application to the Corporation of the City of Kingston for a Tree Permit pursuant to the provisions of this By-Law.

(4) "Building Permit" means a building permit issued pursuant to the *Building Code Act*, 1992, S.O. 1992, c. 23, as amended.

(5) "Certified Arborist" means an arborist certified by the Certification Board of the International Society of Arboriculture.

(6) "Certified Tree Marker" means an individual who has full certification, and is in good standing, under the Ontario Ministry of Natural Resources program for marking trees.

(7) "City" means the Corporation of the City of Kingston.

(Updated: August 13, 2009)

(8) "Commercial Harvesting" means the business of felling trees and transporting logs to a market, with the expectation of gain or reward.

(9) "DBH" (Diameter at Breast Height) means the diameter of the stem of a tree measured in centimetres outside the bark at a point that is 1.37 metres above the ground.

(10) "Designate" means a person who is an employee of the Corporation of the City of Kingston and who has been appointed by the Director to administer all or part of this By-Law on behalf of the Director.

(11) "Destroy" means any act that renders, or which is likely to render, the tree(s) unviable or compromise its life processes in such a way that it cannot survive, and "destruction" has a corresponding meaning.

(12) "Director" means the Director of Planning & Development for the City of Kingston, and includes their designate.

(13) "Distinctive Tree" means a healthy tree that is considered by the Director to be an uncommon species to the City of Kingston region and environment or of an uncommon size, maturity, or age, and includes, without limitation, those tree species listed in Schedule 'A' to this By-Law.

(14) "Drip Line" means an imaginary line running along the ground directly beneath the outer most branches of the tree(s).

(15) "Farm" means a tract of land devoted to an Agricultural Operation.

(16) "Forest Management Plan" means a document, including prescriptions for Silviculture and ecological conservation, prepared by a Registered Professional Forester on behalf of the Owner for the purpose of managing the natural and forestry resources in accordance with Good Forestry Practices and environmental objectives.

(17) "Good Arboricultural Practice" means the proper planting and care of trees in accordance with the standards set by the International Society of Arboriculture.

(18) "Good Forestry Practice" means the proper harvesting, renewing, and maintaining of trees within the context of their specific forest and environmental conditions, which minimize detriments to Natural Forest Values.

(19) "Highway" means a common and public road and includes the road allowance, any bridge, trestle, viaduct or other structure forming part of the road, and, except as otherwise provided, includes a portion of a roadway.

(20) "Injure" means any action that causes physical, biological, or chemical harm or damage to a tree, and "injury" has a corresponding meaning.

(21) "Municipal Property" means any land owned, held, and/or used by the City, and includes, but is not limited to, road allowances, easements, boulevards, parks, natural areas, highways, or rights-of-way.

(22) "Municipal Tree" means a tree, the trunk of which is located entirely or substantially on Municipal Property.

(23) "Natural Forest Values" mean significant tree based ecosystems, the natural productivity and health of the trees, important fish and wildlife habitat, soil and water quantity and quality, and the aesthetics of the treed landscape.

(24) "Normal Farm Practice" means any activity undertaken in accordance with the *Farming and Food Production Protection Act* that is part of an Agricultural Operation, and is conducted in a manner consistent with proper and accepted customs and standards as established and followed by similar Agricultural Operations under similar circumstances, and may make use of innovative technology in a manner consistent with proper advanced farm management techniques.

(25) "Officer" means an individual appointed by the Corporation of the City of Kingston to enforce the provisions of this By-Law, and includes a municipal by-law enforcement officer.

(26) "Owner" means the person(s) or corporation(s) registered on the title of the land in the Registry Office or Land Titles Office.

(27) "Park" means a playground, playing field, ball diamond, sports field, beach, recreation centre, community building, facility, square, garden, water, pedestrian walkway, or any other area owned, leased or used by the City and devoted to active or passive recreation, and includes any lane or walkway or public parking area associated with the Park.

(28) "Personal Use" means the utilization of a tree(s) or tree sections destroyed or injured by an Owner on their own land and collected solely for their own purpose and use without the sale, exchange, or other disposition of the tree(s) or tree sections to other parties.

(29) "Plant Nursery" means the use of lands, buildings or structures, or portions thereof, where trees, shrubs or other plants are grown for the purpose of retail or wholesale trade. A plant nursery may include the accessory sale of soil, planting materials, fertilizers, garden equipment, ornaments and similar material.

(30) "Qualified Forestry Consultant" means a Certified Arborist, a Certified Tree Marker, or a Registered Professional Forester.

(31) "Registered Professional Forester" means a member of the Ontario Professional Foresters Association as defined in the *Professional Foresters Act*, 2000, S.O. 2000, c. 18.

(32) "Rural Area" means the area defined as Rural in the applicable Official Plan.

(33) "Silviculture" means the theory and practice of controlling forest establishment, composition, growth, and quality of forests to achieve the objectives of forest management.

(34) "Tree" means any species of woody perennial plant, including its root system, which has reached or can reach a height of at least 4.5 metres at physiological maturity.

(35) "Tree Permit" means the written authorization from the Director to destroy or injure trees, with or without conditions.

(36) "Tree Preservation and Protection Plan" means a plan prepared by a Qualified Forestry Consultant, which includes measures required for the protection of trees that eliminate or mitigate the potential risk of tree damage.

