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MUNICIPAL ENGINEERING

RESIDENTIAL SUBDIVISION STANDARDS

Revision – R6
2009

CITY OF MOUNT PEARL
ENGINEERING DEPARTMENT

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MUNICIPAL ENGINEERING STANDARDS

The Council of the City of Mount Pearl hereby adopts the following Municipal Engineering Standards.

Made and adopted by the Council of the City of Mount Pearl on this _____ day of _____2002.

_____ _____

Clerk Mayor

All persons are hereby requested to take notice that anyone who wishes to view these Standards may do so at the Office of the City Engineer of the City of Mount Pearl. Should there be any questions or need for clarification, please contact the City's Engineering Department at 3 Centennial Street or telephone 709-748-1017.

Approved by: _____

Eliol Blackmore, P. Eng.
City Engineer

AMENDMENTS TO MUNICIPAL ENGINEERING RESIDENTIAL SUBDIVISION STANDARDS

AMENDMENT #	DESCRIPTION OF REVISION	DATE OF REVISIONS
R1	Drafting section changed	August 22/94
R2	General Revision, Stormwater Management	April 20/02
R3	General Revision, Landscaping Requirements and Urban Forestry	January 2007
R4	Revising Storm Main Materials	April 2007
R5	Revised Materials List Driveway Requirements Land Use Zoning Tables Deflection Test Requirements Restrained Joint Fitting Requirements Updated Sample Subdivision Agreement	May 2008

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SCHEDULE 1

SUBDIVISION DEVELOPMENT POLICY

1.1 DEFINITIONS

1.1.1 - STAGE I Work:

Stage I work consists of all work relating to installation of water, sanitary, and storm sewer systems, construction of all street right of ways including base course asphalt, curb and gutter, temporary street lighting and development of open space areas and accesses to these areas.

1.1.2 - STAGE II Work:

Stage II work consists of all work relating to the construction of above ground work, including but not limited to, surface course asphalt, landscaping of areas other than open space areas, tree planting, privacy fencing, sidewalks and walkways.

1.1.3 - Developer:

A person or company who has applied for and has been granted approval to subdivide or service an existing parcel of land.

Development Permit – A permit giving the Developer approval to proceed to the final design Stage of a project.

1.1.4 - Consulting Engineer:

A professional engineer, registered in the Province of Newfoundland and Labrador, retained by the Developer to be responsible for design and supervision of the works.

Construction Permit - gives the Developer approval to proceed with construction work as per development agreement.

1.2 DEVELOPMENTAL APPROVAL

1.2.1 - Requirements:

The applicant will be required to submit three copies of the proposed subdivision plan showing the street and lot layout, water courses, buffers and public open space. The applicant is required to provide one(1) digital copy of each plan. The plans shall be at a paper scale of 1:500 and have contours at one (1) meter intervals. The applicant will also be required to submit three copies of a location plan at a scale of 1:2500 as well as the digital copy. Location plan shall indicate the proposed street layout and shall locate the position of the proposed development within the municipal boundaries of the City of Mount Pearl.

1.2.2 – Developmental Approval:

The preliminary subdivision plan will be reviewed for the following:

(a) Access

The plan will be evaluated for impact on traffic flows and ease of access to and from the subdivision.

(b) Water Supply

The water supply to the subdivision will be evaluated to determine if adequate pressures and flows exit in the City's system.

(c) Sanitary Sewer Generation

The City's system will be evaluated to determine if the current configuration has the capacity available to accommodate the calculated flows to be generated.

(d) Storm Sewer Generation

The City's system will be evaluated to determine if the current

configuration has the capacity available to accommodate the calculated flows to be generated.

(e) Internal Street Layout

The street layout will be reviewed for general conformance to the design criteria as given in the Subdivision Design Guidelines. Approval at this Stage is preliminary and will not prohibit further changes that may become necessary during the detailed design.

(f) Public Open Space

The City may require the applicant to convey to the City for a nominal consideration of one dollar ($1.00) a parcel of land for public recreation purposes not to exceed ten per cent (10%) of the total subdivision area.

The City may also require a strip of land to be reserved and remain undeveloped along the banks of any significant river, brook, pond or wetland and this land may, at the discretion of Council, constitute the requirement of land for public open space.

If upon review of the above a deficiency is determined to exist, then:

1. The application may be recommended for rejection.
2. The applicant may be required to undertake further studies to determine the extent of any problems and corrective action required.
3. The application may be recommended for Developmental Approval subject to the applicant taking any necessary corrective action as determined by the Municipality.

The application will be recommended for developmental approval if there have not been any problems noted during the review. Developmental Approval shall be valid

for one year, only, from the date of granting by the City, during which time an application for Final Approval shall be submitted.

1.3 CONSTRUCTION APPROVAL

1.3.1 - General:

The subdivision is to be designed and constructed in accordance with the City's Regulations and the Government of Newfoundland's Municipal Water, Sewer and Road Specifications (Government Master Specifications). In certain instances these regulations are more stringent than, and supersede, the Government Master Specifications – these instances are detailed in the City's Supplement to the Government Master Specifications contained in Schedule 3 of this document.

1.3.2 - Requirements:

The application for Construction Approval should be made within one year of the granting of the Developmental Approval, and must be accompanied by the following:

(a) Subdivision Plan - The Plan should be drafted as per the standard Subdivision Plan (Appendix C) and shall show the following items:

- (i) Water, sanitary and storm sewer layout (invert information is not required);
- (ii) Street alignment information (coordinates for PI and street intersections are not required);
- (iii) Lot layouts and numbering;
- (iv) Right of ways, easements and carriageways;
- (v) Canada Post locations:
- (vi) Driveway locations:
- (vii) Open space areas;
- (viii) Bench mark locations and elevations;

(ix) Direction of flow for sanitary and storm sewer systems;

(b) Master Survey Plan – The Plan should be drafted as per the standard Master Survey Plan (Appendix C) and shall show the following items:

(i) Street alignment information including coordinates for PI and street intersections;

(ii) Lot metes and bounds, areas and numbers;

(iii) Right of ways and easements;

(iv) Canada Post locations:

(v) Driveway locations:

(vi) Open space areas;

(vii) Bench mark locations and elevations;

(c) Plan and Profile Drawings - Plan and profile drawings showing all streets, watermains and sewers to be constructed. Detailed drawings are required for any items not covered by the Standard Drawings in the Municipal Water, Sewer and Roads Specification Book.

(d) Lot Grading Plan - as per the City's Standard (Appendix D)

(e) Sanitary Sewer Calculations - Calculations are to be submitted on standard forms and accompanied by a detailed drainage plan.

(f) Storm Sewer Calculations - Calculations are to be submitted on standard forms and accompanied by a detailed drainage plan.

(g) Federal Fisheries and Oceans - Copies of any approvals required for works under the jurisdiction of Fisheries and Oceans.

(h) Provincial Environment and Lands - Copies of any approvals required

for works under the jurisdiction of Environment and Lands, both the civil sanitary and water resources divisions.

(i) Canada Post - Copies of approval for the proposed Canada Post locations.

(j) Newfoundland Power - Legal plan and description for easements.

1.3.3 - Approval:

The detailed subdivision design will be reviewed for conformance with the City's Regulations and the Government Master Specification. If any problems are noted the Applicant will be required to make the necessary revisions and resubmit the drawings for approval.

If no problems are noted, then "Construction Approval" will be recommended and the Applicant will be asked to submit copies of the aforementioned drawings in digital format.

Construction Approval is valid for a one year period but may be renewed once for a further period not exceeding one year.

The granting of Construction Approval shall not prevent the City from thereafter requiring the correction of any errors not noted at the time of application.

Revisions to the aforementioned drawings subsequent to approval for construction shall not be made without the prior approval of the City. Upon approval of any revision, a digital copy of the revised drawing shall be submitted.

1.4 FINANCIAL REQUIREMENTS

1.4.1 - Assessments:

(a) Capital Recovery Assessments - All outstanding assessments on the property to be developed as recorded by the City must be paid prior to the Subdivision Development Agreement being executed. The assessments will be for items such as:

- Water, sanitary and storm sewer systems;
- Street improvements;
- Sidewalks;
- Over-sizing;
- Recreational or as otherwise required by City.

(b) Trunk Sewer Assessments - If the subdivision is within the drainage area of a Sanitary Trunk Sewer, for which there is an assessment registered, then the assessment must be paid prior to the execution of the Subdivision Development Agreement. This assessment is an area assessment and is a fixed rate of $4940.00 per hectare for the gross area being developed.

1.4.2 - Development Fee:

This fee is to be addressed with the City Planner prior to review of proposed development.

1.4.3 - Securities:

The City will determine the amount of any securities required. All securities must be in the form of cash, certified cheque, or letter of credit from an approved surety company.

(a) Stage I Security – (1) If no lot development. Security to be in the

amount of 10% of the estimated cost of Stage I works, and must be in place prior to issuance of construction permit.

(2) If lot development. Security to be in the amount of 125% of the estimated cost to complete remaining Stage I and Stage II works, and must be in place prior to issuance of building permit.

(b) Stage I Warranty Security - This security will be equal to 10% of the value of Stage I work and must be in place prior to the acceptance of Stage I works, and shall remain in effect for twelve (12) months following the date of substantial completion for STAGE I works.

(c) Stage II Security - This security will be equal to 125% of the estimated cost of the Stage II works and must be in place prior to issuance of a construction permit.

