

**SUBDIVISION BY-LAW
FOR THE
TOWN OF WINDSOR**

PART 1: TITLE AND APPLICATION

This By-law may be cited as the "Subdivision By-law" for the Town of Windsor and shall apply to the Town of Windsor.

PART 2: INTERPRETATION

In this By-law the word "shall" is mandatory and not permissive. Words used in the present tense shall include the future. Words used in the singular shall include the plural except where otherwise indicated and words used in the plural number shall include the singular. All other words shall carry their customary meaning except those defined hereinafter.

PART 3: DEFINITIONS

3. (1) **Agreement** means a written contract entered into between the subdivider and the Council relating to the provision of services as outlined in this by-law;
- (2) **Area of Land** means any lot or parcel as described by its boundaries;
- (3) **Council** means the Council of the Town of Windsor;
- (4) **Department of Health** means Department of Health and Fitness;
- (5) **Existing Street** means any public street;
- (6) **Frontage** means the horizontal distance between the side lot lines measured along the front lot line but where the front lot line is not a straight line, or where the side lot lines are not parallel, the frontage is to be measured perpendicularly to the line joining the middle of the front lot line with either the middle of the rear lot line or the apex of the triangle formed by the side lot line and at a point therein equal in distance to the minimum applicable front yard. In the case of a corner lot with a corner vision triangle the exterior lot lines (street line) shall be deemed to extend to their hypothetical point of intersection for the purpose of calculating the frontage.
- (7) **Professional Engineer** means a registered member, in good standing of the Association of Professional Engineers of Nova Scotia;
- (8) **Public Street** means the whole and entire right-of-way of every highway, road, or road allowance vested in the Province of Nova Scotia or the Town of Windsor;

- (9) **Public Water System** means any potable water system which is owned by the Town;
- (10) **Sanitary Sewer System** means any sanitary sewer system which is owned by the Town;
- (11) **Storm Sewer System** means any drainage system owned and maintained by the Town whether above or below ground constructed to collect, control and transport storm water from the area of land being subdivided to a point of discharge;
- (12) **Subdivider** means the owner or owners of the area of land proposed to be subdivided and includes anyone acting with his written consent;
- (13) **Subdivision** means the division of any area of land into two or more parcels, and includes a re-subdivision or a consolidation of two or more parcels;
- (14) **Surveyor** means a registered member in good standing, of the Association of Nova Scotia Land Surveyors.
- (15) **Town** means the Town of Windsor.

PART 4: PRELIMINARY PLANS OF SUBDIVISION

- 4. (1) The subdivider proposing to subdivide property may submit to the Development Officer three (3) copies of a preliminary plan of the proposed subdivision together with the following information and documentation:
 - (a) name and address of the subdivider, and if the subdivider is not the owner of the area of land proposed to be subdivided, the name of the owner,
 - (b) names and addresses of all owners or the lot identifiers of all properties abutting the land proposed to be subdivided, and
 - (c) a plan or sketch of the land proposed to be subdivided to scale or scale sufficient for clarity of all particulars on the plan showing:
 - (i) the dimensions and area of the area of land to be subdivided,
 - (ii) the nature of the proposed subdivision and the lots therein,
 - (iii) the approximate location of watercourses or other natural features on the land proposed to be subdivided that might affect the number of lots on the area proposed to be subdivided, and
 - (iv) a key plan at a scale not smaller than 1:50,000 showing the general location of the area of land and indicating the north point.
- (2) The Development Officer shall, if applicable, forward a copy of all material received pursuant to subsection (1) to the Department of Health for an evaluation to determine what lot size is generally appropriate to meet the requirements of the provincial Regulations Respecting Subdivision of Land to be Serviced by On-Site Sewage Disposal Systems, the Director of Public Works, or any other agency of the Province or Town the

Development Officer deems necessary.

- (3) The Department of Health, the Director of Public Works, and any other agency of the Province or Town which has been forwarded a copy of the Preliminary Plan shall forward a written report of their findings to the subdivider and the Development Officer. The Development Officer shall then report to the subdivider regarding the status of the subdividers application.

PART 5: PROCEDURE FOR APPROVAL OF TENTATIVE PLANS OF SUBDIVISION

5. The subdivider proposing to subdivide an area of land shall submit to the Development Officer for approval an application in the form specified in Schedule "A" of this By-law together with 6 copies of the tentative plan of the proposed subdivision meeting the requirements of Part 6 of this By-law.
6. Notwithstanding Section 5, the Development Officer may waive the requirement that tentative application and plan of subdivision be submitted, where:
- (a) the lots abut an existing street, and
- (b) no public sewer or water systems are to be installed,
- provided that, if required, an assessment of the lots has been completed pursuant to the Regulations Respecting Subdivision of Land to be Served by On-Site Disposal Systems by the Department of Health and the Development Officer is advised in writing by the Department of Health of the classification of such lots pursuant to the Regulations.
7. When the Development Officer is satisfied that an application and tentative plan of subdivision are complete he shall, if applicable, forward a copy to the Department of Health, the Director of Public Works, and any other agency of the Province or Town the Development Officer deems necessary.
8. The Development Officer shall comply with the notification and approval provisions of Sections 105(2) and (3) of the Planning Act.
9. Approval of the tentative plan of subdivision may not be refused or withheld as a result of the assessment or recommendations made by the Department of Health, the Director of Public Works or any other agency of the Province or Town unless the tentative plan of subdivision is clearly contrary to a law of the Province or by-law of the Town made pursuant to a law of the Province, including any applicable dimensions for lot area and lot frontage contained in a land use by-law of the Town.
10. (1) The following information shall be stamped or written on any tentative plan of subdivision which is approved together with any other information necessary for the tentative plan to proceed to the final plan stage;
- (a) "This tentative plan of subdivision is approved for lots _____.
Such approval lapses if the lots are not shown on a final plan of subdivision

approved within two years of the date of the approval of the tentative plan."

- (b) the date of the approval of the tentative plan, and
- (c) "This tentative plan of subdivision shall not be filed in the Registry of Deeds as no subdivision takes effect until a final plan of subdivision is endorsed by the Development Officer and has been filed by him in the Registry of Deeds."

- 11. (1) Within 5 days of approving a tentative plan of subdivision, the Development Officer shall forward a copy of the approved tentative plan to the subdivider and notify in writing, where applicable, the Department of Health, Director of Public Works, and any other agency of the Province or Town the Development Officer requested to review the plan, of his decision to approve the tentative plan.
- (2) Where the Development Officer refuses to approve a tentative plan of subdivision, he shall notify the subdivider pursuant to the Planning Act, advising the subdivider of the appeal provisions of the Planning Act.

PART 6: TENTATIVE PLAN OF SUBDIVISION REQUIREMENTS

- 12. (1) Tentative plans of subdivision submitted to the Development Officer shall be:
 - (a) drawn to scale or scales sufficient for clarity of all particulars on the tentative plan of subdivision,
 - (b) based on a description of the property to be subdivided, preferably but not necessarily as surveyed, and
 - (c) folded to approximately 20 x 30 cm. (8 x 12 in.) with the face of the folded print being the title block which is located in the lower right hand corner of the tentative plan of subdivision.
- (2) Tentative plans of subdivision shall show the following:
 - (a) name of the subdivision, if any, and the name of the owner of the area of land,
 - (b) names of all owners or the lot identifiers of all properties abutting the area of land proposed to be subdivided,
 - (c) a location map, drawn to a scale not smaller than 1:50,000 (such scale to be shown on the map), preferably with the same orientation as the area of land,
 - (d) the words "TENTATIVE PLAN" located above the title block,
 - (e) a clear space for stamping measuring at least 15 centimetres (5.90 in.) wide by 15 centimetres (5.90 in.) high,
 - (f) the approximate dimensions of the area of land proposed to be subdivided,
 - (g) the proposed dimensions and shape of lots and blocks,