(37) "Tree Protection Zone" means an area surrounding a tree that is marked and fenced off, where storage of materials of any kind, parking or moving of vehicles, and disturbance of the soil or grade is prohibited.

(38) "Urban Area" means the area defined as Urban in the applicable Official Plan.

APPLICATION OF THE BY-LAW

2. No person shall injure or destroy or cause or permit the injury or destruction of the following trees within the limits of the City of Kingston, except where the injury or destruction is done under the authority of a Tree Permit, or as otherwise exempted in Sections 3 and 4 of this By-Law:

(a) All trees classified as an endangered, threatened, or at risk tree species, as defined in the provincial *Endangered Species Act*, R.S.O. 1990, c. E. 15, or successor legislation;

(b) All trees classified as an endangered or threatened tree species, or a tree species of special concern, as defined in the federal *Species at Risk Act*, or successor legislation;

(c) All trees classified as a Distinctive Tree as defined in Section 1 of this By-Law and in accordance with Schedule 'A' of this By-Law;

(d) All trees that are fifteen centimetres (15 cm), or greater, in diameter at breast height (DBH);

(e) All trees located on Municipal Property;

(f) All trees located in areas designated as Environmental Protection Areas (EPA) or as Open Space in a municipal official plan;

(g) All trees that have been identified for protection in a Tree Preservation and Protection Plan approved by the Director; and,

(h) All trees that are subject to commercial harvesting on lands greater than one (1) hectare in area.

SPECIFIC EXEMPTIONS

3. Trees may be injured or destroyed, without applying for a Tree Permit, where:

(a) Pruning is necessary to maintain the health and condition of the tree, provided the injury is in accordance with Good Arboricultural Practice;

(b) It is necessary to remove a hazardous, dead, diseased, or severely injured tree(s), or a portion of such a tree(s), provided a letter confirming the need for the removal has been prepared by a Certified Arborist and approved by the Director, and any such injury or destruction is conducted in accordance with Good Arboricultural Practices.

(By-law No. 2007-170; 2009-42)

(c) It is necessary to remove trees that are causing, or are likely to cause, structural damage to load-bearing or other structures;

(d) The tree(s) are located within the limits of any residential lot that existed and was developed with a residential structure prior to the date of the passage of this by-law;

(e) The tree(s) are within the limits of any residential lot that is created by way of a registered plan of subdivision, consent or registered plan of condominium on or after the date of the passage of this by-law;

(f) The tree(s) are located within a building or structure, a solarium, a rooftop garden, or an interior courtyard;

(g) The injury or destruction is imposed as a condition of the approval of a site plan, a plan of subdivision, or a consent under Section 41, 51, or 53 respectively of the *Planning Act* or as a requirement of a Site Plan Control Agreement or Subdivision Agreement entered into under those Sections;

(h) The injury or destruction is imposed as a condition of a development permit authorized by a regulation made under Section 70.2 of the *Planning Act*, or as a requirement of an agreement entered into under that regulation;

(i) The injury or destruction is required to permit the establishment or extension of a building or structure, including driveways and access routes, and provided:

(i) the proposed use is permitted by the Zoning By-Law;

(ii) there is no reasonable alternative to the injury or destruction;

(iii) a building permit has been issued for the proposed use; and

(iv) no tree is destroyed or injured that is located more than fifteen (15) metres from the outer edge of the building or structure.

(j) The injury or destruction is necessary to install, provide or maintain utilities or public or private water and sanitary sewer infrastructure required for the construction or use of a building or structure for which a building permit has been issued;

(k) The destruction is in accordance with Good Arboricultural Practices and Good Forestry Practices and only where the trees are for a landowner's Personal Use;

(l) The trees that are destroyed are located within a cultivated orchard, tree farm, or plant nursery that are being actively managed and harvested for the purposes for which the trees were planted;

(m) The injury or destruction occurs on land covered by a Forest Management Plan, approved by a Registered Professional Forester, a copy of which has been submitted to the Director, and provided any injury or destruction is undertaken in accordance with Good Forestry Practices and the Forest Management Plan;

(n) The injury or destruction is necessary to clear land in accordance with a Normal Farm Practice conducted by an Agricultural Operation for its own Agricultural purposes, provided that the trees are situated outside of areas designated as Environmental Protection Areas (EPA) in a municipal official plan, and outside of the area identified on Schedule 'D' of this By-Law.

(By-law No. 2007-170; 2008-184)

(o) The injury or destruction is required as part of the operation of an existing cemetery or golf course;

(p) The injury or destruction occurs on land described in a license for a pit or quarry or a permit for a wayside pit or wayside quarry issued under the *Aggregate Resources Act;*

(q) The injury or destruction is required in order to lawfully establish and operate or enlarge any pit or quarry on land:

(i) That has not been designated under the *Aggregate Resources Act* or a predecessor of that *Act*, and

(ii) On which a pit or quarry is a permitted land use under a By-Law passed under Section 34 of the *Planning Act*.