(d) Stage II Warranty Security - This security will be equal to 10% of the value of Stage II work and must be in place prior to the acceptance of Stage II works and remain in effect for twelve (12) months following the date of the letter of total performance for Stage II works.

One thousand dollars ($1,000.00) of the Stage II security will be retained for each undeveloped lot (at the time of Stage II acceptance) to cover possible damages to the curb and gutter and surface course asphalt. The Developer shall initiate the review of securities held.

1.5 STAGE I WORKS

1.5.1 - Schedule:

Stage I works shall not commence until Construction Approval has been issued, all financial requirements have been met, and the Subdivision Agreement has been executed. All work shall receive continuous site supervision by the Consulting Engineer.

All work shall be in accordance with this document and the Government of Newfoundland's Municipal Water, Sewer and Road Specifications and the Municipality's supplementary document (See Schedule 3). Where a conflict occurs the more stringent, as determined by the city engineer, shall apply.

1.5.2- Acceptance of Stage I Works:

Stage I works will be accepted by the City when all work has been completed and the following submitted and approved:

1. As-built Engineering Drawings as per City standards;
2. Subdivision Plan as per City standards;
3. House service information forms;
4. Lot grading plans;
5. Test results as required for the water, sanitary and storm sewer systems.
6. Inspection of the water, sanitary and storm sewer systems by the City;
7. Stage I warranty period security;
8. Correction of all noted deficiencies;
9. Fire flow test results as required by the City;
10. Concrete test results for curb and gutter works;
11. Asphalt test results for base course asphalt;
12. Compaction test results for sub-grade works to the full limit of street

13. right of way.
14. Video inspection of sanitary sewers and storm sewers.

1.5.3 - Building Permits

Building permits will not be approved until Stage I Works have been accepted by the City, however, if the deficiencies noted are of a minor nature, or security has been provided to cover the cost of the Stage I and Stage II works, then the building permits may be approved. The developer is cautioned that no occupancy permits will be issued until completion and acceptance of Stage I Works.

1.5.4 - Warranty Period

The Developer shall at his own expense rectify and make good any defect or fault, however caused, appearing within a one year period from the date of acceptance of the Stage I works. The Stage I warranty security will be released at the end of the warranty period providing all noted deficiencies have been corrected.

1.6 STAGE II WORKS

1.6.1 - Schedule

Stage II works shall not commence until Stage I works have been accepted. Base course asphalt and curb and gutter must be placed prior to the City undertaking any snow clearing operations. The City will not accept responsibility for damage by others to any Stage I works until all Stage II work has been completed and accepted by the City. The surface course asphalt shall not be placed without the approval of the City Engineer. Approval to commence Stage II works will not normally be granted until eighty percent (80%) of the lots have been built upon and rough grading completed.

1.6.2 - Benchmarks

Benchmarks shall be installed as per the requirements detailed in the Subdivision Design Criteria.

1.6.3 - Acceptance of Stage II Works:

The City will accept stage II Works when all work has been completed and the following submitted and approved:

1. Concrete test results for sidewalk;
2. Asphalt test results for surface course asphalt;
3. As-built information for benchmark installations;
4. Legal plans and descriptions for all lands to be transferred to the City (i.e., street right of ways, easements and open space);
5. Stage II warranty period security;
6. Inspection of Stage II works by the City;
7. Correction of all noted deficiencies;
8. Master survey of development, both plan and description, as per the City's requirements.
9. Video inspection of sanitary sewers and storm sewers prior to placement of surface course asphalt.

1.6.4 - Warranty Period

The Developer shall, at his own expense, rectify and make good any defect or fault, however caused, appearing within a one year period from the date of acceptance of the Stage II works.

The Stage II Warranty security will be released at the end of the warranty period providing all noted deficiencies have been corrected.

SCHEDULE 2

SUBDIVISION DESIGN GUIDELINES - SURVEYING

1.1 DEFINITIONS:

1.1.1 - Survey:

Means the determination of any point or the direction or length of any line required in measuring, laying off or dividing land for the purpose of establishing boundaries or title to land.

1.1.2 - Newfoundland and Labrador Provincial Co-ordinate Survey System:

Means a system established for referencing land surveys and is based on 3° (degree) transverse mercator projection.

1.1.3 - Co-ordinate Monument:

Means any marker established for the Provincial Co-ordinate Survey System.

1.2. MASTER SURVEY PLAN:

1.2.1 A Survey plan shall be drawn in accordance with the requirements of the "Drafting" section of Schedule 2 and shall include:

(a) The name of the owner of all abutting lands;

(b) The length and bearing of each line of any transverse which connects any point on the boundary of the subdivision with a Provincial Co-ordinate Monument;

(c) The radius, central angle, the length of arc, the point of curve and the point of tangency shall be given for each curved line and clearly indicated on the survey plan.

(d) Each street, walkway and easement;

(e) Each lot and its number;

(f) The length, bearing and internal angle of each line of the boundary of, and the area in square metres of:

(i) The land being subdivided;
(ii) Each street, walkway and easement;
(iii) Each lot;
(iv) the land, if any, which is reserved for park, playground, buffers and public purposes;

(g) The geometry of connections between existing streets and streets of the subdivision;

(h) The location of any existing structure which is to remain;

(i) Every water course and its direction of flow;

(j) All information necessary for the calculation and laying out of any curved line;

(k) The date of compilation;

(l) The date and description of revision, if any;

(m) The name of the subdivision;

(n) All existing streets, roads, lanes and intersections in the immediate area and their official names as designated by the City;

(o) The location and extent of rock outcrops;

(p) The location and results of any test borings;

(q) At least two (2) centre line points of known chainage related to the Provincial Co-ordinate Survey System;

(r) The location and elevation of the City benchmark used.

(s) Manhole numbers shall be assigned by using the last four whole numbers of the easting and the suffix, "S" for sanitary sewer manholes and "R" for storm sewer manholes.

1.2.2 The master survey plan shall be of a size within the following limits:

(a) MAXIMUM - Size designation, B1, which represents 707 mm wide x 1000 mm long;

(b) MINIMUM – SI Size designation A1, which represents 594 mm wide x 841 mm long;

(c) LEGAL SIZE - Size designation, P4 which represents 21.5 cm wide x 35.5 cm long;

NOTE: *Refer to National Standards of Canada, CAN2-9.60 M and CAN 2-9.61M for paper size designation.*

1.2.3 Master survey plan shall be drawn to a scale as indicated in the “Drafting” section of Schedule 2;

1.2.4 Master survey plan shall have a Key Plan to locate the subdivision as it relates to adjacent streets of the City. Scale shall be as indicated in the “Drafting” section of Schedule 2.

1.2.5 Master survey plan shall be certified by a Newfoundland Land Surveyor.

1.3 SURVEY DETAILS AND ACCURACY:

1.3.1 All traverses are to be plotted by either the actual calculated "Latitude (lats) and Departures (deps)" method or by the "Tangent Off-Set Method".

1.3.2 All boundary line dimensions to be shown to at least two decimal places with all angles shown to the nearest 30 seconds or better.

1.3.3 More or less distances shall only be accepted along a water boundary.

1.3.4 Contours or topographical survey elevations shall be shown to determine the elevations for all streets, roads, easements and walkways in relation to the proposed lot layout.

1.3.5 For proposed streets, the existing vertical alignment conditions shall be obtained from actual field surveys.

1.3.6 All Vertical Control shall be related to the Province of Newfoundland Approved Datum.

1.3.7 Information shown on a survey plan shall be sufficiently detailed to permit any point on any surveyed line to be accurately located in the field.

1.3.8 The accuracy of closure shall be not less than 1 metre in 10,000 metres.

1.4 STREET, WALKWAY AND LOT IDENTIFICATION

1.4.1 When the right of way and street have been constructed and the subdivision or area involved is ready for acceptance, each public lot, easement, walkway and street shall be identified by an iron or steel pin driven into the ground at each corner, beginning of curve, and end of curve, unless these points fall upon solid rock. In such cases, an "X" shall be cut into the rock.

1.5 SURVEY INFORMATION

1.5.1 Prior to Stage I work acceptance, a copy of all information, regarding permanent subdivision survey monuments, street lines, boundary lines, easements, and walkway locations will be presented to the City, in both digital and paper formats.

1.5.2 Survey information shall be clear, concise, neat and accurate, properly labelled and signed by a registered Newfoundland Land Surveyor.

1.6 BENCHMARKS

1.6.1 The Developer shall supply brass plugs and wedges or other markers to be used as Benchmarks.

1.6.2 The Land Surveyor shall assign numbers to the Benchmarks, as per Provincial requirements.

1.6.3 The plugs with wedges shall be placed in the concrete curb flush with the concrete. Prior to setting, the plug hole will be filled with quick-set cement. Then, with the use of a mallet and a wooden block, the plug and wedge will be driven into the hole.

1.6.4 All benchmarks shall be inter-visible and coordinated using the 3^0 (degree) Modified Transverse Mercator Projection. The traverse closure shall be a minimum of 1:10,000. Crown land reference monuments and their coordinates shall be listed when running the traverse.

1.6.5 The maximum distance between benchmarks shall be 300 metres.

1.6.6 Benchmarks must be established from other City Benchmarks or Geodetic Benchmarks and end at the same or different City Benchmarks that have acceptable elevation values. All lines beginning and ending in existing Benchmarks with known elevations and all lines forming self-closing loops will be levelled one way. All Benchmarks must be turning points and form part of the levelling loop.