- (h) the area of each lot including the approximate area of the remainder lot, if any,
 - (i) each proposed lot individually identified without duplication of lot identifiers, and where practicable, where a parcel is being added to or subtracted from an existing lot or where a lot shown on a plan of subdivision is being divided, the proposed lot or lots shall be identified by the existing lot identifier and a letter,
 - (j) approximate location of existing main buildings on the area of land proposed to be subdivided with the graphical location for all buildings within 3 meters (9.8 feet) either side of the boundaries of the proposed lot,
 - (k) the boundaries of proposed lots shown by solid lines, and the vanishing boundaries of existing lots being re-subdivided, consolidated or both, shown as broken lines,
 - (l) the scale to which the tentative plan of subdivision is drawn,
 - (m) the width and location of railroads, and existing and proposed public streets, including intersections and turning circles,
 - (n) the names of existing and proposed public streets,
 - (o) a notation stating whether or not the lots for which approval is requested are serviced by sanitary sewer and water systems,
 - (p) the identification, location, dimensions, and area of land proposed to be reserved for park, playground, and similar public purposes,
 - (q) the width, location and nature of any easements or rights-of-way affecting the area of land proposed to be subdivided,
 - (r) north point,
 - (s) the date on which the tentative plan of subdivision was drawn and the date of any revisions,
 - (t) the location of any watercourse, prominent rock formation, area subject to flooding and any other prominent natural features which might affect the layout or provision of public streets and services to the area where the subdivision is to be located, and
 - (u) any other information which the Development Officer deems necessary to determine whether a tentative plan of subdivision conforms to these subdivision regulations.
- (3) In addition to meeting the requirements of subsections (1) and (2), where the proposed lots front on a proposed public street, a tentative plan of subdivision shall:
- (a) show a boundary survey of the area of land proposed to be subdivided, excluding the remainder lot, certified and stamped by a Nova Scotia Land Surveyor in the manner required by the Nova Scotia Land Surveyors Act and the Regulations made thereunder,

- (b) be accompanied by four copies of a plan showing
 - (i) contours at 2 metre (5 foot) intervals, and drainage patterns, and
 - (ii) the width and location of existing and proposed public streets, including intersections and turning circles, and
 - (iii) the location of existing and proposed sanitary sewer, water, and drainage systems, and proposed connections thereto,
 - (c) be accompanied by two copies of a plan showing the centre line profiles of the proposed public streets, and
 - (d) be accompanied by any other information which the Development Officer deems necessary to determine whether the plan and drawing referred to in subsections (b) and (c) conform to these subdivision regulations.
- (4) Where plans or drawing or centre-line profiles are prepared by or under the supervision of a professional engineer, they shall be signed and sealed by the professional engineer in accordance with the Engineering Professional Act.

PART 7: PROCEDURE FOR APPROVAL OF FINAL PLANS OF SUBDIVISION

13. The subdivider proposing to subdivide an area of land shall submit an application in the form specified in Schedule "A" of this By-law and 8 copies of the final plan of subdivision meeting requirements of Part 8 of this by-law to the Development Officer for approval.
14. The Development Officer shall comply with the notification and approval provisions of Section 105 (2) and (3) of The Planning Act.
15. When the Development Officer is satisfied that an application and final plan of subdivision are complete he shall, if applicable, forward a copy to the Department of Health, the Director of Public Works, and any other agency of the Province or Town the Development Officer deems necessary.
16. Approval of a final plan of subdivision may not be refused or withheld as a result of the assessment or recommendations made by the Department of Health, the Director of Public Works, or any other agency of the Province or the Town unless the final plan of subdivision is clearly contrary to a law of the Province, or by-law of the Town made pursuant to a law of the Province including any applicable dimensions for lot area and lot frontage contained in a land use by-law of the Town.
17. (1) Upon approval by the Development Officer of the final plan of subdivision, the Development Officer shall notify in writing the subdivider, and where applicable, the Department of Health, Director of Public Works, and any other agency of the Province or Town the Development Officer requested to review the plan, of his decision to approve the final plan.

- (2) Where a Development Officer refuses to approve a final plan of subdivision, he shall notify the subdivider pursuant to the Planning Act, advising the subdivider of the appeal provisions of the Planning Act.

PART 8: FINAL PLAN OF SUBDIVISION REQUIREMENTS

18. (1) Final plans of subdivision submitted to the Development Officer shall be:
- (a) drawn to a scale or scales sufficient for clarity of all particulars on the final plan of subdivision,
 - (b) certified and stamped by a Nova Scotia Land Surveyor that the lots for which approval is requested have been surveyed in the manner required by the Nova Scotia Land Surveyors Act and the regulations made thereunder, except for a final plan of subdivision prepared pursuant to Section 22 (2) of this by-law.
 - (c) folded to approximately 20 x 30 centimeters (8 x 12 inches) with the face of the folded print being the title block which is located in the lower right-hand corner of the final plan of subdivision.
- (2) Final plans of subdivision shall show the following:
- (a) name of the subdivision, if any, and the name of the owner of the area of land,
 - (b) a location map, drawn to a scale not smaller than 1:50,000 (such scale to be shown on the map), preferably with the same orientation as the area of land,
 - (c) the length of the boundaries of all existing and proposed lots, streets, and rights-of-way and easements including the length of arc, points of curvature and radius in the case of curved lines,
 - (d) names of all owners or the lot identifiers of all properties abutting the proposed subdivision,
 - (e) a clear space for stamping measuring at least 15 centimetres (5.90 in.) wide by 15 centimetres (5.90 in.) high,
 - (f) the dimensions of the area of land proposed to be subdivided,
 - (g) approximate location of existing main buildings on the area of land proposed to be subdivided with the graphic location for all buildings within 3 metres (9.8 feet) either side of the boundaries of the proposed lot,
 - (h) the shape, dimensions and area of lots, blocks, and the remainder lot, if any,
 - (i) each proposed lot individually identified without duplication of lot identifiers, and where practicable, where a parcel is being added to or subtracted from an existing lot or where a lot shown on a plan of subdivision is being divided, the proposed lot or lots shall be identified by the existing lot identifier and a letter,
 - (j) the bearings of the boundaries of proposed lots,

- (k) the width and location of railroads, and existing and proposed public streets, including intersections and turning circles,
 - (l) the boundaries of proposed lots shown by solid lines, and the vanishing boundaries of existing lots being re-subdivided, consolidated or both, shown as broken lines,
 - (m) a notation stating whether or not the lots for which approval is requested are serviced by sanitary sewer and water systems,
 - (n) the identification, location, dimensions, and area of land proposed to be reserved for park, playground, and similar public purposes,
 - (o) the width, location and nature of any easements or rights-of-way on or affecting the area of land proposed to be subdivided,
 - (p) the date on which the final plan of subdivision was certified with all revisions to be identified, dated and initiated,
 - (q) north point,
 - (r) the scale to which the final plan of subdivision is drawn,
 - (s) the names of existing and proposed public streets, and
 - (t) any other information which the Development Officers deems necessary to determine whether a final plan of subdivision conforms to this by-law,
- (3) Where the design or layout of the subdivision was designed by an individual or firm other than the individual or firm of the professional land surveyor who has certified the final plan of subdivision, the name of such individual or firm and the nature of the work performed shall be shown in the title block of the final plan of subdivision.
- (4) (a) Final plans of subdivision shall be accompanied by detailed engineering design drawing for the water, sewer and storm drainage systems to be installed
- (i) prepared in accordance with the specifications contained in Schedules "B", "C" and "D" of this By-law, and
 - (ii) stamped by a Professional Engineer,
- (b) In addition to the requirement in subsection (a) the drawings shall show the location and dimensions of existing water and sewer systems where proposed water and sewer mains are to be connected, and the information is available to the Town.
- (5) Final plans of subdivision shall be accompanied by detailed engineering design drawings for the public streets to be constructed
- (i) prepared in accordance with the specifications contained in Schedule "E" of this By-law, and
 - (ii) stamped by a Professional Engineer.