STATUTORY LIMITATIONS & EXEMPTIONS

4. Trees may be injured or destroyed, without applying for a Tree Permit, pursuant to the following legislative provisions:

(a) Activities undertaken with any rights or powers under Provincial or Federal legislation;

(b) Activities or matters undertaken by a municipality, a local board of a municipality, or a Conservation Authority;

(c) Activities or matters undertaken under a license issued under the *Crown Forestry Sustainability Act*, 1994;

(d) Trees that are injured or destroyed by a person licensed under the *Surveyors Act* to engage in the practice of cadastral surveying or their agent, while making a survey; and,

(e) Trees that are injured or destroyed by a transmitter or distributor, as those terms are defined in Section 2 of the *Electricity Act*, 1998, for the purpose of constructing and maintaining a transmission system or a distribution system, as those terms are defined in that Section.

PLANNING & DEVELOPMENT PROCESS

5. (1) The provisions of this Tree By-Law, as amended from time to time, shall form part of the development approval process governed by the *Planning Act*.

(2) An application for a Tree Permit may be processed concurrently with an application submitted pursuant to the *Planning Act* and may form part of the technical information requested in order to consider the Planning Application complete.

(3) Where there is a development application involving a Planning Approval in the Urban Area, trees shall be protected from injury or destruction resulting from any site preparation, until the issuance of a Tree Permit and/or the receipt of the final approval of the applicable Planning Applications.

(4) Where there is a development application involving a Planning Approval in the Rural Area for rural estate residential subdivisions, rural commercial developments, rural industrial developments, or rural institutional developments only, trees shall be protected from injury or destruction resulting from any site preparation, until the issuance of a Tree Permit and/or the receipt of the final approval of the applicable Planning Applications.

APPLICATION FOR A TREE PERMIT

6. (1) Subject to Section 2, any person may injure or destroy a tree, provided that a Tree Permit has been issued by the Director to permit the injury or destruction and provided that the injury or destruction is conducted in accordance with the terms and conditions of the Tree Permit.

(2) Every person that intends to injure or destroy a tree(s) specified in Section 2 above, either personally or through another person or corporation, is required by this By-Law to complete and file a Tree Permit Application in the form prescribed by the City.

(3) The Tree Permit Application shall be filed with the Director, and shall include all information prescribed by the application, including, but not limited to:

(a) The names and addresses of the Owner of the land upon which the tree(s) is to be injured or destroyed, the Applicant or Agent (if different), Qualified Forestry Consultant, and contractor (if applicable);

(b) The municipal address and legal description of the land upon which the tree(s) is to be injured or destroyed;

(c) A schedule for the proposed works, including the start and end dates and the construction period;

(d) A description of the proposed works, including the number of trees to be removed, the reasons for the removal, the number of trees to be retained, the protection measures to be used for any retained trees, and the number of trees to be replanted;

(e) A description of any known cultural or natural heritage features on or adjacent to the subject site;

(f) Confirmation of existing Official Plan designations, zoning, and the status of any planning applications on the property as determined by pre-consultation with the Director;

(g) Confirmation of any other applications affecting the subject property; and,

(h) All required signatures as per Subsection (a) above.

(4) Every Tree Permit Application shall be accompanied by the prescribed fee, payable in accordance with Schedule 'A' of By-Law No. 2005-10, "A By-Law to Establish Fees and Charges to be Collected by The Corporation of the City of Kingston", as amended.

(By-law No. 2007-170; 2009-88)

(5) Where, in the opinion of the Director, additional information is necessary, the Director may require the Applicant to submit a report to be prepared by a Qualified Forestry Consultant that will form part of the Tree Permit Application, and which will address the reasons for the proposed destruction of the tree(s) and the preservation of any trees to be retained. The report shall be prepared in accordance with the City of Kingston's *Guidelines for the Completion of an Arborist Report* and the *Guidelines for Tree Preservation and Protection*

(6) A Tree Permit Application shall only be considered complete when accompanied by the information required pursuant to Section 6. herein and the fee required in accordance with Schedule 'A' of By-Law No. 2005-10, "A By-Law to Establish Fees and Charges to be Collected by The Corporation of the City of Kingston", as amended.

(By-law No. 2007-170; 2009-88)

REVIEW AND DISPOSITION OF A TREE PERMIT APPLICATION

7. (1) The Director shall review the complete Tree Permit Application and may:

(a) issue a Tree Permit;

(b) issue a Tree Permit with conditions; or

(c) refuse to issue a Tree Permit.

(2) Following the receipt of a complete Tree Permit Application, the Director may confer with such persons, staff, qualified professionals, and agencies as they consider necessary for the proper review of the application.

TERM OF A TREE PERMIT

8. (1) A Tree Permit issued by the Director shall remain in effect for twelve (12) months after the date of issuance, except for a Tree Permit authorizing a Forest Management Plan prepared for commercial harvesting.

(2) A Tree Permit for the commercial harvesting of trees, in accordance with a Forest Management Plan, shall specify a maximum time period as a condition of the Tree Permit.

(3) The Applicant may request, in writing, an extension to the Tree Permit for a period of up to two additional years, provided that the request is filed at least 30 days prior to its expiry.

(4) The Director may extend the expiration date of a permit.

(5) In considering whether or not to grant a request to extend a permit, the Director shall take into account to what extent the work authorized by the permit has been completed, and to what extent the conditions of the permit have been adhered to, and in no case shall the Director extend a permit so that the permit remains in effect for more than three (3) years from the original date of its issuance.

(6) No permit shall be renewed where the Owner or Applicant is in breach of any of the terms of this By-Law or a Tree Permit.