1.6.7 Benchmarks must be established by spirit levels done to third order standards with a minimum accuracy of 24mm/k where k= the distance in kilometres between benchmarks measured along the levelling route. If the misclosure or discrepancy exceeds the allowable, the line shall be re-levelled.

1.6.8 The method used will be three wire method (mean of the reading for the three wires). The difference of elevation is the mean of the two running where:

$$Mean = \frac{(F)-(B)}{2}$$

The Contractor/Surveyor will perform all necessary adjustments of the level loops.

1.6.9 The description sheet shall be digital in a fashion that can be reproduced in a clear and legible form. A minimum of three ties shall be shown to reference the Benchmark. The reference plan need not be to scale, however, all information shall be digital in a form compatible with city software. Lettering size shall be a minimum of 2.5 mm high and line weight shall be 0.35 mm.

1.6.10 All Benchmarks and Benchmark information shall be shown on the subdivision plan according to the City standards.

1.6.11 If the work does not meet the above criteria, the contractor/surveyor's work shall be returned for corrections.

SUBDIVISION DESIGN GUIDELINES - Drafting

2.1 Preparation of Drawings

2.1.1 - CAD Drawings Required:

Computer-aided design and drafting (CAD) shall be used in the preparation of construction and as-built drawings for all developments. Manually drafted drawings will not be accepted.

2.1.2 – Submission of Drawings in Digital Format

The City of Mount Pearl presently uses AutoCAD for drafting and archival storage of its own digital drawings. Wherever this specification requires the submission of digital drawings, they shall be in AutoCAD *dwg* format, or *dxf* format, where the consultant uses a CAD platform other than AutoCAD.

Prior to submission of digital drawings the consultant shall enquire as to the version of AutoCAD presently being used by the City and shall submit his drawings in a compatible format.

Storage Media – Throughout the Design process individual drawings may be submitted on compact disk (CD). As-built or record drawings shall be submitted in complete sets on compact disk (CD). One (1) complete set of prints to be submitted with digital submission.

Electronic File Transfer – During the design process, electronic file transfer through e-mail or internet will be considered on a case by case basis.

2.1.3 – Physical Size of Drawings

All drawings in any one development shall be of the same physical size. The prime consultant shall coordinate the drawing size with any/all sub-consultants, i.e., surveyors, etc.

Maximum size: the maximum size designation shall be "B1" which represents a 707 mm wide by 1000 mm long sheet.

Minimum size: the minimum size designation shall be "A1" which represents a 594 mm wide by 841 mm long sheet.

2.1.4. - Scales

All CAD drawings shall be drawn full size and plotted at a reduced scale.

The Plotting Scale of the:

(a) Engineering Plan or Site Services Plan shall be:
  (i) Plan - 1:500
  (ii) Profile - 1:500 Horizontal
  1:50 Vertical

(b) Survey Plan/Subdivision Plan shall be:
  (i) 1:500 or
  (ii) As approved by the City

(c) Site drainage plan shall be:
  (i) 1:500 or
  (ii) 1:1000 or
  (iii) 1:2500 or
  (iii) As approved by the City

(d) Location plan or key plan shall be 1:2500

(e) Site grading plan shall be 1:500

(f) Detail plan and cross-sections shall be at a scale that will fully illustrate the subject matter.

2.1.5 - Grid Reference

Drawings shall be prepared using NAD 83 (North American Datum 1983). Grid lines at 200 metres shall be shown and Northings and Eastings indicated.

2.1.6 - North Arrow

A north arrow shall be placed in the upper right corner of each drawing.

2.1.7 - Plan Orientation

Survey plans shall be drawn using the development's actual coordinates based upon NAD 83. Title blocks, borders and plots shall be rotated such that the top of the sheet is approximately north and text can be read left to right and/or bottom to top.

2.1.8 - Symbols and Line Types

Standard City drafting symbols and line types, as shown on the sample drawing provided, shall be used on all drawings. Where symbols other than the standard ones are used, they shall be shown in the legend.

2.1.9 - Lettering

Except as noted below for existing grades, all drawing notes and dimensions shall be roman simplex font and the minimum size lettering shall be Leroy 100, which represents a plotted height of 2.54 mm. For the purpose of annotating existing grades, text at a forty five degree angle to the bottom of the drawing sheet should be used. This text shall be Leroy 60 size, which represents a plotted height of 1.524 mm. With the exception of text for existing grades, it is recommended that no more than three (3) lettering heights be used on any one drawing.

2.1.10 - Layering

Data on each drawing shall be fully layered according to standard engineering practice.

2.1.11 - Reserved Area

An area at least 21.5 cm high shall be reserved above the title block for the key plan, notes, legend, engineer's stamp, revision data, etc.

2.1.12 - Cover Sheet

A cover sheet shall be provided for each drawing set and shall contain the following information:

(a) Project Name
(b) Key Plan
(c) Name of Consulting Engineer and Sub-consultants
(d) Name of Developer
(e) List of Drawing Names and Numbers
(f) Date of Issue
(g) "As-Built" or "Record Drawing" note when applicable.

2.1.13 - Submission of Drawings

(a) Design drawings shall be submitted as follows:
    (i) 3 each - White Prints
        1 only – Digital Copy

(b) Construction drawings shall be submitted as follows:
    (i) 3 each - White Prints
    (ii) 1 only – Digital Copy

(c) As-built drawings shall be submitted as follows:
    (i) 1 only - White Print

(ii) 1 only – Digital Copy

(iii) 1 only - Listing of screen colour/pen weight designations.

2.1 Preparation of Drawings – General Conditions

2.2.1 Street Names

All streets shall be identified and names printed within street lines. Proposed street names to be submitted to the City prior to incorporating in drawings. The City will forward names to the Fire Commissioner's office for review. Upon approval by the Fire Commissioner and Council, the developer will be advised of approved street names.

2.2.2 Intersection Identification

At intersection streets or where the continuation of the streets is on other plans, the following note shall be shown on the Plan:

"For Continuation see plan no. _____"

2.2.3 Traverse Plotting

All traverses shall be plotted by either:

(a) The "Tangent Off-Set Method; or

(b) The calculated "Latitude (Lats) and Departure (Deps)" Method

2.2.4 Percent (%) Grade

Percent (%) grades (slopes) shall be shown for all appropriate services to two (2) decimal places.

2.2.5 Accuracy of Measurements

All distances shall be measured to the nearest centimetre.

2.2.6 Geodetic Datum

Elevations shown on any plan shall be referred to the Provincial Geodetic Datum

and the reference Benchmark (B.M.) along with its location and description shall be shown in the area above the Title Block.

2.2.7 Irregular Boundary Line Measurements

More or less distances shall not be accepted except along a water boundary or other irregular boundaries in which case a "tie line" between the adjoining boundary end points shall show the bearing and the distance.

2.2.8 Revisions to Plan

(a) If plans are revised, amended or altered, the revision number, date and a brief description of the revision shall be noted in the revision area of the Title Block;

2.2.9 Signing Of Plan

All plans shall be stamped and signed by a professional engineer licensed in the Province of Newfoundland and Labrador.

2.2.10 Procedure Revision

This procedure is subject to change without notice, and the onus lies with the user to ensure that he is in possession of the latest revision.

SUBDIVISION DESIGN GUIDELINES - EASEMENTS

3.1 General

3.1.1 Easement means an incorporeal right, distinct from ownership of the soil, vested in the City and consisting of a use of another's land for any Public service or utility.

3.1.2 When sewers, surface drainage or water system pipes are to be installed other than in a street or walkway, an easement shall be provided over such installations.

3.1.3 The owner of the easement land shall not construct any type of structure over such easement area.

3.2 Design

3.2.1 The width of any easement shall be based upon the type, depth and number of services proposed to be installed.

3.2.2 The minimum width of an easement shall be three (3) metres for single pipe and six (6) metres for double pipe.

3.2.3 The alignments for any easement shall be dependent upon the type of service to be installed.

3.3 Acceptance

3.3.1 Acceptance of services within an easement shall be carried out as outlined under the requirements for Stage I acceptance.

3.3.2 All easements shall be covered by legal agreement as approved by the City's Solicitor.

3.4 Restoration

3.4.1 When the City carries out work within an easement, it shall be responsible for restoring the area as close as practical to its original condition or as otherwise stipulated in the Easement Agreement.

3.4.2 This procedure is subject to change without notice, and the onus lies with the user to ensure that he is in possession of the latest revision.

SUBDIVISION DESIGN GUIDELINES – STORM SEWER PIPING

4.1 Design Drainage Area:

The design drainage area may be determined from contour plans, and shall include any fringe areas not provided for, in adjacent storm drainage areas, as well as other areas, which may become tributary by reason of regrading.

4.2 Drainage Plan:

The drainage plan shall be based on design elevations and to a scale as indicated in the drafting section of this specification and shall show generally:

(a) Streets;

(b) Lots;

(c) Water courses and direction of flow;

(d) Proposed storm sewers with manholes numbered using the last four digits of the Easting and the suffix "R",

(e) Tributary areas to each manhole, size of the area in hectares and the runoff coefficient clearly shown therein;

(f) Contour lines having an interval not exceeding one metre;

(g) Proposed surface drainage.

(h) Design elevations.

4.3 Runoff:

Computations shall be based on the Rational Method formula:

Q = R.A.I.N. where:

Q = maximum rate of runoff, in litres per second

R = runoff coefficient

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

I = average rainfall intensity, having duration equal to the time of concentration of drainage area, in millimetres per hour

N = Constant = 2.778

Standard design forms shall be used for all calculations. (See Appendix A).