PART 9: GENERAL PROVISIONS

19. (1) All lots to be approved and the remainder lot, if any, shown on a final plan of subdivision shall abut a public street.
- (2) A proposed public street shown on a final plan of subdivision shall have a minimum right-of-way of 15.24 metres (50 feet).
20. All lots for which approval is requested shown on a final plan of subdivision and the remainder lot, if any, for which no approval is requested, shall meet the applicable dimensions for minimum lot area and lot frontage contained in the Land Use By-law.
21. Notwithstanding Section 20, where an area of land contains more than one main building each of which was built or placed prior to November 7, 1974 the Development Officer may approve a final plan of subdivision showing the same number or fewer of lots as there are main buildings and a remainder lot, if any, for which no approval is requested, provided that:
- (1) each proposed lot has minimum lot frontage of 6 metres (19.7 feet), and
- (2) each proposed lot:
- (a) is served by a central sewage system and meets the lot area requirements of Section 20, or
- (b) is approved by the Department of Health for the installation of an on-site sewage disposal system and the Development Officer is notified in writing of such approval, and
- (3) the remainder lot, if any, meets the lot area and lot frontage requirements of Section 20.
22. (1) Notwithstanding Section 20, the Development Officer may approve a final plan of subdivision altering the boundaries of two or more areas of land where:
- (a) no additional lots are created, and
- (b) each lot,
- (i) meets the minimum dimensions for lot frontage of the land use by-law, or
- (ii) has not had its frontage, if any, reduced and
- (c) each lot,
- (i) meets the dimensions for lot area of the land use by-law, or
- (ii) has not had its area reduced.

- (2) Where the proposed lot is not surveyed pursuant to clauses 18(1) (b) and 18(2)(j), the final plan of subdivision prepared pursuant to subsection (1) shall:
- (a) be certified and stamped by a Nova Scotia Land Surveyor that the boundaries of the parcel proposed to be added to the existing area of land have been surveyed; said boundaries shall be shown as a heavy solid line, except the common boundary between the existing lots which shall be shown as a heavy broken line, and certified as being the common boundary;
 - (b) notwithstanding clauses 18 (1)(b) and 18 (2)(j) and (l), other than the new boundaries which have been surveyed pursuant to the clause (a), show the remaining boundaries of the resulting lot for which approval is requested described graphically as a lighter solid line, and
 - (c) have the following notation affixed to the plan adjacent to the certification required by the Nova Scotia Land Surveyors Act and regulations made thereunder, and such notation is signed by the surveyor:

"NOTE: The only boundaries shown on this Plan which have been surveyed are the boundaries of Parcel _____. The common boundary between existing Lots ___ and ___ which is shown by a heavy broken line is hereby certified as having been the common boundary.

The remaining boundaries of resulting Lot ___ shown on this plan are a graphic representation only and do not represent the accurate shape or position of the lot boundaries which are subject to a field survey."
23. Notwithstanding Section 20, the Development Officer may approve a maximum of two lots in accordance with the variance provisions of Section 107 of the Planning Act, provided all other requirements of this By-law are met.
24. (1) Notwithstanding the lot area and frontage requirements of Section 20, where a development component of a permanent nature such as a structure, driveway, well, or septic tank is encroaching in or upon an immediately adjacent area of land, the Development Officer may approve a plan of subdivision to the extent necessary and practical to remove the encroachment.
- (2) Where the lots created pursuant to (1) are not surveyed in accordance with Sections 18(1)(b) and 18 (2)(j) and (l) the provisions of Section 22 (2) shall apply.
25. Any portion of a lot to be approved on a tentative or final plan of subdivision, and a remainder lot if any, shall have a minimum width and minimum depth of at least 6 metres (19.7 feet).
26. Continuous street frontage shall not exceed 365.8 metres (1200) feet in length. Where continuous street frontage exceeds 304.8 metres (1000) feet a pedestrian walkway of a width of not less than 3.05 metres (10 feet) shall be provided through and near the centre of the block to give access to adjacent streets.

27. There shall be no more than four public street approaches in an intersection.
28. Where a proposed public street intersects a public street, the minimum sight distance along the public street shall be 65 metres (213.3 feet).
29. The distance between public street intersections shall not be less than 61 metres (200.13 feet).
30.
 - (1) The length of a proposed cul-de-sac shall not exceed 107 metres (351.05 feet) from an intersection to the turning circle.
 - (2) Proposed cul-de-sacs or other dead-end public streets shall have a turnaround with a minimum radius of 16.5 metres (54.13 feet) from the centre of the proposed cul-de-sac.
31. The grade of a proposed public street measured for at least 30 metres (98.43 feet) shall be a maximum of 8% and a minimum of 0.5%.
32. All proposed intersecting streets must intersect at an angle of 70 to 90 degrees for a minimum distance of 30 metres (98.43 feet) from the intersection measured from the respective centre lines.
33. Where a public street in an adjoining subdivision abuts the boundaries of a plan of subdivision submitted for approval, the proposed public street in the latter shall, if reasonably feasible, be laid out in prolongation of such public streets, unless it would be in violation of this By-law.
34. Wherever possible, side lot lines shall be substantially at right angles to a public street or radial to a curved public street.
35. Wherever possible, the rear lot lines of a series of adjoining lots shall be continuous, not stepped or jogged.
36.
 - (1) An application to amend or repeal an endorsed plan of subdivision or a plan of subdivision drawn prior to November 7, 1974 shall be in accordance with the Planning Act and shall satisfy the requirements of this by-law concerning approvals of final plans of subdivision.
 - (2) The application to amend shall refer to the plan of subdivision as originally endorsed or drawn, and such reference shall include the file number of the earlier subdivision plan filed at the office of the Registrar of Deeds for the Town.

PART 10: WATER, SEWER AND OTHER SERVICES

37.
 - (1) A subdivider who proposes to subdivide an area of land in Windsor shall install a public water system for the area of land proposed to be subdivided, where the area of land being subdivided is adjacent to this service.

- (2) The public water system shall include all control, fire protection and system safety appurtenances and mains and laterals to the boundaries of the proposed lots and the system shall be designed by a Professional Engineer and shall comply with the specifications set forth in Schedule "B" of this By-law.
38. (1) A subdivider who proposes to subdivide an area of land in Windsor shall install a sanitary sewer system for the area of land proposed to be subdivided, where the area of land being subdivided is adjacent to this service.
- (2) The sanitary sewer system shall include chambers, collectors and all appurtenances including laterals to the boundaries of the proposed lots and the systems shall be designed by a Professional Engineer and shall comply with the specifications set forth in Schedule "C" of this By-law.
39. (1) A subdivider who proposes to subdivide an area of land in Windsor shall install a storm drainage system for the area of land proposed to be subdivided.
- (2) The storm drainage system shall be designed by a Professional Engineer and shall comply with the specifications set forth in Schedule "D" of this By-law.
40. (1) A subdivider who proposes to subdivide an area of land shall layout and construct all proposed public streets as shown on the street plan.
- (2) The public street shall include all roadway culverts, curbs, catch basins, gutters, sidewalks and drainage ditches and the public street shall be designed by a Professional Engineer and shall comply with the specifications set forth in Schedule "E" of this By-law.
41. Prior to endorsement of approval on the final plan of subdivision the Development Officer shall have received joint approval of the water and sanitary sewer systems from the Department of Health and the Department of the Environment.
42. (1) The subdivider may satisfy the requirements of Sections 37, 38, 39 and 40 by agreeing in writing with the Town to install the required systems and construct the public streets after receiving endorsement of approval on the final plan of subdivision and shall deposit with the Clerk, prior to endorsement,
- (i) cash, or
- (ii) a certified cheque, or
- (iii) a bond of indemnity acceptable to the Council,
- in an estimated amount sufficient to cover 125% of installation costs of the required systems and 125% of construction costs of the public streets, such estimates to be approved by the Director of Public Works.
43. (1) An agreement entered into between the Town and the subdivider pursuant to Section 42

shall be executed in duplicate, signed by the Mayor and the Clerk on behalf of the Town and by the subdivider and shall be given to the Clerk and the subdivider prior to endorsement of approval on the final plan of subdivision.