TERMS AND CONDITIONS OF A TREE PERMIT

9. (1) The Director may impose conditions on a Tree Permit that in his or her sole discretion are reasonable. Without limiting the generality of the foregoing, the following conditions may be imposed by the director:

(a) Any conditions in accordance with Good Arboricultural Practice, established Silviculture, and/or Good Forestry Practice;

(b) Any conditions recommended by a Qualified Forestry Consultant;

(c) The measures to be implemented to protect the retained trees during construction, if applicable;

(d) The requirement to prepare a Tree Preservation and Protection Plan, which must be approved by the Director and implemented as a condition of a Tree Permit;

(e) The creation of Tree Protection Zones and conditions associated with those zones;

(f) The manner and timing of the destruction or injury to the tree(s);

(g) A requirement to plant replacement trees in accordance with Section 9(2) of this By-Law; and,

(h) A requirement to provide compensation, in accordance with Section 10 of this By-Law for Municipal Trees injured or destroyed.

(2) Where a Tree Permit requires the planting of replacement trees, the Director may impose the following provisions related to the replacement trees:

(a) The species, size, number, and location of the replacement tree(s) shall be determined by the Director, in consultation with a Qualified Forestry Consultant;

(b) Where the removal involves a Distinctive Tree, the replacement tree(s) shall include the same species, where they are commercially available; (By-law No. 2007-170; 2009-42)

(c) The number of replacement trees to be planted shall be the greater of the number of trees specified by the conditions of the Tree Permit, or the number of trees to be planted in accordance with the Subdivision Agreement, Condominium Agreement, or Site Plan Agreement, whichever number is greater;

(d) The date by which any replacement tree(s) is to be planted shall be determined by the Director, in consultation with a Qualified Forestry Consultant;

(e) The maintenance and care of any replacement tree(s) shall be determined by the Director, in consultation with a Qualified Forestry Consultant;

(f) Replacement trees are to be maintained and protected in accordance with Good Arboricultural Practices by the Owner or person responsible for the injury or destruction, for a minimum period of two (2) years after planting;

(g) Cash or a letter of credit shall be deposited with the City, to be held in trust, for a minimum period of up to two (2) years after planting, to cover the costs of maintaining the replacement trees or for replacing any replacement trees that die; and,

(h) Replacement trees shall be subject to the following locational priorities:

(i) The first and highest priority shall be to plant the replacement tree(s) on the property where the tree(s) was destroyed; and,

(ii) The next highest priority shall be to plant the replacement tree(s) on another site(s) in the Municipality for the purpose of general reforestation, at the discretion of the Director.

(3) Where the destruction or injury of a tree(s) is not conducted as part of, and in accordance with, a Site Plan Agreement, a Subdivision Agreement, or a Condominium Agreement, the Owner may be required:

(a) To enter into an agreement regarding the conditions set out in Section 9 of this By-Law which form part of the Tree Permit, including any conditions imposed in accordance with Section 10 of this By-Law; and,

(b) To register the agreement on the title to the lands affected by the Tree Permit.

COMPENSATION

10. (1) The Director shall calculate the compensation for the injury or destruction of a tree(s) required as a condition of a Tree Permit for a Municipal Tree, or required as a condition of an Order issued under this By-Law as follows:

(a) The value of any tree that is injured or destroyed shall be determined using the International Society of Arboriculture Trunk Formula Method, as illustrated in Schedule 'C' of this By-Law, as it may be amended from time to time.

(b) The value of the tree(s) injured or destroyed, as calculated by the Director pursuant to Section 10(1)(a), shall be used to determine the number, species and size of the replacement tree(s) that shall be planted by the permit holder or the person responsible for the injury or destruction, as the case may be. The Director shall make this determination in consultation with a Qualified Forestry Consultant and his or her decision as to the number, species and size of replacement tree(s) shall be final.

(c) The provisions of Section 9(2)(c) to (g), with necessary modifications, shall apply to replacement trees planted in accordance with this section.

TREE MARKING & PRESERVATION

11. (1) All trees identified under Section 2 of this By-Law that are to be destroyed in accordance with an approved Tree Permit shall be marked by a Qualified Forestry Consultant with clearly visible marks of orange paint both at breast height and ground level, at least five (5) days prior to destroying any tree, but not prior to the issuance of a Tree Permit.

(2) Each stump remaining after cutting shall show the paint marking applied by the Qualified Forestry Consultant.

(3) The Applicant shall cause the installation of all tree preservation measures required pursuant to a Tree Permit to be completed under the supervision of a Qualified Forestry Consultant, to the satisfaction of the Director.

(4) The tree preservation measures and Tree Protection Zone(s) shall be inspected on a regular basis by a Qualified Forestry Consultant and a bi-monthly report made to the Director for the duration of the active period of construction.

TREE PERMIT POSTING

12. (1) A copy of the Tree Permit shall be posted on the property prior to the commencement of any injury or destruction of any tree allowed by the Tree Permit, in a conspicuous place on the subject property that is adjacent to a public road and visible to all persons, or at such other location designated by the Director.

REVOCATION OF A PERMIT

13. (1) A Tree Permit may be revoked by the Director under any of the following circumstances:

(a) If it was issued on mistaken, misleading, false, or incorrect information;

(b) If it was issued in error;

(c) If the Owner or Applicant requests, in writing, that it be revoked;

(d) If the terms of an Agreement under this By-Law are not complied with; or,

(e) If an Owner fails to comply with any provision of the Tree Permit or this By-Law.