4.4 Runoff Coefficient:

The value of the coefficient shall be obtained by correlating the ratio of impervious to pervious surfaces. The minimum coefficients for fully developed areas shall be as follows:

(a)	Parks & Undeveloped Areas	0.10 - 0.30
(b)	Single Family Residence	0.30 - 0.50
(c)	Semi-Detached	0.40 - 0.60
(d)	Row Housing	0.60 - 0.75
(e)	Apartments	0.50 - 0.70
(f)	Parking Lot Areas (paved)	0.90 - 1.00
(g)	Light Industrial	0.50 - 0.80
(h)	Heavy Industrial	0.60 - 0.90
(i)	Hospitals	0.70
(j)	Light Commercial	0.50 - 0.70
(k)	Commercial Core	0.70 - 0.95
(l)	Heavily developed areas	0.80 - 0.95

4.5 Rainfall Intensity:

The rainfall intensity shall be based on a 1 in 10 year return period and a duration of ten (10) minutes for suburban residential areas. Trunk Sewers, bridges and other critical structures as determined by the City shall be on a 1 in 100 year return period with a duration equal to the time of concentration. The design intensity must be obtained from the most up-to-date data available from Environment Canada for the St. John's area.

4.6 Capacity of Pipe:

Manning's Formula: $$V = \frac{R^{\frac{2}{3}} \times S^{\frac{1}{2}}}{n}$$

shall be used to compute the capacity of storm sewers. The following

roughness coefficient shall be used:

(a) Concrete box culverts 0.013

(b) P.V.C. ribbed pipe 0.011

4.7 Minimum Size

Street Sewers	300 mm
Catch Basin Leads	Single 200 mm Double 300 mm
Building Sewer	100 mm

4.8 Velocity: (for design flow)

Minimum	1 m/s
Maximum	5 m/s for diameter up to and including 825 mm and 6 m/s for diameters larger than 825 mm.

4.9 Change of Size:

No decrease of pipe size from a larger size upstream to a smaller pipe downstream shall be allowed regardless of the increase in grade.

4.10 Pipe Crossing Clearance:

(a) Sewer crossing sewer: A minimum of 150 mm vertical clearance is required between outside barrels where sewer pipes cross.

(b) Sewer crossing waterline (vertical clearance): A minimum of 450 mm vertical clearance and where possible 3000mm in horizontal clearance is required between a sewer pipe crossing a waterline.

(c) Sewer crossing waterline (horizontal clearance): Waterlines shall be run in a separate trench from either the sanitary or storm sewers, and shall have a minimum horizontal separation of three (3) metres.

4.11 Location:

(a) Storm sewers shall be located such that manholes are placed in the centre of driving lanes, wherever possible.

(b) Manholes shall be located at every change of horizontal and vertical alignment, size and material of the sewer.

4.12 Earth Load:

Shall be calculated by using the Marston Formula.

4.13 Superimposed Load:

The effect of concentrated and distributed superimposed loads shall be evaluated by generally accepted formula.

4.14 Manholes:

(a) Standard types of manholes and their details are shown on Standard Drawings. (Infiltration and Exfiltration tests will be required)

(b) All manhole chamber openings must be located on the upstream side of the manhole.

(c) Special manholes shall be fully designed and detailed.

(d) Maximum distances between manholes unless otherwise specified shall be 90 m for 700 mm pipe or smaller, and 120 m for pipe greater than 700 mm.

4.15 Special Structures:

Inlet and outfall structures including headwalls, stilling chambers, etc. shall be fully designed and submitted in detail. In each case, topography shall be shown as well as the protective works necessary to counteract erosion of the site at the structure. Grates shall be provided on all inlet structures and outlet structures greater than 600 mm in diameter and shall be fully

designed, detailed and approved by the City.

4.16 Outfalls:

All storm outfalls, which empty into a ditch or water course, must receive approval from Fisheries and Oceans Canada and the Provincial Department of Environment.

4.17 Catch Basins:

(a) The lead shall have a minimum 2% grade and shall discharge directly to an existing or proposed manhole located within 30 m of the catch basin. Unless otherwise approved.

(b) Recess catch basin shall not be used.

(c) Catch basins shall be located and spaced in accordance with conditions of design and shall provide for expected maximum flow.

(d) Standard location for catch basins at street intersections shall be immediately upstream of sidewalk or pedestrian crosswalks and between intersections at all low points.

(e) Spacing shall not exceed 95 m for road grades up to 3%. On steeper roads, this spacing shall be reduced.

(f) Catch basins are to be depressed 30 mm with respect to the gutter grade.

4.18 Headwalls:

Headwalls shall be designed for inlet control with:

$$\frac{HW}{D} \leq 1.0$$

4.19 Deflection Test:

All PVC/HDPE storm pipes will be required to pass a deflection test similar to the sanitary sewer.

4.20 Vertical deflection:

Testing of every section with a “Go-No Go” device is required. The deflection shall be checked by manually pulling a go, no-go deflection testing mandrell through the pipe. If the percent of deflection exceeds the maximum specified, the contractor shall, at his own expense, undertake such remedial action as required to reduce the deflection to the limits specified. Vertical deflection tests shall be performed on all lines. The contractor shall conduct the tests under the observation of the Department of Engineering Services

4.21 Revisions of Procedure:

This procedure is subject to change without notice and the onus lies with the Consulting Engineer to ensure that he is in possession of the latest revision.

4.22 Storm Water Detention Requirements

For those areas not previously planned, prior to the city’s requirements for storm water detention, shall be required to incorporate storm water detention into the development.

The City of Mount Pearl recognizes two major storm water detention systems; above and underground detention. For storm water detention the 1:100 year return rainfall event shall be used. The duration shall be the time of concentration or the event which requires the greatest storage up to the 12 hour event.

SUBDIVISION DESIGN GUIDELINES – SANITARY SEWERS

5.1 Design Drainage Area:

The drainage area may be determined from contour plans and shall include all other areas, which may become tributary by reason of regrading or pumping.

5.2 Drainage Plan:

The drainage plan shall be based on design elevations and shall be to a scale as indicated in the Drafting section of this specification and shall show generally:

(a) Streets

(b) Lots

(c) The size and grade of the sanitary sewers with manholes numbered using the last four digits of the Easting and the suffix "S".

(d) Tributary areas to each manhole, size of the area in hectares and ultimate average population per hectare clearly shown therein.

5.3 Evaluation of Design Flows:

(a) Standard design forms (Appendix B) shall be used for all calculations. A sample may be obtained from the Engineering Department.

(b) The design of all sanitary sewers shall be based on a peak flow and the 22,500 L/ha/day constant of infiltration. A typical computation of Design Flow (for distribution pipes only) is shown on attached Table 2 and some of its aspects explained in the following items.

(c) The minimum rate of infiltration for which capacity shall be provided is 22,500 L/ha/d.

(d) The design flows from developments of single family residence shall be based on an average population density of 80 people per hectare.

(e) Flow computations (for distribution pipes only) shall be based on Table I as follows:

(h) Design elevations.

TABLE #1

LAND USE	AVERAGE DAILY SEWER FLOW	PEAKING FACTOR	PEAK SANITARY FLOW
Residential	275 L/c/d	Calculate Using Peaking Factor Formula	

Where:

Average Sewer Flow is a predicted flow based on ninety (90%) percent of water consumption.

Peaking Factor is the ratio of the peak rate of flow on the average rate of flow. It is based on the Harmon Formula,

$$M = 1 + \frac{14}{4 + \sqrt{p}}$$

Where "p" is the tributary design population in thousands for residential areas. For other than residential, the design population "p" can be termed as an equivalent population and is computed by dividing the unit non-residential sewage flow by the average unit residential sewage flow of 275 L/c/d.

5.4 Capacity of Pipe:

Manning's Formula: $$V = \frac{R^{\frac{2}{3}} \times S^{\frac{1}{2}}}{n}$$

shall be used to compute the capacity of sanitary sewers. The following roughness coefficient "n" shall be used:

(a)	Concrete Pipe	0.013
(b)	P.V.C.	0.010

5.5 Minimum Size:

Of street sewer	200 mm
Of building sewer	100 mm

5.6 Velocity: (for design flow)

Minimum - 1 m/s

Maximum - 5 m/s for diameter up to and including 825 mm and
6 m/s for diameters larger than 835 mm

5.7 Change of Size

No decrease in pipe size from a larger size upstream to a smaller size downstream shall be allowed regardless of the increase in grade.

5.8 Pipe Crossing Clearance:

(a) Sewer crossing sewer: A minimum of 150 mm vertical clearance is required between outside barrels where sewer pipes cross.

(b) Sewer crossing waterline (vertical clearance): A minimum of 450 mm vertical clearance and where possible 3000mm horizontal is required between a sewer pipe crossing a waterline.

(c) Sewer crossing waterline (horizontal clearance): Waterlines shall be

(d) run in a separate trench from either the sanitary or storm sewers, and shall have a minimum horizontal separation of three (3) metres.

5.9 Location:

(a) Sanitary sewers shall be located such that manholes are placed in the centre of driving lanes wherever possible.

(b) Manholes shall be located at every change of grade, alignment, size or material of the sewers.

(c) Manholes shall be spaced a maximum of 90 m apart for sewers smaller than 700 mm diameter and 120 m apart for sewers over 700 mm diameter.