- (2) The agreement shall contain terms with respect to:
 - (a) commencement and completion dates for construction and installation of services,
 - (b) such phasing as may be agreed upon by the subdivider and the Town,
 - (c) the terms and conditions of any security posted with the Town,
 - (d) the provision and acceptance of easements and rights-of-way associated with the services, and
 - (e) any other matter required by the provisions of this By-law.
44. In addition to Section 43, where the subdivider is responsible for the installation of services, the subdivider shall:
- (1) arrange and pay for engineering design and construction specifications for the services in accordance with the provisions set forth in Schedules "B", "C", "D" and "E" of this by-law;
 - (2) arrange for complete testing of the systems, and shall advise the Director of Public Works of proposed test dates, sites and times;
 - (3) allow the Town to inspect the construction and installation at any stage;
 - (4) following completion of the sanitary sewer and water systems and the construction of all public streets, convey the services free of encumbrances from the subdivider to the Town, at no cost to the Town.
45. In addition to Sections 43 and 44, where the subdivider is responsible for the installation of services and he posts security with the Town, the following conditions shall be met:
- (1) The security shall be made in favour of the Town, conditioned on the execution and completion of the agreement in accordance with its terms and the terms of this by-law, and shall not be subject to cancellation, termination, or expiration during the period of time for completion of the services;
 - (2) Where installation of the services is not completed in accordance with the agreed upon commencement and completion dates, the sub-divider shall forfeit the cash deposit, certified cheque or bond of indemnity.
46. Following construction and installation of the required services and before acceptance by the Town of the services , the subdivider shall:
- (1) provide the "as built" reproducible engineering drawings for all services stamped by a Professional Engineer, and

- (2) provide all operating and procedural manuals for each water or sanitary sewer system, and
 - (3) provide the results of all required test reports of the systems demonstrating that the required systems have been constructed and are operating according to the standards of the agreement and this By-law, and
 - (4) provide all easements and rights-of-way associated with the services, and
 - (5) post a maintenance bond acceptable to the town made in favour of the Town in an amount equal to 10% of the actual costs of construction and installation of services, and such bond to be posted for one (1) year.
47. The deed to any proposed public street shown on a final plan of subdivision shall be accepted by the Town free of encumbrances prior to endorsement of approval on the final plan of subdivision by the Development Officer.
48. (1) When not required to do so pursuant to Section 37, 38 or 39, but where the subdivider wishes to install services, the subdivider shall agree in writing with the Town to construct and install the services after receiving endorsement of approval on the final plan of subdivision.
- (2) Where the subdivider agrees in writing pursuant to Section 48(1), the subdivider shall deposit with the Clerk, prior to endorsement of approval on the final plan of subdivision
- (a) cash, or
 - (b) a certified cheque, or
 - (c) a bond of indemnity acceptable to the Council,
- in an estimate amount sufficient to cover 125% of construction and installation costs, such estimate to be approved by the Director of Engineering.
49. (1) The water system, installed pursuant to Section 48(1) shall include all control, fire protection and safety system appurtenances and mains and laterals to the boundaries of the proposed lots and the system shall be designed by a Professional Engineer and shall comply with the specifications set forth in Schedule "B" of this By-law.
- (2) The sanitary sewer system installed pursuant to Section 48(1) shall include chambers collectors and all appurtenances including laterals to the boundaries of the proposed lots and the system shall be designed by a Professional Engineer and shall comply with the specifications set forth in Schedule "C" of this By-law.
- (3) The storm drainage system installed pursuant to Section 48(1) shall be designed by a Professional Engineer and shall comply with the specifications set forth in Schedule "D" of this By-law.
- (4) In addition to the requirements of Section 48 and Section 49(1), (2) and (3), the provisions contained in Sections 43, 44, and 45 shall apply.

PART 11: PARKLAND TRANSFERS

50. Before endorsement of approval on the final plan of subdivision, the Subdivider shall either:
- (1) reserve and convey to the Town, free of encumbrances, for park, playground, or similar recreation purposes, an area of useable land equal to five percent (5%) of the area of land shown on the final plan of subdivision, exclusive of public streets and the remainder lot if any; or
 - (2) contribute to the Town, a sum of money equal to five percent (5%) of the assessed value of the new lots created, excluding streets, roads, and the remainder lot if any; or
 - (3) reserve and convey to the Town, an area of useable land satisfying the requirements of 50(1), outside the area of land to be subdivided, but within the boundaries of the Town.
51. For the purpose of Section 50, useable land shall be defined as land that:
- (1)
 - (a) has public access;
 - (b) does not have an average slope exceeding 15%;
 - (c) is not a clearing and grubbing disposal area;
 - (d) is not swampland, nor is subject to flooding;
 - (e) is able to meet the applicable dimensions for minimum lot area and lot frontage contained in the Land Use By-law;
 - (2) in lieu of the above, is considered unique by the Development Officer in that the parcel is:
 - (a) land suitable for preservation as an interpretive natural reserve area based on the opinion of a qualified professional; or
 - (b) land adjacent to parkland or open space owned by the Town.
52. At the option of Council a combination of Sections 50 (1), (2) and (3) may be accepted by the Development Officer providing that it is equivalent in value to that required under Section 50 (1) and (2).
53. Money received by the Council pursuant to Sections 50 and 52 shall be used by Council for the acquisition of, and capital improvements to, park, playground and public open-space areas.
54. Section 50 shall not apply where the applicant is requesting approval for consolidation or re-subdivision of existing lots providing no additional lots are being created.

PART 12: REQUIREMENTS FOR ENDORSEMENT AND FILING OF FINAL PLANS OF SUBDIVISION

55. (1) When the requirements of The Planning Act, this By-law and the Regulations Respecting Subdivision of Land to be Serviced by On-Site Sewage Disposal Systems pursuant to the Health Act have been met and the final plan of subdivision has been approved by the Development Officer, approval shall be endorsed on the final plan of subdivision by the Development Officer.
- (2) The Development Officer shall forward a copy of the endorsed final plan of subdivision to the subdivider.
- (3) The Development Officer shall give notice of the endorsement of approval on the final plan of subdivision to:
- (a) the Council of the Town,
 - (b) the surveyor, and
 - (c) any other department or agency of the province or the Town who has been requested to review the final plan of subdivision.
56. The following information shall be written or stamped on any final plan of subdivision which is endorsed:
- (1) "This final plan of subdivision is approved for lots _____";
- (2) The classification of each lot within one of the classes A, B, C, D, including the definition of such class, specified in Schedule "A" to the Regulations Respecting Subdivision of Land to be Serviced by On-Site Sewage Disposal Systems or "Lots _____ are serviced with a sanitary sewer";
57. Pursuant to Section 110(2) of the Planning Act, the Development Officer shall forward by certified mail or hand deliver one endorsed copy of the final plan of subdivision to the office of the Registrar of Deeds for the registration district in which the land is located and pay the fees required under Part 13 of this by-law to file the final plan.
58. In accordance with Section 110(4) of the Planning Act, the Development Officer shall register a notice, in the form specified in Schedule "F", in the Registry of Deeds which indicates approval of the final plan of subdivision and shall forward to the Registrar of Deeds the fees required to be paid by the subdivider pursuant to Section 59 of the By-law.

PART 13: FEES FOR THE FILING OF A FINAL PLAN OF SUBDIVISION

59. (1) The subdivider shall pay the fees contained in the Costs and Fees Act, R.S.N.S., 1989, c.104, for filing the endorsed final plan of subdivision and certification of a copy of such plan by the Registrar of Deeds and for registering a notice of approval of the plan.

- (2) The fee referred to in subsection (1) shall be paid at the time of application for approval of the final plan of subdivision by cheque or money order made payable to the Registry of Deeds.
- (3) Where the final plan of subdivision does not receive endorsement of approval by the Development Officer, the subdivider shall be entitled to the return of the cheque or money order referred to in subsection (2).

PART 14: REPEAL

The Subdivision By-law for the Town of Windsor approved by the Minister of the Department of Municipal Affairs on the 10th day of November, 1976 and any amendments thereto are repealed.