(2) When a Tree Permit is revoked, the Owner and/or Applicant shall immediately cease all operations being conducted under the authority of the revoked Permit.

APPEALS TO COUNCIL

14. (1) An Applicant for a Tree Permit pursuant to this By-Law may appeal in writing to the Council of the City of Kingston where:

(a) The City refuses to issue a Tree Permit, within thirty (30) days after the refusal; or,

(b) The Applicant objects to a condition in the Tree Permit, within thirty (30) days after the issuance of the Permit.

(2) On appeal, the Council has the same powers as the Director under this By-Law, and may:

(a) Confirm the refusal to issue the Tree Permit;

(b) Issue a Tree Permit, with or without conditions; or,

(c) Affirm, vary, or add any conditions to the Tree Permit.

ENFORCEMENT

15. (1) This By-Law shall be enforced by an Officer appointed by Council for the purposes of enforcing by-laws within the City of Kingston.

(2) An Officer may, at any reasonable time, enter and inspect any land to determine whether this By-Law, an Order, or a condition of a Tree Permit is being complied with, provided that the power of entry does not allow the Officer to enter any building.

(3) An Officer may, in carrying out an inspection, be accompanied by the Director, and any other person necessary to assist the Officer with their enforcement activities.

(4) No person shall obstruct or interfere with the Director, or an Officer, in the discharge of their duties under this By-Law, and any person who so obstructs the Director or an Officer is guilty of an offence pursuant to this By-Law.

ORDERS

16. (1) Where the Director is satisfied that a contravention of this By-Law has occurred, the Director may issue a Stop Work Order requiring the person that contravened the By-Law, or that caused or permitted the contravention of the By-Law, to stop any injury or destruction to the tree(s).

(2) The Stop Work Order shall set out reasonable particulars of the contravention adequate to identify the contravention, the location of the contravention and the date by which there must be compliance with the Order.

17. (1) Where the Director is satisfied that a contravention of this By-Law has occurred, the Director may issue an Order requiring the person who contravened the By-Law or who caused or permitted the contravention, or the owner or occupier of the land on which the contravention occurred, to do the work specified in the Order that is necessary in the opinion of the Director to correct the contravention, including without limitation the planting of replacement tree(s) in accordance with Section 10 of this By-Law.

(2) The Order shall set out the reasonable particulars of the contravention adequate to identify the contravention, the location of the contravention, and the date by which there must be compliance with the Order.

(3) The Order may provide that if the person named in the Order fails to comply with the Order by a date specified in the Order, that the City shall have the right to enter upon the land affected by the Order at any time, and to complete the work specified in the Order at the expense of the person named in the Order.

18. (1) A Stop Work Order issued under Section 16, or an Order issued under Section 17, may be served personally by an Officer, may be posted in a conspicuous place on the property where the contravention occurred, or may be sent by registered mail to the person contravening this By-Law.

(2) Where an Order issued under this By-Law is served personally by an Officer, it shall be deemed to have been served on the date of delivery to the person(s) named.

(3) The placing of the Order on the affected lands shall be deemed to be sufficient service of the Order on the person or corporation to whom the Order is directed on the date it is posted.

(4) Where an Order issued under this By-Law is sent by registered mail, it shall be sent to the last known address of:

(a) The Applicant;

(b) The Owner; or,

(c) The person or company retained to work on the trees on the land.

(5) Where service of an Order is made by registered mail, service shall be deemed to have been served on the fifth day after the Order is mailed.

19. (1) Where a person fails to comply with an Order issued pursuant to Section 17 of this By-Law and the City enters on the lands and completes the work, the City shall be entitled to recover its costs to complete the work from the person named in the Order by action or by adding the costs to the tax roll and collecting them in the same manner as property taxes.

(a) The costs include interest calculated at a rate of 15 percent, calculated for the period commencing on the day the City incurs the costs and ending on the day the costs, including interest, are paid in full.

(b) The amount of costs, including interest, constitutes a lien on the land upon the registration in the land registry office of a notice of lien.

(c) The lien shall be in respect of all costs that are payable at the time the notice is registered plus interest accrued at the rate of 15 percent to the date the payment is made in full.

OFFENCE

20. (1) Any person who breaches any provision of this By-Law, contravenes the terms or conditions of any Tree Permit, or contravenes an Order issued by the Director, is guilty of an offence.

(2) Any officer or director of a corporation who knowingly concurs in the contravention of any provision of this By-Law, contravention of any terms or conditions of any Tree Permit, or contravention of an Order issued by the Director, is guilty of an offence.

PENALTIES

21. (1) If any person or corporation is convicted of an offence for contravening this By-Law, the conditions of a Tree Permit, or an Order issued under this By-Law, the Court in which the conviction has been entered, and any Court of competent jurisdiction thereafter, may, in addition to any fine imposed, make an order:

(a) Prohibiting the continuation or repetition of the offence;

(b) To rehabilitate the land, including planting replacement trees, applying accepted silvicultural treatments necessary to re-establish the trees, and governing the timing of the rehabilitation, planting, or replanting, within such a period as the Court considers appropriate; and,

(c) To provide compensation to the City, in accordance with Section 10 of this By-Law;

(2) In addition to Section 21(1):

(a) Any person who contravenes any provision of this By-Law, contravenes the terms or conditions of a Tree Permit, or an Order issued under this By-Law, is guilty of an offence and is liable:

(i) On first conviction, to a fine of not more than $10,000 or $1,000 per tree, whichever is greater; and

(ii) On any subsequent conviction, to a fine of not more than $25,000 or $2,500 per tree, whichever is greater.