5.10 Earth Load:

Earth loads on sewers shall be calculated by using the Marston Formula.

5.11 Vertical deflection:

Testing of every section with a “Go-No Go” device is required. The deflection shall be checked by manually pulling a go, no-go deflection testing mandrell through the pipe. If the percent of deflection exceeds the maximum specified, the contractor shall, at his own expense, undertake such remedial action as required to reduce the deflection to the limits specified. Vertical deflection tests shall be performed on all lines. The contractor shall conduct the tests under the observation of the Department of Engineering Services

5.12 Superimposed Load:

The effect of concentrated and distributed superimposed loads shall be evaluated by generally accepted formula.

5.13 Manholes:

(a) Standard types of manholes and their details are shown in Standard Drawings.

(b) All manhole chamber openings must be located on the upstream side of the manhole.

(c) All pipes turning at a greater angle than 45^0 in a manhole require a 150 mm drop.

(d) Special manholes shall be fully designed and detailed.

5.14 Building Sewer:

(a) Separate and independent building sewers shall be provided for every single family house, each unit in a semi-detached, and each apartment building, office building, factory or similar building. (See Appendix I for Sewer Lateral Detail)

5.15 Storm Water:

Storm water drains, roof drains, or foundation drains, shall not be connected to any part of the sanitary sewer.

5.16 Revisions of Procedure:

This procedure is subject to change without notice and the onus lies with the Consulting Engineer to ensure that he is in possession of the latest revision.

TABLE #2

LAND USE	PEAK SANITARY FLOW (FROM TABLE 1)	MINIMUM RATE OF INFLITRATION	DESIGN FLOW
Residential		22,500 L/ha/d	Peak Sanitary Flow + Minimum Rate Of Infiltration

SUBDIVISION DESIGN GUIDELINES – WATER SYSTEMS

6.1 General:

6.1.1 (a) Definitions:

(i) **Water system** means an assembly of pipes, fittings, control valves and appurtenances, which convey water to water service pipes and hydrants.

(ii) **Water service pipe** means a pipe that conveys water from a water system to the inner side of the wall through which the pipe enters the building.

6.2 Design Criteria and Location:

6.2.1 - Dead Ends:

The water system shall be so designed to exclude any dead-ended pipe, so far as is reasonably possible.

6.2.2 Size of Water Pipe:

(i) 150 mm diameter mains may be used on cul-de-sacs and crescents less than 200 m in length. But in no case shall the total length of 150mm diameter exceed 200m. 200 mm diameter mains shall be used for all local mains.

(ii) The size of a main feeder pipe shall be a minimum of 300 mm diameter.

6.2.3 Depth of Cover:

(i) All water pipe shall have a minimum cover of 1800 mm in relation to the final finished street grade.

(ii) For streets not paved prior to December 1 of any year, a sufficient depth of fill shall be placed to give a minimum cover of 1500 mm.

6.2.4 Location of Water Pipes:

(i) All water pipes shall normally be laid on the quarter point of the street right of way and in a separate trench from the sanitary and storm sewers. Horizontal separation between watermain any sewer main shall be a minimum of 3000mm unless otherwise approved.

(ii) Where a water pipe is to be laid in a trench, other than in a street, the developer shall grant to the City by deed and plan, at his cost, title to the Easement. Such Easement shall be not less than six (6) metres in width and the City shall approve its location.

6.2.5 Location of Valves:

(i) Valves at street intersections shall be located within the street carriageway.

(ii) Four (4) valves shall be required at each four-way street intersection. If there are more or less than four (4) streets meeting at any intersection, the appropriate number of valves shall be installed to allow complete isolation of the system.

(iii) On straight runs in a residential area, the maximum distance between

valves shall be 180 m.

(iv) Valves for hydrants shall be located within the carriageway of the street and shall be located minimum of six (6) metres from the hydrant. Hydrant tee, lead, valve, and fitting shall have restrained joints.

(v) A valve shall be located within six (6) meters of dead ends for future connection and restrained joints used for a minimum of six (6) meters. Valve is to be located beyond service laterals and hydrant.

6.2.6 Valve Chambers

(i) All valves larger than 300 mm diameter shall be geared.

(ii) All valves of 400 mm and larger shall be installed in a chamber constructed of reinforced concrete or made from a 1500 mm diameter pre-fabricated concrete manhole.

(iii) Access frames and covers for these chambers shall be cast iron, providing a clear opening of 750 mm in diameter with two (2) countersunk lifting rings in the cover. The term "WATER" shall be imprinted on the cover. There shall be two access covers in each chamber larger than 1800 mm in diameter and access ladders shall be provided in the chamber.

6.2.7 Hydrants

(i) Hydrants shall be placed at the centre of lots, and/or a minimum of 2m from driveway and any utility structures. 1700mm behind the curb line or 400mm behind the sidewalk; whichever is greater, and spaced not more than 140 m apart.

(ii) Hydrants shall be installed so that the top of the standpipe flange will be from 100 mm - 150 mm above the finished curb grade.

(iii) The branch pipe to the hydrant shall be 150 mm in diameter and shall include a 150 mm branch valve. Hydrant valves shall be located within the street carriageway. When future connections are anticipated, hydrants shall be located no more than a minimum 6(six) metres from the end and beyond the last service location. Therefore all fittings shall have restrained joints for a distance of 12 meters.

(iv) All joints on hydrant leads, including the mainline Tee, shall be equipped with joint restraining fittings.

(v) Although dead-ended pipes are not desirable, if unusual conditions exist and warrant the installation of a dead-ended pipe, a hydrant shall be installed in its proper location at the dead end.

(vi) Hydrants shall be installed at all high points in profile.

6.3 Connections to Existing Water Systems:

6.3.1 Service Interruption:

A connection of the developer's water system to any part of the existing water system must be carried out in such as way as to cause the least interruption to existing service and the City must approve each such connection. A connection of 100mm diameter pipe or greater shall be by a tapping sleeve and valve. All connections shall be pressure connections.

6.3.2 Scheduling of Connection:

The City will assist in the scheduling of any such connection and will install the tapping sleeve and valve at the Developer's expense. If the Developer is permitted to make the actual connection the work must be done under the supervision of the City at the Developer's expense.

6.3.3 Other Connections:

Whenever the existing water system is within reasonable distance from a proposed subdivision, and an interconnection is practical, the developer shall be required, at his cost, to install the necessary pipe and interconnect the water system in his subdivision to the existing water system.

6.3.4 Prohibited Cross-Connections:

No pipe or water service pipe, cross-connection will be made from the existing water system to a water system in a subdivision, which is connected to some other source of supply.

6.4 Tapping Sleeves and Valves:

Tapping sleeves and valves shall be used for all ductile iron connections to existing water mains.

SUBDIVISION DESIGN GUIDELINES – Streets

7.1 STREET CLASSIFICATION:

Streets shall be classified as shown in the following table:

	ARTERIAL	COLLECTOR	LOCAL
Traffic service	Traffic movement first consideration	Traffic movement and land access of equal importance	Traffic movement second consideration
Land service	Land access second consideration		Land access first consideration
Parking	Some parking	Parking	Parking
Design Volume (A.D.T.)	12,000 - 30,000	12,000 - 30,000	Less than 1,000
Characteristics of traffic flow	Uninterrupted except at signals and crosswalks	Interrupted flow	Interrupted flow
Vehicle type	All types but trucks may be omitted	All type with truck limitations	Passengers and service vehicles; large vehicles restricted
Connects to	Arterials, collectors, freeways & some locals	Arterials, collectors, locals	Collectors, locals

CHARACTERISTICS OF STREET CLASSES

STREET CLASSIFICATION

	ARTERIAL	COLLECTOR	LOCAL
Street grade Maximum	10.0%	10.0%	10.0%
Street grade Minimum	1.0%	1.0%	1.0%
Street right of way width	30 m	20.5 m	15 m
Minimum C/l Radius	90 m	90 m	*50 m
Maximum Super Elevation	0.06m/m	0.06m/m	0.06m/m
Minimum Stopping Sight Distance and Turning Sight Distance	Refer to Urban Supplement to TAC	Refer to Urban Supplement to TAC	Refer to Urban Supplement to TAC
Pavement Widths	15 m	12 m	10.5
Minimum "K" value Vertical curve Crest ---------- Sag ---------- Maximum K Crest Sag	 7 11 40 30	 7 11 40 30	 7 11 40 30
Minimum Length of vertical curve	L = length in metres should not be less than design speed in kilometres per hour. With exception of local intersections approved the city.		
Vertical curve Maximum (Length for drainage)	Crest: K = 60 Sag: K = 30		
Minimum Distance between intersections	400 m	60 m	60 m
Minimum face of curb radius at intersections	15 m	9 m	8 m

Sidewalks (sides)	Both	Both	One
Street lighting (Minimum requirements)	1.5 cd/m or 22 lx	1.0 cd/m or 15 lx	1.0 cd/m or 15 lx

* Crescent and Cul de sacs may have a centreline radius of 22.5 m if less than 200m in length.

7.2 Design Criteria

7.2.1 Streets shall be designed to provide the safest and smoothest traffic flow possible. The criteria in Table 1 consist of the minimum requirements for flat vertical alignments. Specific vertical and horizontal alignments may dictate a variance in these requirements.

7.2.2 For specific situations not covered by this section, the latest edition of the *Geometric Design Guides for Canadian Roads* should be used as a guide.