SCHEDULE "A"

APPLICATION FOR SUBDIVISION APPROVAL

FILE NO.: _____

- 1. Application for Tentative Approval _____ Final Approval _____
- 2. Proposed name of Subdivision: _____
- 3. Location of Property to be Subdivision: _____
- 4. Recorded in Registry of Deeds, Windsor, N.S.
Book #: _____ Page #: _____ Date: _____ 19__
- 5. Name and Address of Owner(s) of land to be subdivided:
Name: _____
Address: _____
Tel. #: _____
- 6. Name and Address of surveyor (where required):
Name: _____
Address: _____
Tel. #: _____
- 7. I hereby submit this annexed plan entitled _____
to the Development Officer of the Town of Windsor, and ask for the approval of the lot(s)
designated thereon as Lot(s) #. _____

DATED AT _____ this _____ day of _____ A.D. 19__.

I certify that I am the owner or am acting with the owners consent.

(Signature): _____

(Address): _____

NOTE: If the above applicant is not the owner of the lands in question, a letter of authorization from the owner(s) must be included.

SCHEDULE "B"**SPECIFICATIONS - WATER DISTRIBUTION SYSTEMS**

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
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B.2	Design Criteria	20
B.3	Material Specifications	21
B.4	Installation	22
B.5	Testing and Inspection	23

SCHEDULE B

SPECIFICATIONS - WATER DISTRIBUTION SYSTEMS

B.1 GENERAL

Water distribution systems shall conform to the following minimum specifications and design criteria except where otherwise required by the Town or other authorities having jurisdiction. It should be noted that these specifications outline the minimum required and that in certain instances, higher standards may be applicable including the standards of the American Water Works Association (AWWA). These specifications, in no case, preclude these higher standards when they area warranted.

Except as supplemented or modified by these specifications, materials and installation shall conform to the requirements in the "Standard Specifications for Municipal Services" dated January, 1987, and amendments and additions thereto which have been developed by the Nova Scotia Road Builders Association and the Nova Scotia Consulting Engineers Association Joint Committee, and are hereinafter referred to as the "Standard Specifications".

B.2 DESIGN CRITERIA

B.2.1 Water distribution systems shall be capable of accommodating fire demand plus maximum daily demand at a minimum residual pressure at the fire of 138 kPa (20 p.s.i).

Fire demand shall be calculated in accordance with the latest requirements contained in "Water Supply for Public Fire Protection" prepared by Fire Underwriters Survey of the Insurance Bureau of Canada.

B.2.2 Maximum daily demand shall be 341 litres per person per day (75 l.G.P.C.D).

B.2.3 A population density of 3.5 persons per dwelling unit shall be used for design.

B.2.4 The Hazen-Williams formula shall be used for the design of the water distribution system. A friction factor (C) of 120 shall be used for analysis.

Hazen Williams Formula:

Metric

$$Q = 0.279 C D^{2.63} S^{0.54}$$

Where

Q = flow in pipe, cubic metres per second
 C = pipe friction factor, dimensionless
 D = pipe diameter in meters
 S = slope of the energy grade line, m/m

Imperial

$$Q = 0.232 C D^{2.63} S^{0.54}$$

Q = flow in pipe, million Imperial gallons per day
 C = pipe friction factor, dimensionless
 D = pipe diameter in feet
 S = slope of the energy grade line, ft/ft

Nomographs may be used.

B.2.5 Water distribution system shall be planned to minimize the number of dead-end mains.

B.2.6 Minimum pipe diameter for street mains shall be 150 mm (6 inches).

B.2.7 Minimum pipe diameter for service laterals shall be 20 mm (3/4 inch).

- B.2.8 Minimum pipe diameter for sprinkler services shall be 150 mm (6 inches).
- B.2.9 Only one water service shall be provided per lot. Combined sprinkler and water service connections taps on the sprinkler lateral at a minimum of 1.5 m (5 feet) outside the building foundation and a valve is provided at the tee.

Maximum water service diameter off 100 mm (4 inch) and 150 mm (6 inch) diameter sprinkler line shall be 25 mm (1 inch) diameter. Maximum water service diameter off a 200 mm (8 inch) diameter sprinkler line shall be 50 mm (2 inch) diameter. Combined connections of larger diameters must be approved by the Town.

- B.2.10 Fire hydrants shall be placed as recommended by the Fire Underwriter's Survey of the Insurance Bureau of Canada but not greater than 90 m (300 feet) apart in congested and industrial areas and 150 m (500 feet) apart in residential areas. Hydrants shall be placed at street intersections, at the mid points of long blocks and at the end of dead-end streets.
- B.2.11 Fire hydrant laterals shall have a minimum diameter of 150 mm (6 inches) and shall be provided with a gate valve of the same size.
- B.2.12 Water distribution mains shall be provided with valves at a maximum spacing of 400 m (1300 feet) on arterial mains, 250 m (800 feet) on mains in residential areas and 150 m (500 feet) in commercial areas. There shall be a minimum of 3 valves per cross intersection and 2 valves per tee intersection.
- B.2.13 Where watermains are to be installed adjacent to or in the same trench as sanitary sewers and forcemains then the joint policy of the Nova Scotia Departments of Health and Environment, issued in January, 1984, on the installation of gravity sewers, sewage forcemains and watermains in combined and separate trenches shall apply to the sub-division.
- B.2.14 For watermains not constructed within a public street right-of-way a minimum easement width of 5 metres (16.5 feet) shall be deeded to the Town by the sub-divider for the maintenance access.

B.3 MATERIALS

- B.3.1 Water distribution mains, sprinkler laterals and water service piping 100 mm (4 inch) diameter and larger shall be cement mortar lined ductile iron pipe. Pipe and fittings shall meet the referenced standards and the following requirements:
- (a) Minimum pressure rating for the pipe shall be equal to or greater than 1.5 times the working pressure of the main at its lowest point and not less than 1035 kPa (150 p.s.i.)
 - (b) Minimum pipe thickness for ductile iron pipe shall be Class 52 for buried service and Class 53 for use in chambers and above ground.
 - (c) Push-on or mechanical joints shall be used for pipes in buried service. Only mechanical joints shall be used for fittings in buried service. Flange and groove-type joints shall be used for all joints in chambers and above ground.
- B.3.2 Valves shall meet the following requirements:
- (a) All exposed bolts, threads and nuts in buried service shall be coated with Denso-tape or

equal.

- (b) Gate valves shall be 300 mm (12 inch) diameter or smaller. Where larger valves are required, butterfly valves shall be used.
- (c) Butterfly valves shall conform to the requirements of the latest revision of AWWA Standard C504 and shall be designed for buried installation.
- (d) Valve boxes shall be installed with all buried valves. Valve shall be provided with centring disc.
- (e) Direction of opening shall be counter clockwise (open left).

B.3.3 Service connections smaller than 100 mm (4 inch) diameter shall be Type K annealed copper tubing or polyethylene Type PE, Series 160. Minimum pressure rating shall be 1035 kPa (150 p.s.i.).

B.4 INSTALLATION

B.4.1 Watermain piping:

- (a) All pipelines shall be installed with a minimum cover of 1.5 m (5 feet) and place in a bed of compacted fine granular material.
- (b) If cover is less than 1.5 m (5 feet), protect pipe from frost penetration by covering with 25 to 50 mm (one to two inches) of rigid styrofoam insulation, equal to DOW HI-40, in accordance with the following table and the Standard Drawings.

TABLE

<u>Depth of Backfill Cover Over Insulation in metres (in feet)</u>	<u>Required Insulation Thickness in mm (in inches)</u>
0.61 (2)	51mm (2)
0.91 (3)	38mm (1.5)
1.22 (4)	25mm (1)

B.4.2 Hydrants:

- (a) Hydrants shall be installed with pump nozzle facing street curb. Hydrants shall have two -64 mm (2 1/2") hose connections and one 140 mm (5 1/2") pumper connection. Threads and operating nut to be Windsor standards.

B.4.3 Service Connections:

- (a) Service connections shall be installed with a minimum of 1.5 m (5 feet) cover. If

shallower, cover pipe with 25 to 50 mm (1 to 2 inches) thickness of DOW HI-40 styrofoam, or equal, rigid insulation as outlined in Clause D.4.1(b).

- (b) All service connections from the main to the lot line, including corporation cock and curb stop, shall be installed by the sub-divider. When such laterals are not continued immediately into the building, that termination shall be indicated by a blue maker stake marked "water".
- (c) Sprinkler lines shall be similarly installed and marked, as per Schedule B, complete with gate valve and valve box located 300 mm (12 inches) inside street line.