(b) Any corporation that contravenes any provision of this By-Law, contravenes the terms or conditions of a Tree Permit, or an Order issued under this By-Law is guilty of an offence and is liable:

(i) On first conviction, to a fine of not more than $50,000 or $5,000 per tree, whichever is greater; and,

(ii) On any subsequent conviction, to a fine of not more than $100,000 or $10,000 per tree, whichever is greater.

ADMINISTRATION

22. (1) The short title of this By-Law is the "Tree By-Law".

(2) Schedules 'A', 'B', and 'C' shall form part of this By-Law.

(3) If any Section or Sections of this By-Law or parts thereof are found by any Court to be illegal or beyond the power of the Council to enact, such Section or Sections or parts thereof shall be deemed to be severable and all other Sections or parts of this By-Law shall be deemed to be separate and independent there from and continue in full force and effect unless and until similarly found illegal.

(4) If there is a conflict between this By-Law and a By-Law passed under the *Forestry Act* or the *Municipal Act*, the provision that is the most restrictive regarding the injury or destruction of trees shall prevail.

(5) Nothing in this By-Law shall exempt any person or corporation from complying with the requirements of any other by-law in force, or from obtaining any license, permission, permit, authority or approval required under any other by-law or legislation.

BY-LAW NO. 2005-289

23. (1) By-Law 2005-289 of the City of Kingston shall be repealed effective on the coming into force and effect of this By-Law.

(2) Any Tree Permits and/or conditions issued in accordance with By-Law 2005-289, prior to the passing of this By-Law, shall remain in effect.

(3) Despite Section 23(1) of this By-Law, By-Law 2005-289 of the City of Kingston shall continue to apply to proceedings in respect of offences that occurred before its repeal.

(4) THAT this By-Law shall come into force and effect upon the day of passing thereof.

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City of Kingston By-law No. 2007-170 "TREE" **Page 19**

SCHEDULE 'A'

LIST OF DISTINCTIVE TREE SPECIES

The following is a list of Distinctive Tree Species that are considered to be uncommon to the City of Kingston region and environment:

Common English Name	Latin Name
Black Maple	*Acer nigrum*
Ginkgo	*Ginkgo biloba*
Kentucky Coffeetree	*Gymnocladus dioica*
Blue Ash	*Fraxinus quadrangulata*
Black Walnut	*Juglans nigra*
Sycamore	*Platanus occidentalis*
London Planetree	*Platanus x acerifolia*
Tulip-tree	*Liriodendron tulipifera*
Ohio Buckeye	*Aesculus glabra*
Pitch Pine	*Pinus rigida*
Douglas-Fir	*Pseudotsuga menziesii*

(Updated: August 13, 2009)

City of Kingston By-law No. 2007-170 "TREE" **Page 20**

SCHEDULE 'B'

Permit Fees

Permit Fees shall be paid to the City of Kingston at the time of application for a Tree Permit in accordance with the fees set out in Schedule 'A' of City of Kingston By-Law No. 2005-10, "A By-Law to Establish Fees and Charges to be Collected by The Corporation of the City of Kingston", as amended.

(By-law No. 2007-170; 2009-88)

City of Kingston By-law No. 2007-170 "TREE" **Page 21**

SCHEDULE 'C'

INTERNATIONAL SOCIETY OF ARBORICULTURE – TRUNK FORMULA METHOD

File #_____ Property _____ Date _____

Qualified Forestry Consultant _____

Field Observations

1. **Species** _____
2. **Condition** _____%
3. **Trunk Circumference** _____ in./cm **Diameter** _____ in./cm
4. **Location** % = [Site _____% + **Contribution** _____% + **Placement** _____%] ÷ 3 = _____%

Technical Assessment

5. **Species** rating _____ %
6. **Replacement Tree Size** (diameter) _____ in./cm
   (Trunk Area) _____ $in^2/cm^2/TA_R$
7. **Replacement Tree Cost** $_____
   (see Standard Subdivision Agreement Provisions)
8. **Installation Cost** $_____
9. **Installed Tree Cost** (#7 + #8) $_____
10. **Unit Tree Cost** $_____ per in^2/cm^2
    (see Standard Subdivision Agreement Provisions)