7.3 Cul-De-Sacs:

Cul-de-sacs should only be used where approved by the City's Planning and Engineering Departments. They shall have the following additional minimum requirements:

(a) Face of curb line, turning circle, radius of 15.25 m.

(b) Maximum exit grade of +5%

(c) Low back curb and gutter to extend around the bulb

(d) Transitional street line radius of 15.25 m into street line turning circle.

(e) Maximum length of 200 m - measured from connecting street right of way to end of bulb.

(f) Right of way should be 17.25m at bulb.

7.4 Intersections:

7.4.1 Intersections shall:

i) Be of "T" type design;

ii) Have a vertical alignment within the intersection approach of not more than 2% grade for a minimum distance of 10 m from the roadway intersection curb line;

iii) Have an intersecting angle of 90^0 where possible. The minimum angle shall be 75^0;

iv) Have a minimum centre line distance between adjacent and/or opposite intersections:

a) On Local streets to Collector street of 60 m,

b) On Collector streets to Collector streets 90 m.

7.4.2 When two (2) streets (or more) intersect, only one (1) street may have a curved horizontal alignment; all other streets at this intersection shall have a minimum tangent section of 30.5 m as measured from the point of street line intersection to the first point of horizontal curvature on each approached street line.

7.5 Driveways:

7.5.1 All residential lots shall have a low back curb of 6.2m in width, starting at a point 0.5m from the property line. Widths greater than this may be approved at council's discretion, but in no case shall it be greater than 50% of the lot frontage.

7.5.2 Corner lots may be permitted to have a driveway access from the flanking street as per the approved subdivision plan.

7.5.3 No driveway (ramp) shall be permitted to enter onto a proposed designated limited access freeway, arterial or major street.

7.6 OTHER GENERAL REQUIREMENTS

7.6.1 Tangent distances between horizontal reverse curves shall not be less than 50 m.

7.6.2 Horizontal alignment of streets shall be such that the centre line and curb lines shall be symmetrical with their street lines.

7.6.3 Vertical alignments of streets shall be considered as symmetrical about the centre line unless otherwise instructed by the Municipality.

7.6.4 All streets shall have a minimum 150 mm crowned roadway cross-section and in no case should the crowned roadway cross-section be less than 2%.

7.6.5 a) Curb and gutter will be required
b) Sidewalk requirement to be determined by Planning Department.

7.6.6 All local streets shall have a minimum of 150 mm Class "B" and 75 mm Class "A" granulars, 38 mm base course and 38 mm surface course asphalt. (2 lifts of 37.5 mm each) Collector and arterial share has 200 mm class B and 100 mm class A and 75 mm asphalt (2 lifts of 37.5 mm). Additional granulars and asphalt may be specified as determined by the City Engineer.

7.6.7 At intersections a 5.6 m green belt will be required, beyond the street right of way, on the flanking street.

8.0 LANDSCAPING REQUIREMENTS AND URBAN FORESTRY

Refer to City's Landscaping requirements. A copy can be obtained from the City's Planning Department by calling (709) 748-1023. The developer shall only remove those trees that are necessary for development and only after consultation and approval from the City's Parks and Community Services

Department. Tree replacement and/or relocation may be required.

SCHEDULE 3

SUPPLEMENT TO:

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR MUNICIPAL WATER, SEWER AND ROADS MASTER CONSTRUCTION SPECIFICATION

Note: This section details areas where the City of Mount Pearl's Municipal Engineering Standards differ from the Provincial Government's Master Specification.

1.1 SECTION 01001 DEFINITIONS

1.1.1 **ENGINEER** Shall mean Consulting Engineer registered in the Province of Newfoundland and Labrador, retained by the Developer to be responsible for design and supervision of the work.

1.1.2 **OWNER** Owner, where used in the Master Specifications, refers to the Developer, a person or company who has applied for and has been granted approval to subdivide or service an existing parcel of land.

1.2 SECTION 01005 GENERAL INSTRUCTIONS

1.2.1 Where a Contractor is required to install storm or sanitary sewer mains beginning at an existing manhole or section of existing main, the Contractor shall install a temporary 6 mm mesh screen over the outlet pipe of the first downstream existing manhole to prevent silt and gravel from entering the existing system from the new work. If this location is not appropriate, the Engineer may choose a more suitable

Location, to be approved by the City Engineer.

1.3 SECTION 01570 TRAFFIC REGULATIONS

1.3.1 Traffic detours shall not be implemented unless the owner receives the prior written approval of the City. The owner shall request approval at least 7 days in advance of the proposed implementation of the detour.

1.3.2 Traffic detours shall be applicable to through traffic movements only. The owner shall provide adequate means whereby access is maintained to properties fronting on closed sections of streets.

2.1 SECTION 02702 PIPE SEWER CONSTRUCTION

1) Delete item 2.4.1 as shown in Government Master Specification and substitute the following:

2.4.1 All house/building sewer service pipe to be SDR 28. All storm mains to be PVC or HDPE with a stiffness factor of 320 or greater.

2) Delete item 3.4.1 as shown in the Government Master Specification and substitute the following:

3.4.1 Place Type 1 granular bedding materials on all storm and sanitary services.

3) **3.7.13** Delete the items as shown in the Government Master Specification and substitute as follows:

1. **Scope of work:**

The work covered by this specification consists of furnishing all materials, labour, supervision, equipment and plant; to perform all work necessary for the video inspection of the gravity sewer lines as specified.

2. **When Video Inspection Required:**

A Video inspection will be required:

(a) For all new sewers (sanitary and storm). Sewers are to be inspected prior to acceptance of Stage I works and ten months from the date of acceptance or before placing of surface course asphalt, whichever occurs first.

(b) When any proposed construction project may conceivably damage, disrupt or otherwise disturb any portion (or an appurtenance) of the municipality's sewerage system, a pre-construction and post-construction inspection of the system will be required.

Inspection requirements shall be determined based on the following criteria:

(i) Any sewer running parallel to the proposed construction area and within 5m of same, shall be inspected if blasting is required or anticipated.

(ii) When blasting is not required, any sewer running parallel to the proposed construction and is within 3m of same shall be inspected.

3. **Arrangement for inspections:**

The Contractor will arrange all pre-construction and post-construction video inspections.

4. **Pre-Construction Inspection of Sewers:**

In the area of the proposed construction, all building services connected to the sewer main shall be assumed to be in reasonable structural condition if they have been functioning properly in the past. If a malfunction of a building service is caused, the contractor will be held responsible for any repairs. As an alternate to the previously outlined pre-construction inspection requirements, the Contractor may accept the sewer line conditions noted in a previous video inspection report for the affected area, which may be presently on file, however, to permit utilization of a past report, the following criteria must be met:

(a) The video inspection report shall be less than 3 years old;

(b) No major construction works shall have been undertaken in the immediate area since this inspection.

5. **Post-construction inspection of sewers:**

The post-construction inspection must be completed within thirty days of completion of the works, and in any case before the work is accepted. The video inspection contractors shall record both the pre-construction and post-construction inspections on video tape, as outlined. Upon completion of the post-construction inspection, the tapes will be submitted to the Engineer.

6. **Evaluation of inspection results:**

The results of the video inspection will be evaluated by the Engineer for determination of any damage as a result of the construction project. The sewer system and its appurtenances will be assumed to be damaged by a construction project under the following conditions:

(a) The excavation is of sufficient proximity and depth;

(b) In bedrock, to cause damage to sewers by blasting tremors or rock movement.

7. **Repair of damaged sewers:**

All damage incurred by the sewer system due to the construction project shall be repaired by the contractor in accordance with the City standards. Upon completion of these repairs, a subsequent verification inspection shall be undertaken to assess the quality of the repairs.

8. **Definitions:**

(i) "Clean" shall mean the removal of all sand, grease and all other solid or semi-solid material from the length of pipe connecting two manholes.

(ii) "Building service" shall mean the sewer line (lateral) extending from the building to the sewer main.

9. **Video Equipment:**

Video equipment shall consist of a self-contained camera and a monitoring unit connected by a 3 wire coaxial cable. The camera shall be small enough to ensure passage through a 150 mm sewer, shall be water proof, and shall have a self-contained remotely controlled lighting system capable of varying the illumination of the interior of the sewer line for inspection and photographic purposes.

Picture quality shall be such as to produce a continuous 600 line resolution picture showing the entire periphery of the pipe. All video disks submitted must be DVD or Blue Ray Colour format. An audio description of the inspection must also be provided, as well as a written report.

10. **Video inspection:**

The video inspection shall be performed on one sewer line section at

a time. Each sewer line section being inspected shall be isolated where necessary from the remainder of the line by the use of a line plug to ensure total viewing of the periphery of the pipe. The inspection shall be performed in the direction of the flow, where possible.

An inspection record prepared by the Engineer shall be kept, showing the exact location of each point of infiltration, fault and building service observed by the camera. The Engineer reserves the right to take pictures of the video monitor, as long as such photographing does not interfere with the Contractor's operations and work. Sewer lines 1050 mm in diameter or greater may be inspected by walking through the pipe. Video pictures shall be recorded with a hand held video inspection camera. In addition, still pictures may be taken with a 35 mm camera. Sections found to have deficiencies are to be retaped after deficiencies have been rectified, therefore, taping of new work will show no deficiencies.

11. **Accommodation for Viewing:**

The Contractor shall provide the accommodation for no less than two people, for the purpose of viewing the monitor, while the inspection is in progress.