B.5 TESTING AND INSPECTION

B.5.1 All buried pipe and fittings shall be inspected by the Town's designated representative during installation. The subdivider shall not bury any pipe or fittings until they have been inspected by the Director of Engineering unless prior written permission has been received. Visual inspection in place, prior to bury without written consent from the Town, will not be accepted.

B.5.2 Hydrostatic and Leakage Testing:

- (a) All watermain pipe and fittings shall be pressure treated before installation of building services and acceptance by the Town.
- (b) Test as outlined in the Standard Specifications. For acceptance of a water distribution system by the Town, no leakage shall be recorded during test period.
- (c) Flushing and Disinfection:

Following successful pressure testing, the watermain system shall be flushed and disinfected in accordance with the Standard Specifications.

SCHEDULE "C"**SPECIFICATIONS - SANITARY SEWER SYSTEMS**

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
C.1	General	25
C.2	Design Criteria	25
C.3	Materials	26
C.4	Installation	27
C.5	Testing and Inspection	27

SCHEDULE "C"

SPECIFICATIONS - SANITARY SEWER SYSTEMS

C.1 GENERAL

Sanitary sewer systems shall conform to the following specifications and design criteria except where otherwise required by the Town or other authorities having jurisdiction. It should be noted that these specifications outline the minimum required and that in certain instances, higher standards may be applicable. These specifications, in no case, preclude these higher standards when they are warranted.

Except as supplemented or modified by these specifications materials and installation shall conform to the requirements of the "Standard Specifications for Municipal Services" dated January, 1987, and amendments and additions thereto which have been developed by the Nova Scotia road Builders Association and the Nova Scotia Consulting Engineers Association Joint Committee, and are hereinafter referred to as the Standard Specifications.

C.2 DESIGN CRITERIA

C.2.1 Sanitary sewerage systems for residential areas shall be designed for an average daily flow of 182 litres (40 imperial gallons) per person per day with a peaking factor of 4 plus an infiltration allowance of 33,700 litres per hectare (3,000 imperial gallons per acre) per day.

C.2.2 A population density of 3.5 persons per dwelling unit shall be used for design.

C.2.3 Capacity of sanitary sewers shall be determined by the Manning formula using a Manning roughness coefficient of 0.013. Pipes shall be designed to handle peak flow when flowing half-full.

Manning formula:

Metric

$$V = \frac{1}{n} (R^{2/3} S^{1/2})$$

Where

V=Velocity, metres per second
n = Manning roughness coefficient, dimensionless
R = Hydraulic radius, metres
S = slope of the energy grade line, m/m

Imperial

$$V = \frac{1.49}{n} R^{2/3} S^{1/2}$$

Where

V = Velocity, feet per second
n = Manning roughness coefficient, dimensionless
R = Hydraulic radius, feet
S = slope of the energy grade line, feet/foot

Nomographs and hydraulic elements charts for hydraulic capacity of circular pipes may be used to determine pipe flow capacity.

C.2.4 Sanitary sewer pipes shall be a minimum of 200 mm (8 inches) in diameter. 200 mm diameter sewers shall be laid at a minimum slope of 1.0 percent.

- C.2.5 Sanitary sewer flow velocities shall be a minimum of 0.6m (2 feet) per second and a maximum of 4.6m (15 feet) per second.
- C.2.6 Sanitary sewers shall not decrease in diameter downstream: each pipe shall be the same diameter or larger than the pipes upstream.
- C.2.7 Laterals for single family homes shall be a minimum of 100 mm (4 inches) in diameter laid at a minimum slope of 2.0 percent. Capacity of laterals serving more than 4 dwelling units shall be determined using the Manning Formula (Clause C.2.3). Do not include the allowance for infiltration. Peak flow shall be determined using the Fixture Method outlined in Water Pollution Control Federation Manual of Practice No. 9.
- C.2.8 Manholes shall be placed at every change in direction, grade or pipe diameter, at all pipe intersections and at intervals not exceeding 100 m (328 feet).
- C.2.9 Manholes shall be pre-cast concrete a minimum of 1050 mm (42 inches) in diameter.
- C.2.10 Only one lateral shall be allowed for each lot.
- C.2.11 Where lift stations are required, they shall be designed by a professional engineer. No lift station shall be installed until the design has been approved by the Director of Engineering.
- C.2.12 Forcemains from lift stations shall be sized to ensure a minimum flow velocity of 0.9 m/sec (3.0 feet per second). They shall discharge freely at atmospheric pressure and their maximum length shall be such that the entire contents of the forcemain is discharged at least twice per 24 hour period.
- C.2.13 Where sanitary sewers and forcemains are to be installed adjacent to or in the same trench as a watermain then the joint policy of the Nova Scotia Departments of Health and Environment, issued in January, 1984, on the installation of gravity sewers, sewage forcemains and watermains in combined and separate trenches, shall apply to the subdivision.
- C.2.14 For sanitary sewers and forcemains not constructed with a public street right-of-way, a minimum easement width of 5 meters (16.5 feet) shall be deeded to the Town by the subdivider for maintenance access.

C.3 MATERIALS

- C.3.1 Sanitary sewer mains shall be SDR 35 PVC or pre-cast concrete. Concrete pipe strength will be determined using the methods recommended by the pipe manufacturer using a factor of safety of 1.5.
- C.3.2 Sanitary sewer laterals 200 mm (8 inch) diameter and larger shall be SDR 35 PVC pipe. Smaller laterals shall be SDR 28 PVC pipe.
- C.3.3 All sanitary sewer laterals shall be white in color.
- C.3.4 Forcemain piping shall be ductile iron mechanical joint, PVC or polyethylene rated for not less than 1.5 times the working pressure of the main at its lowest point, including surge pressure associated with pumping operations as calculated in accordance with accepted engineering formula.

C.3.5 Manhole frames and covers shall be IMP R10 type or approved equal.

C.4 INSTALLATION

C.4.1 Sanitary sewer piping shall be installed with a minimum cover of 1.5 m (5 feet). Pipes shall be installed, bedded and backfilled as specified in the Standards Drawings and in accordance with the Standards Specifications.

C.4.2 Sanitary sewer laterals shall be constructed as specified in the Standard Specifications and bedded and backfilled as specified in the Standard Drawings.

C.4.3 Sanitary sewer lateral connections shall be provided from the sanitary main to the lot line by the subdivider. If not continued immediately into the building, termination shall be marked with a red marker stake marked "sanitary".

C.5 TESTING AND INSPECTION

C.5.1 Inspection:

The subdivider shall not bury any pipe or appurtenances until they have been inspected by the Town's Director of Engineering or his representative unless prior written permission has been received from the Director of Engineering. Pipe or appurtenances which have not received visual inspection in place, prior to bury without written consent from the Town, will not be accepted.

C.5.2 Testing will be carried out in accordance with the requirements set out in the Standard Specifications.

SCHEDULE "D"**SPECIFICATION - STORM DRAINAGE SYSTEMS**

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
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D.3	Material Specifications	33
D.4	Installation	34
D.5	Inspection	34

SCHEDULE "D"

SPECIFICATIONS - STORM DRAINAGE SYSTEMS

D.1 GENERAL

Pipe and ditch storm drainage systems will conform to the following minimum specifications and design criteria. It should be noted that these specifications outline the minimum required and that in certain instances, higher standards may be applicable. These specifications, in no case, preclude these higher standards when they are warranted.

Except as supplemented or modified by these Specifications materials and installation shall meet the requirements of the "Standard Specifications for Municipal Services" dated January, 1987, and amendments and additions thereto which have been developed by the Nova Scotia Road Builders Association and the Nova Scotia Consulting Engineers Association Joint Committee, and are hereinafter referred to as the Standard Specifications.