Calculations using Field and Standard Subdivision Agreement Information

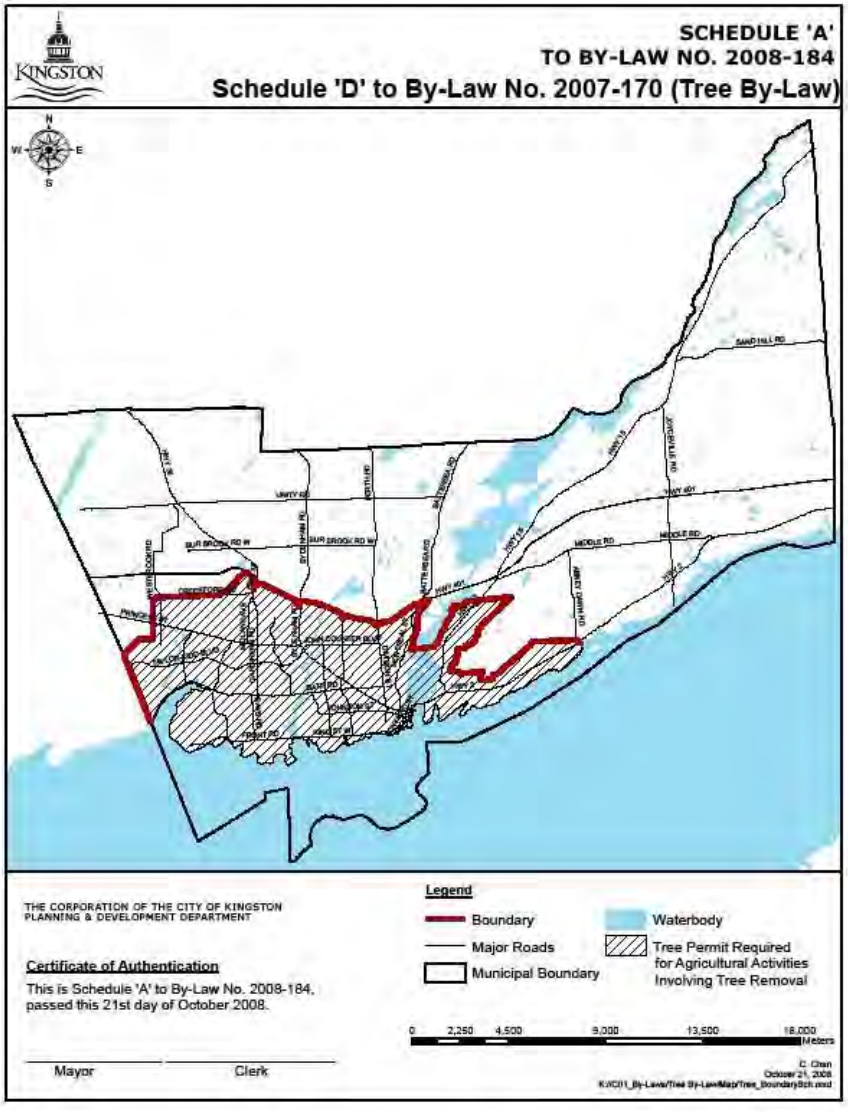
11. **Appraised Trunk Area:**
    TA_A or ATA_A; use Tables 4.4-4.7)
    or c^2 (#3) _____ x 0.08
    or d^2 (#3) _____ x 0.785
    = _____ in^2/cm^2
12. **Appraised Tree Trunk Increase** (TA_{INCR}) =
    TA_A or ATA_A _____ in^2/cm^2 (#11) – TA_R _____ in^2/cm^2(#6) = _____ in^2/cm^2
13. **Basic Tree Cost** = TA_{INCR} (#12) _____ in^2/cm^2 x **Unit Tree Cost** (#10) $ per in^2/cm^2 = **Installed Tree Cost** (#9) $_____ = $_____
14. **Appraised Value** = **Basic Tree Cost** (#13) $_____ x **Species** rating (#5) _____% x **Condition** (#2) _____% x **Location** (#4) _____% = $_____
15. If the **Appraised Value** is $5,000 or more, round it to the nearest $100; if it is less, round to the nearest $10.
16. **Appraised Value** = (#14) $_____

Items 5 through 10 are determined by the Technical Assessment of a Qualified Forestry Consultant. The **Wholesale Replacement Tree Cost**, the **Retail Replacement Tree Cost**, or the **Installed Tree Cost** (#9) divided by the **Replacement Tree Size** (#6) can be used for the **Unit Tree Cost** (#10), or it can be set by the Qualified Forestry Consultant in consultation with the Director.

(Updated: August 13, 2009)

City of Kingston By-law No. 2007-170 "TREE" Page 22

Schedule "D"
(as shown below as Schedule 'A' to By-Law 184)



(By-lawNo. 2007-170; 2008-184)

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TREES & PARKLAND DEVELOPMENT

Appendix 3I: *DC Parks Process Implementation*

New DC Parks Process as Implemented under Subdivision Process

Important Note: The development community has to be aware that pre-consultation will expedite the process. If park and open space needs are defined prior to submission, it saves on costs and revisions to plan.