12. **Records:**

An Inspection Record, in log form, shall be maintained during the video inspection by the Engineer. This log shall show the exact location of each leak, fault and building service. The location shall include the distance away from the referenced manhole and also the position as referenced to the axis of the pipe.

Further, a detailed technical description shall be accompanied with photographs as supporting data for each leak or fault noted in the Inspection Report. The term leak or fault is hereinafter defined as:

(a) Any sewer pipe joint which displays a gap or spread, offset, or signs of infiltration.

(b) Any building service which has water entering around the junction of the lateral to the sewer line section or a steady flow entering the line section through the sewer lateral.

(c) Any building service exhibiting a pronounced protrusion into the sewer line section.

(d) Any section of the sewer which is crushed, broken or displays cracks which are either parallel or perpendicular to the axis of the pipe (longitudinal cracks or shears).

(e) Any variance in the grade of the sewer line section.

The final video inspection report for each section will be submitted by the Engineer in the format as noted in item 201.16 - Standards for Video Inspection Records. In addition to the normal inspection report format, the Contractor shall record all the video inspection on video tape. These tapes shall be submitted to the Municipality. The written inspection report will prepared by the Engineer.

All photos and video pictures shall be of excellent quality and resolution. They should present a clear picture of the condition of the pipe with a precise and distinct definition of all observations, i.e., leaks, faults, cracks, obstructions, etc.

13. **Threading of Sewers:**

A 6mm nylon rope or equivalent may be installed in the sewer not more than one day in advance of the inspection, in order that the

camera traction cable may be drawn through the sewer. The rope shall be tightly secured to the manhole ladders, making sure the line is taut, leaving no slack in the sewer line.

14. **Site Safety:**

Manhole barricades are required around all open manholes, in addition to Traffic Control, as per Division 7. Manhole barricades shall be as per Form 741. Prior to entering manholes and sewer lines, the contractor shall ensure that dangerous gases are not present. The Contractor shall keep a C.S.A. certified gas meter and air blower at the site to ensure the safety of the workmen when they are working inside the manholes and sewer lines. Personnel shall be trained in confined space entry.

15. **Flow Control:**

When sewer line flows are above the minimum requirements (1/4 of the pipe diameter) to effectively conduct the inspection, one or more of the following methods of flow control shall be used:

Plugging or Blocking

A sewer line plug shall be inserted into the line at a manhole upstream from the section to be inspected. The plug shall be designed so that all or any portion of the sewage flows can be released. During the inspection portion of the operation, flows shall be shut off or substantially reduced in order to properly inspect the pipe at the invert. After the inspection is complete, flows shall be restored to normal.

Pumping or By-passing

When adequate flow control cannot be obtained by the plugging method, pumps or siphons shall be used to divert all or a portion of

the flows as may be necessary to perform the inspection, as approved by the Engineer. Excess sewage flows shall be transported through a pipe or by tank trucks to the nearest or most economical disposal area.

16. **Standards for Video Inspection Reports:**

Within ten working days following completion of a video inspection on a section of sewer, a final video inspection video on this section shall be submitted by the Contractor to the Engineer. The Engineer shall prepare and submit a final video inspection report to the Municipality.

The 10" x 11 1/2" enclosure for the final report will meet the following specifications:

- The report shall be suitably bound;
- Only letter-sized paper (8 1/2 x 11) will be used;
- The title page of the final report will be as follows, with the appropriate substitution where required:

(see following page)

Video Inspection

of

Sanitary/Storm Sewer

Department of Engineering and Works

Location:

Video Recorded by:

Report Prepared by:

Date:

- An Index Page is to be included with each report and will state: "Street names from manhole #__ to manhole #__.

- Whether inspected at the same time or not, the complete sewer inspection report will be presented together, from upstream to downstream manhole.

- All pages will be numbered in the upper right hand corner of the right hand page. Thus, only every second page will be numbered with the same number referring to both the left and right hand page.

- A standard form for documenting the video and manhole inspection findings is provided in Item 202. The form must show:

  (a) For video inspection results the heading will state:
    (i) The street name
    (ii) The manhole numbers applicable to this section
    (iii) The reference drawing number
    (iv) The date of the inspection

  (b) The key plan will consist of a small drawing (not to scale) showing the appropriate locations of the two manholes in relation to any nearby reference points such as houses (with corresponding civic numbers), telephone poles (with corresponding pole numbers) etc. This drawing will denote:
    (i) The manhole numbers
    (ii) The horizontal distance between the two manholes

(iii) The direction of sewer flow

VIDEO INSPECTION REPORT

SUBDIVISION:_____ STREET NAME: _____MANHOLE NO. _____ TO MANHOLE NO.

DISTANCE: _____ GRADIENT:

PIPE LENGTH: _____ PIPE SIZE:____ PIPE MATERIAL: _____DATE: _____ REF. DWG. NO. _____ SHEET NO.

DVD NUMBER	LINE FOOTAGE	PHOTO NO.	COUNTER REF. NO.	OBSERVATIONS

All photographs will appear on the left page only, opposite the corresponding description for the photo which appears on the right hand page. When there are more pictures in any run than can be placed on the first left page, these will be placed on subsequent pages with corresponding descriptions appearing opposite. All photographs will be numbered in order. This number will appear beside them and will be the same number referred to in the description. The last page of the report will consists of an area sewer plan to scale, showing the street inspected for the report and applicable manhole numbers.

4) Delete the item 3.7.15 as shown in the Government Master Specification and substitute as follows:

3.7.15

Deflection Test for PVC Sanitary Sewers

.1 A deflection test shall be carried out on all sections of the sewer. The maximum allowable deflection under fully backfilled and compacted trench conditions shall not exceed 5% before 30 days and 7.5% after 30 days.

.2 Locations with excessive deflection shall be repaired and/or pipe shall be replaced at the Owner's expense. The equipment used for the deflection test shall be that as recommended by the manufacturer, and may include an Electronic Deflectometer or a Rigid "Go-No-Go" Device. For the purpose of deflection measurement, the base inside diameters and the deflection mandrel dimensions are provided in Table 2. To ensure accurate testing, the lines shall be thoroughly cleared.

TABLE 2
Base Inside Diameters
and Deflection Mandrel
Dimensions, PVC SDR-35 (ASTM D3034)

Nominal Size	Base Inside Diameter (mm)	5% Deflection Mandrel (mm)	7.5% Deflection Mandrel (mm)
200	194.69	185.0	180.0
250	242.90	230.8	224.6
300	288.57	274.0	266.9
375	353.01	335.4	326.6

2.2 SECTION 02713 - WATER MAINS

(1) Delete item 1.1.1 as shown in the Government Master Specification and substitute the following:

1.1.1 Curb stops shall be located behind the sidewalk within the street right of way.

(2) Delete items 2.1.2, 2.1.3, and 2.1.4 as shown in the Government Master Specification and substitute the following for item 2.1.1:

- All water mains shall be ductile iron, class 52, cement lined.

Seal coat to be applied to the cement-mortar lining.

(3) **Item 2.4 (general)** - All water service pipe to be copper tubing, Type K. Delete references to all other pipe materials.

(4) Delete item 2.6.1 as shown in the Government Master Specification and substitute the following:

Item 2.6.1 - Granular bedding materials to be Type 3.

2.3 SECTION 02724 - SEWAGE FORCEMAINS

(1) Delete item 2.2.1 as shown in the Government Master Specification and substitute the following:

Item 2.2.1 - Granular bedding materials to be Type 3.for ductile iron pipe and Type 1 for all other materials.

5.1 SECTION 05500 – METAL FABRICATIONS

5.1.1 HAND RAIL

1. **Scope of Work:**

   Fabricate and erect pedestrian hand railing constructed of steel pipe posts. Locations shall be as shown on the drawings.

2. **Form and Dimensions:**

   The form and dimensions of the handrail shall conform to those given in the drawings, and the length shall be as required to suit the particular site conditions where necessary. The Contractor shall vary the spacing of the posts such that the spacing is uniform throughout the length of the rail.

3. **Materials and Fabrication:**

   Steel posts and rails shall consist of 50 mm inside diameter galvanized schedule 40 pipe conforming to ASTM Standard A53. The railing shall be pre-fabricated before erection, and joints between rails and posts shall be made by proper cutting and fitting to insure complete contact. The joints shall then be welded, and the welds and surrounding heat-damaged areas shall be galvanized after fabrication or otherwise suitably protected from corrosion by the use of a zinc based coating. The railing shall be delivered to the site complete and ready for erection.

4. **Installation and Finish:**

   Posts shall be bedded in non-shrink grout in accordance with the bedding detail in the drawings. Holes shall be either drilled or formed in the concrete walls, walks, steps or sidewalks as required.

After installation, the posts and rails shall be prepared and painted as follows:

i) Clean galvanized with a Matchless brand #802 metal conditioner or approved equal.

ii) Prime (one coat) with Matchless brand #590 Zinc Dust Zinc Oxide primer or approved equal.

iii) Paint (two coats) with Matchless brand #119 enamel in colour selected by the Engineer.

SCHEDULE 4

4.1 SAMPLE SUBDIVISION DEVELOPMENT AGREEMENT

THIS AGREEMENT made at the City of Mount Pearl, in the Province of Newfoundland and Labrador, this _____ day of _____, Anno Domino, Two Thousand and Eight.