D.2 DESIGN CRITERIA

D.2.1 Underground street drainage systems and road way ditch systems shall be designed as minor drainage systems, unless required otherwise by the Town. The design of the minor drainage system shall be based on the rainfall duration/intensity curve corresponding to an average storm frequency of 1 in 5 years for all land uses except commercial and industrial areas designated by the Town which shall be designed to accommodate an average storm frequency of 1 in 10 years unless greater capacity is required to conform with Clause D.2.3.

D.2.2 The major drainage system shall be designed to handle, in combination with the minor system, a peak flow based on the rainfall duration/intensity curve corresponding to an average storm frequency of 1 in 100 years. The major drainage systems shall discharge into existing water courses or bodies of water.

D.2.3 The tributary area for storm drainage design shall include all areas which naturally drain toward the design location.

Drainage shall not be diverted to another watershed unless permission is obtained in writing from the Town and the Nova Scotia Department of the Environment.

D.2.4 Run-off calculations shall be based on total development of the tributary area.

Where oversized pipes are required to service areas outside of the proposed development unit the terms of this By-law, the Town will pay for the difference between the design size and the required oversizing.

D.2.5 The Rational Method shall be used for computing storm water run-off quantities.

Rational Formula: $Q = C A i$

Where

Q = maximum rate of run-off, in cubic metres per second (C.m.S.) (in cubic feet per second (C.f.S))

C = run-off coefficient, dimensionless

A = area tributary to the point of design, in hectares (in acres)

i = average rainfall intensity, having a duration equal to the time of concentration of the drainage area, in millimetres (in inches) per hour.

D.2.6 Runoff Coefficients:

- (a) The value of runoff coefficients for design storms of 1 in 5 year or 1 in 10 year frequency shall be determined using Table D.1 below.

TABLE D.1
RUNOFF COEFFICIENTS
For 1 in 5 year and 1 in 10 year storms

<u>Area Classification</u>	<u>Runoff Coefficient</u>
Commercial	0.90
Residential	0.50
Industrial	0.85
Green Acres	0.30

- (b) The value of runoff coefficients for design storms of 1 in 100 year frequency shall be determined using Table D.2 below.

TABLE D.2
RUNOFF COEFFICIENTS
For 1 in 100 year storms

<u>Area Classification</u>	<u>Runoff Coefficient</u>
Commercial	1.00
Residential	0.80
Industrial	1.00
Green Acres	0.50

D.2.8 Time of concentration shall be based on an inlet time of 10 minutes.

D.2.9 Intensity of design storms shall be determined using accepted Engineering practices.

D.2.10 Storm Sewers:

- (a) Capacity of storm sewers shall be determined by the Manning formula using a Manning roughness coefficient of 0.013. Pipes shall be designed to handle peak flow when flowing full, without surcharge.

Manning formula:

Metric

$$V = \frac{1}{n} (R^{2/3} S^{1/2})$$

Where

V=Velocity, metres per second
 n = Manning roughness coefficient, dimensionless
 R = Hydraulic radius, metres
 S = slope of the energy grade line, m/m

Imperial

$$V = \frac{1.49}{n} R^{2/3} S^{1/2}$$

Where

V = Velocity, feet per second
 n = Manning roughness coefficient, dimensionless
 R = Hydraulic radius, feet
 S = slope of the energy grade line, feet/foot

Nomographs and hydraulic element charts for hydraulic capacity of circular pipes may be used to determine pipe flow capacity.

- (b) Storm sewer laterals shall have a minimum diameter of 150 mm (6 inch).
- (c) Storm sewers shall be a minimum of 300 mm (12 inches) in diameter.
- (d) Flow velocities in storm sewers shall be a minimum of 0.9 metres (3 feet) per second and a maximum of 6.1 meters (20 feet) per second.
- (e) Storm sewer pipes shall not decrease in diameter downstream; each pipe shall be the same diameter or larger than the pipes upstream.
- (f) Manholes shall be placed at every change in direction, grade or pipe diameter, at all pipe intersections and at intervals not exceeding 130 m (427 feet). Deflection angles of sewer lines at manholes shall not be greater than 90 degrees to the direction of the flow.
- (g) Manholes shall be precast concrete a minimum of 1050 mm (42 inches) in diameter.

D.2.11 Catchbasins:

- (a) Catchbasins shall be installed on the straight portion of each curb immediately upstream of intersections, and at low points in gutters. Catchbasins spacing shall be adequate to prevent ponding on streets in storm events corresponding to the design of the minor system. Catchbasin spacing shall not exceed 90 m (295 feet).
- (b) Catchbasins shall be precast concrete with minimum 600 mm (24 inch) diameter.
- (c) Minimum diameter of catchbasin leads shall be 270mm (10 inch).

D.2.12 Open Channels:

- (a) Open channels shall be designed to carry the design flow (major and/or minor) based on

the Manning Formula.

- (b) Roadway ditches shall generally conform to the Standard Drawings. Width and/or depth may be increased to accommodate design flow with a minimum freeboard of 300 mm (12 inches).
- (c) Maximum velocities in open channels shall not exceed values set forth in Table D.3, unless the channel is lined, or check dams provided, to the satisfaction of the Town.

TABLE D.3
MAXIMUM PERMISSIBLE MEAN
CHANNEL VELOCITIES
IN STRAIGHT, UNIFORM CHANNELS

<u>Channel Material</u>	<u>Max. Mean Channel Velocity</u> <u>m/Sec (ft./sec.)</u>	
Sand	0.61	(2.0)
Sandy Silt	0.61	(2.0)
Silt Clay	1.1	(3.5)
Clay	1.2	(4.0)
Fine Gravel	1.2	(4.0)
Grass Lined	1.5	(5.0)
Coarse Gravel	1.8	(6.0)
Poor Rock	2.4	(8.0)
Good Rock	4.6	(15.0)

D.2.13 Culverts

- (a) No culvert shall be less than 450 mm (15 inches) in its smallest dimension, or smaller than any upstream culvert.
- (b) Hydraulic capacity of culverts shall be determined by methods described in the manufacturer's literature or comparable references.
- (c) Culverts shall generally be designed to carry peak design flow (major and/or minor) with a headwater depth not greater than the vertical dimension of the pipe. Upstream water levels associated with design headwater depth shall be determined in relationship to expected elevations of structures and ground surface.
- (d) Culvert outlet designs shall provide protection from downstream channel erosion.
- (e) Culvert inlet designs shall provide protection from erosion that could result in culvert failure.

D.2.14 Outfalls:

Design of outfalls from storm drainage systems into receiving waters shall take into consideration:

- (a) Public safety, especially entry by children;
- (b) erosion control;
- (c) appearance.

D.2.15 Roads and Intersections:

- (a) In storms corresponding to the basis of design of the minor drainage system it is expected that roadways will remain free of water other than that accumulated between inlets.
- (b) Storm drainage shall provide that the depth of flow in a 1 in 100 year storm will not exceed 150 mm (6 inches) at the gutter. Provision shall be made to remove runoff into drainage channels, watercourses and pipe systems at low points and at intervals that will assure this criteria is observed.

D.2.16 Easements:

Where storm sewers and open drainage channels are not constructed within the boundaries of public property or approved streets then easements having the following minimum widths shall be deeded to the Town by the subdivider for maintenance access:

for storm sewer	-	5 meters (16.5 feet) top
for open drainage ditch or channel	-	width of the required waterway plus 5 meters (16.5 feet)

D.3 MATERIALS

D.3.1 Storm Sewer Piping:

- (a) Storm sewer pipe shall be pre-cast concrete pipe or approved equivalent.
- (b) Pipe strength shall be determined using the methods recommended by the pipe manufacturer. A factor of safety of 1.5 shall be used.
- (c) All pipe joints shall be gasketed.

D.3.2 Culverts shall be constructed of precast concrete pipe, asphalt coated corrugated steel pipe or corrugated polyethylene pipe. Corrugated polyethylene pipe shall be "Big O" type or approved equal. Pipe strength shall be determined using the methods recommended by the pipe manufacturer. A factor of safety of 1.5 shall be used. Big O must be installed as per manufacturers recommendations for bedding and cover.

D.3.3 Storm sewer laterals, shall be precast concrete as specified in Clause D.3.1 or SDR 28 PVC pipe conforming to the latest revision of CSA Standard B182.1. Laterals shall be non-white in colour.