Process Timeline	Step	Staff Involved/Actions	Checklist Involvement				
			Development Approvals	Culture & Recreation	Parks Operations	Forestry	Engineering Capital Project Coordinator
Ideally: **Prior to submission of Draft Plan**	**Pre consultation with developer to outline municipal parks & open space needs**	Planning (development) staff have initial contact with developer and their consultants	✓				
		Planning staff contacts Parks Planner (Culture & Recreation) to describe proposal , location, housing types.	✓	✓			
		Park Planner consults (phone, e-mail & fax) with Culture & Rec staff, Forestry and Parks Operations to get feedback on proposal and park issues.		✓	✓	✓	
		Parkland conveyance request noted to Planner. Planning staff arranges meeting with consultant/proponents and include Culture & Rec staff as well as Planner and Capital Project Coordinator	✓	✓	✓	✓	✓
		Meeting with developer to discuss 5% parkland conveyance and preferred location scenario	✓	✓	✓	✓	✓
Draft Plan submission	**Technical Circulation from Planning**	Planning Division staff circulate draft plan for review and comment Ten (10) day turnaround	✓				
	Assessment by Parks Planner Input from affected parks staff	Parks Planner reviews document, analyzes request in respect to overall parks plan and studies. Forwards information to other parks staff affected for input.		✓	✓	✓	

Process Timeline	Step	Staff Involved/Actions	Checklist Involvement				
			Development Approvals	Culture & Recreation	Parks Operations	Forestry	Engineering Capital Project Coordinator
	Agreement on park location Basic components, tree preservation	*(if not done at the pre-consultation stage)* Meeting Culture & Recreation staff/ Forestry-Operations • Opportunities for open space addition • Need for cross neighbourhood linkages • Partnerships with school sites • Connections through Cycling & Pathways • Recreation program needs • Forestry tree preservation preferred location identified *(Size set out by Planning Act)*	✓	✓	✓	✓	✓
Draft Plan conditions	**Response to planning on parkland requirement:** Recommended conditions of Draft plan approval	*Draft plan conditions provided to Planning:* 1. **Forestry conditions** re: tree preservation and protection 2. **Parks conditions** • Land/location • Question to developer: does he want to develop park and be reimbursed through DC's or will it be City process. If City, site access agreement required as a condition of draft plan approval. 3. **Public Works – Parks Operational Issues** • Maintenance levels 4. **Warning clauses** • Adjacent uses – parks/open space • Future recreational uses	✓	✓	✓	✓	
Draft Plan Approval Notice of Decision	**Approvals from Planning Committee/ Council (Appeal period over)**	Planner sends out copies of Notice of Decision, as well as copies of the draft plan and digital of survey and topography (grades and vegetation) information	✓	✓			

Process Timeline	Step	Staff Involved/Actions	Checklist Involvement				
			Development Approvals	Culture & Recreation	Parks Operations	Forestry	Engineering Capital Project Coordinator
City Park Implementation Process	**Submission of digital information to Culture and Recreation**	Parks Planner convenes meeting with Engineering Capital Project Coordinator to define scope for work for park/ timelines to implement		✓			✓
	Site Access Agreement	Site access agreement set up with developer, through Planning, to allow for site analysis and pre-engineering work to commence on Park site. Copy of Agreement to Parks Planner and Engineering Coordinator	✓	✓			✓
City and Developer Process	**Conceptual design of Park**	Parks planner convenes meeting with designated Landscape Architect to discuss park concept plans and needs as defined by staff. Scope of work for project (concept only/ full working set)		✓	✓	✓	✓
	Agreement on concept plan	Park planner coordinates meeting with Landscape Architect and staff to confirm conceptual plan layout or refine		✓	✓	✓	✓
City and Developer Process: Final Plan for Park	**1st Submission Subdivision plans (Engineering details**	Parks planner/ Landscape Architect and Engineering work through initial grading issues to ensure functional park		✓		✓	✓
City and Developer Process	**2nd Design Submission etc. and Approvals** Park plan integrated with subdivision grading	Final check by Parks Planner/ Landscape Architect/ Forestry staff and Engineering of plans to ensure end product		✓	✓	✓	✓
City and Developer Process	**Working drawings and specifications tied to RFP for work**	Approved plans and grading packaged for RFP for work by Engineering or Developers consultant					✓

Process Timeline	Step	Staff Involved/Actions	Checklist Involvement				
			Development Approvals	Culture & Recreation	Parks Operations	Forestry	Engineering Capital Project Coordinator
City Process	**Tender package/ Project construction management**	Managed by Engineering					✓
Developer process	**Construction of Park**	By Consultant, Inspections by Engineering. Reimbursement for everything above clean to developer (invoices required)					✓

Facts

- Under the new (2004) Development Charges By-Law the city takes 'environmentally clean' (stage 1or as required by EA) land from the developer fro parkland.
- Prior to the deeding of the land a memo must come from the Manager of the Environment or designate that the parkland in question is in a clean state.
- The city collects money from the developers in the amount of $83,000 an acre for Neighbourhood Parks and $190,000 for Community Parks.
- Capital budget lines for the new DC parks are based on the size of the park in acres x the figure for the type of park.

Issues Identified:

- Either the city will complete the park and accept in an environmentally clean state and commence the design/working drawings and construction process - or the developer will construct the park in consultation with the city and be reimbursed for all work above clean through the DC reserve fund.
- If the city is to manage the design and implementation of the park a site access agreement will be required between the developer and the city to allow city staff or their consultant access to the park site.
- The city will compile a roster of Landscape Architects for both the city and developer to use for consultants in the park process.

Other:

- The park should be constructed at the same time as the subdivision is being built. Need for current survey and topographical information for design and pre-engineering phase of park plan at end of draft plan stage.
- Coordinating the grading of park and the subdivision so that neither is adversely impacted by drainage or grades that constrain functions on the park or the residential lots.
- Ensuring through coordinated grading information that the clean park will not need tons of fill and topsoil to take it to a green and drained state. (i.e.) that the budgeted capital line will not be used just to bring a park to grade