D.3.4 Manhole frames and covers shall be IMP R11 Type or approved equal.

D.3.5 Catchbasins, frames and grating shall be the combined inlet type with bicycle-proof grating and

adjustable curb.

D.4 INSTALLATION

- D.4.1 Storm sewer piping shall be laid at a constant grade and in a straight line between manholes. 300 mm (12 inch) diameter storm sewers shall be laid at a minimum grade of 2.0 percent. Pipes shall be bedded and backfilled as specified in the Standard Drawings and in accordance with the Standard Specifications.
- D.4.2 Laterals shall be laid in a straight line at a minimum grade of 2.0 percent and bedded and backfilled as specified in the Standard Drawings and in accordance with the Standard Specifications.
- D.4.3 Storm sewer laterals where permitted shall be installed from the storm sewer main to the property line by the subdivider. If not continued immediately into the buildings, termination shall be marked with a green marker stake marked "storm".

D.5 INSPECTION

- D.5.1 The subdivider shall not bury any pipe or appurtenances until they have been inspected by the Director of Engineering or his representative unless prior written permission has been received from the Director of Engineering. Pipe or appurtenances which have not received visual inspection in place, prior to bury without written consent from the Town, will not be accepted.

The Town may inspect installed sewers by television camera, or other visual means at the Developer's expense before deciding to accept sewers. Any defects found shall be repaired and corrected by the subdivider before the Town's acceptance of the system at the subdivider's expense.

SCHEDULE "E"**SPECIFICATIONS - PUBLIC SPACES AND STREETS**

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
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SCHEDULE "E"

SPECIFICATIONS - PUBLIC SPACES AND STREETS

E.1 GENERAL

Public space and streets shall conform to the following minimum specifications and design criteria except where otherwise required by the Town or other authorities having jurisdiction. It should be noted that these specifications outline the minimum required and that in certain instances, higher standards may be applicable. These specifications, in no case, preclude these higher standards when they are warranted.

Except as supplemented or modified by these Specifications materials and installation shall conform to the requirements of the "Standard Specifications for Municipal Services" dated January, 1987, and amendments and additions thereto which have been developed by the Nova Scotia Road Builders Association and the Nova Scotia Consulting Engineers Association Joint Committee, and are hereinafter referred to as the Standard Specifications.

E.2 PUBLIC SPACES AND RECREATIONAL AREAS

E.2.1 All lands which are offered for conveyance to the Town in accordance with Part 11 of the Town's Subdivision By-law shall be suitable for the development of park, playground or similar recreational purposes and the construction of appropriate buildings thereon.

E.2.2 Lands conveyed to the Town shall be located as near as possible to the centre of the proposed subdivision, and those lands which have been disturbed by construction activities, shall be graded and sodded before being conveyed to the Town unless otherwise directed by Council.

Grading shall be such as to ensure adequate drainage of the area.

E.3 PUBLIC STREETS

E.3.1 Design Criteria:

- (a) Public streets shall be designed in accordance with the requirements listed below, the additional requirements listed in Part 9 of the Town's subdivision by-law and the Manual of Geometric Design Standards for Canadian Roads published by the Roads and Transportation Association of Canada.
- (b) A design speed of 65 km/hr (40 mi./hr.) shall be used for design. The posted speed limit will be 50 km/hr (30 mi./hr.). In some instances land availability, physical constraints or other limitations may restrict design parameters. The design speed and corresponding posted speed limit may be reduced accordingly as approved by the Town.
- (c) A sidewalk measuring a minimum of 1.5 m (5 feet) wide shall be constructed on one side of every street, as specified in the Standard Drawings. Two sidewalks shall be provided in commercial areas and along arterial streets (as defined in the Municipal Planning Strategy).
- (d) Street construction shall include the installation of municipal services as specified in the

Standard Drawings. Alternatively ditch and culvert type construction in accordance with the Standard Drawings may be permitted.

- (e) The subdivider is encouraged to place utility lines underground wherever feasible. Where underground utility lines are not provided, the subdivider is encouraged to place utility lines at the rear of lots.

E.3.2 Materials:

- (a) Construction materials shall meet the requirements of the Standard Specifications for Municipal Services.
- (b) Concrete for sidewalk and curb construction shall be air entrained to 6% air by volume with a minimum 28MPa (4,000 p.s.i.), 28 day strength.

E.3.3 Street Construction:

- (a) The entire area within the boundary lines of the street right-of-way shall be grubbed and all stumps, vegetation and foreign material removed from the site.
- (b) The street right-of-way including the street-bed, ditches, and sidewalks shall be excavated and filled to prepare a proper sub-base as required in accordance with the approved plan and the Standard Drawings.
- (c) Adequate provision shall be made for surface drainage in accordance with Schedule "D".
- (d) The subdivider shall be responsible for access to all proposed lots, with suitable culverts where required.
- (e) The street-bed and embankments shall be shaped and compacted to within 38 mm (1.5 inches) of design subgrade elevation and to 95% Standard Proctor Density.
- (f) A base course of Class C gravel shall be spread uniformly over the entire street-bed and compacted to 100% Standard Proctor Density.
- (g) A surfacing course of Class B gravel shall be spread uniformly over the base course of gravel and compacted to 100% Standard Proctor Density.
- (h) No final grading of street shall be carried out until all required underground services have been installed and approved.

E.3.4 Asphaltic Concrete Paving:

- (a) Asphaltic paving of subdivision roads shall be completed after all track vehicles and equipment have finished work on the site.
- (b) Fine grade Class B gravel course and then apply asphalt primer to the fine-graded surface of all areas which are to received asphalt pavement.
- (c) Complete asphalt paving in accordance with the Standard Specifications.

E.3.5 Sidewalks:

- (a) Sidewalks shall be constructed of concrete by hand or mechanical means, generally as specified in the Standard Drawings and in accordance with the Standards Specifications.
- (b) Sidewalks shall be minimum 100 mm (4 inches) in depth except at driveways and ramps where minimum depth will be 150 mm (6 inches).
- (c) Concrete for sidewalk shall be placed on minimum 150 mm (6 inch) layer of compacted Class B gravel.

E.3.6 Curb and Gutter:

- (a) Curb and gutter shall be constructed of concrete by hand or mechanical means in accordance with the Standard Specifications.
- (b) Concrete for curb and gutter shall be placed on a minimum 150 mm (6 inch) layer of compacted Class B gravel.
- (c) Curb and gutter cross-section shall conform to the Town Engineering and Works Standard Drawings.

E.4 TESTING AND INSPECTION**E.4.1 Inspection:**

Town representatives will inspect street construction during the progress of the work. No gravels shall be placed until the subgrade has been inspected and approved by the Town's designated representative. No paving shall be permitted until the sub-base has been inspected and approved by the Town's designated representative.

E.4.2 Testing:

- (a) Concrete strength tests will be carried out in accordance with CSA Standard A23.2 as directed by the Town at the expense of the subdivider. Three test cylinders shall be provided for every 38.2 m³ (50 cubic yards) of concrete placed.
- (b) The Town may require sieve analyses or other tests to verify the quality of materials at the expense of the subdivider. The subdivider shall supply sufficient samples of material for sampling. If the materials do not meet the specifications, the subdivider shall replace the defective materials.

SCHEDULE "F"

NOTICE OF APPROVAL OF A PLAN OF SUBDIVISION IN ACCORDANCE WITH SECTION 110(4) AND (5) OF THE PLANNING ACT

NAME OF OWNER(S) _____

NAME OF SUBDIVISION _____

LOCATION _____

DATE OF APPROVAL _____ FOR LOT(S) _____

SURVEYOR _____ DATE OF PLAN _____

DATE THIS _____ DAY OF _____, 19____. DEVELOPMENT OFFICER

PLAN OF SUBDIVISION FILED IN THE REGISTRY OF DEEDS AS PLAN # _____

DATE THIS _____ DAY OF _____, 19____.

This plan of subdivision also contains information regarding the lots approved on this plan with respect to one or more of the following:

1. The lots' eligibility for on-site sewage disposal systems.
2. The availability of public sewer and water systems.