BETWEEN **XXXXXXXX INC.,**
(hereinafter called "the Developer") of the one part

AND **THE CITY OF MOUNT PEARL,**
a statutory corporation, duly incorporated under The City of Mount Pearl Act, 1988, (hereinafter called "the City") of the other part

WHEREAS the Developer has applied to the City for permission to develop the XXXXXXXXXXXXX Subdivision, (hereinafter called the “Subdivision Development") in the Municipal Boundaries of the City, in the Province of Newfoundland and Labrador, and which development is for the general purpose of subdividing lands for the development and construction of industrial lots, and which location and site is located within the City, south of XXXXXXXX, north of XXXXXXXX, and west of the lands owned by XXXXX and which development plans are specified in the Site Plan Drawing number XXX, Grading Plan Drawing number XXXXX, Street “B” Plan and Profile to Street C Drawing number XXXXXX, Street “C” Drawing Number XXXXXXX, Street “C” Plan and Profile Drawing Number 115-10-06, , Street “C” Plan and Profile, Storm Sewer Drawing Number XXXXX and the Perimeter Survey Plan, and revisions, if any detailing the above Subdivision Development and forming part of this Agreement as Schedule “A”;

AND WHEREAS the Developer, as a condition of final acceptance of development plans for the lands is required to provide certain services and works to service the said lands;

AND WHEREAS the City has set out in detail conditions which are to be adhered to by the Developer and which are to constitute the terms and conditions under which the Developer is granted a permit to carry out the Subdivision Development as aforesaid;

AND WHEREAS the City requires from the Developer a written agreement providing for the proper development of the lands and the installation of the services and works and the observance of the conditions with respect to the development of the said lands;

NOW THEREFORE THIS AGREEMENT WITNESSETH that for and in consideration of the City issuing a development permit and in the further consideration of the mutual covenants herein contained, the Developer covenants with the City to carry out the Subdivision Development and the work on the part of the Developer in the City in accordance with and subject to the terms and conditions of the 'Conditions of Permit' attached hereto, pages six to thirty (6-30), and further covenants that the Developer shall observe and perform all the said 'Conditions of Permit' and complete the Subdivision Development pursuant to the City's standards and conditions.

IN THE WITNESS WHEREOF the said parties to these presents have hereunto their hands and seals subscribed and set the day and year first before written.

SIGNED, SEALED AND DELIVERED

on behalf of

THE COMPANY INC. **THE COMPANY INC.**

in the presence of:

{
{
{
{
{ _____
{ XXXXX
_____ { President
Witness {
Name: {
(please print) {
{ _____
{ Name:
{ Title:
{ *(please print)*

THE COMMON SEAL of

THE CITY OF MOUNT PEARL

hereunto affixed in the presence of:

_____

CITY OF MOUNT PEARL

{

{

{

{

{ _____

{ Randy Simms, Mayor

{

{

{

{

{ _____

{ Gerard Lewis,

{ Chief Administrative Officer

XXXXXXXXXXXXX SUBDIVISION
SUBDIVISION DEVELOPMENT AGREEMENT

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XXXXXXXXXXXXX SUBDIVISION
SUBDIVISION DEVELOPMENT AGREEMENT

CONDITIONS OF PERMIT

1. GENERAL

1.1 Developer's Responsibility

Upon approval of the plan by the City, the developer covenants and agrees to design, construct and install, at the developer's expense and in good workmanlike manner to the requirements, standards, and specifications of the City, the Subdivision Development including all public works, facilities and services as shown on the plans.

1.2 Boundaries of Development

The Developer covenants and agrees, at the Developer's expense, to develop the lands to its external boundaries as shown on the Engineering Drawings, numbered XXX, XXX, XXX, and XXX attached to this Agreement and shown as Schedule 'A' (and revisions, if any) and which form part of this Agreement. The Developer covenants and agrees that the proposed work specified on Schedule 'A' shall be executed in conformity with those plans. No other buildings or work shall be executed on the said lands other than those to be erected in conformity with Schedule ‘A’.

1.3 Professional Engineer

The Developer covenants and agrees with the City that engineering design and full supervision of the services and works provided for in this Agreement and Conditions of Permit and development plans will be carried out by a registered Professional Engineer experienced in the work and retained by the Developer until final completion of the Subdivision Development. The Developer shall forward to the City a copy of the **Engineering Client Agreement** prior to start of work.

1.4 Developer's Liability

The Developer shall be held liable for all actions of its contractors and subcontractors and guarantees a quality of material and workmanship satisfactory to the City. Any deficiency which shall be noted from time to time shall be brought to the attention of the Developer and it shall be the Developer's responsibility to ensure that all requirements are carried out by its contractors with utmost expediency.

1.5 Contractors

The Developer covenants and agrees to submit to the City Engineer a list of all contractors and subcontractors, including names, addresses, phone and fax numbers, who are to be engaged in the construction and installation of municipal works and services.

1.6 Proof of Property Ownership

The Developer agrees that no permit shall be issued for the Subdivision Development until proof of ownership of the property is provided.

1.7 Provision of Surveys and Layouts

The Developer agrees that it, or its consulting engineers, will provide the necessary surveys and layouts required to establish building lines and foundation elevations required by the building contractors to ensure that structures are properly located, all of which are to be completed by a registered land surveyor for the Province of Newfoundland and Labrador and all of which shall be required prior to the issuance of a building permit. The property surveys shall be submitted in a digital format and prepared in accordance with the North American Datum 1983 metric units.

1.8 Revision to Subdivision Plans

The Developer shall make any changes in the Subdivision Development plans as Council dictates through its Engineering Department and the

Developer shall make all necessary changes as required as long as such changes do not result in substantial changes to the plans of the Subdivision Development as set out in Schedule 'A' approved by the city.

1.9 Errors or Omissions

It is hereby agreed by the Developer that the approval by the City of the plans and specifications as submitted shall not in any way make the City liable for any errors or omissions which may from time to time become evident, nor does this Agreement or approval release the Developer from the responsibility of making all necessary changes, corrections or additions which might from time to time become necessary.

1.10 Failure to Comply

Failure to comply with any of the conditions in this agreement will constitute automatic cancellation of this permit and the Developer shall be solely responsible and liable for any and all consequences, financial and otherwise, that results from such cancellation.

1.11 Registration of the Agreement

The Developer covenants and agrees that this agreement and the schedules hereto or any parts thereof may be registered upon the title of the lands, at the sole discretion of the City. The Developer shall pay to the Municipality all legal disbursements incurred with respect to registration.

1.12 Assignment of the Agreement

The Developer covenants and agrees to not assign this agreement except with the prior written agreement of the City.

2. CONSTRUCTION OF WORKS AND SERVICES

2.1 Construction of Services

The Developer covenants and agrees, within the period specified in Clause 4.2 hereof, to construct, at the Developer's expense, the following services and works in accordance with the Mount Pearl Development Regulations under the authority of The Urban and Rural Planning Act, 2000, and any amendments thereto.

(a) Streets and sidewalks to be graded, gravelled, paved, curbed, and landscaped and completed in all respects according to the plans and in accordance with the City's Regulations. The street carriageway shall be ten decimal five metres (10.5 m) wide. The landscaped areas between the lot boundaries and the carriageway shall have a minimum landscape treatment of fifteen centimetres (15 cm) depth of screened topsoil covered with grass sods to the satisfaction of the City;

(b) The sidewalks, easements and landscaped areas are to be completed in accordance with the plans and to the satisfaction of the City Engineer;

(c) Watermains, hydrants, and ancillary works;

(d) Sanitary sewers, manholes, and ancillary works;

(e) storm sewers, manholes, catch basins, and ancillary works;

(f) temporary and permanent street lighting;

(h) Traffic signs and posts;

(i) all areas between the lot lines and the limits of the Subdivision Development and beyond the limits of Subdivision Development which are disturbed shall be reinstated with a minimum landscaping of fifteen centimetres (15 cm) depth of screened topsoil covered with grass sods to the satisfaction of the City;

(j) There shall be XXX sidewalk(s) on all streets within the Subdivision Development and the sidewalk shall be located and constructed to the satisfaction of the City;

(k) All other public works as required by the plans and specifications and the City's Regulations;

AND all of which are to be completed to the satisfaction of the City Engineer.

2.2 Public Services to Extend to Property Boundaries

The Developer covenants and agrees that, where a municipal service and/or works is illustrated on the Engineering Plans to extend to the limit of the property boundary or phase of the development, the service and/or works when developed or constructed shall extend to the limit of the property or phase and the Developer shall obtain from the property owner to which the municipal service ends a letter permitting the Developer to have equipment enter onto the abutting property so that the municipal service and/or works can be constructed to the limits of the property or the phase.

2.4 External Improvements and Upgrades – Storm Sewer System

The Developer covenants and agrees that external and downstream improvements and upgrades to the storm sewer system that are required to accommodate the Subdivision Development shall be the

responsibility of the Developer and shall be subject to the requirements and conditions of the City Engineer.

2.5 Provision if Work Not Satisfactory

The Developer covenants and agrees that in the event the Developer fails to install the services covered by this agreement or fails to proceed expeditiously or fails to install the services in accordance with the specifications and requirements of this agreement, then, upon the City Engineer giving seven (7) days written notice either by hand delivered service or by prepaid registered mail to the Developer, the City through its employees, agents, or contractors may, without further notice , enter upon the lands and proceed to supply all materials and to do all the necessary inspection and works in connection with the installation of the services, including the repair and reconstruction of faulty work and the replacement of materials which are not in accordance with plans or specifications and to charge the cost thereof, together with the cost of engineering, to the Developer. Such entry shall not be deemed as acceptance or assumption of the services.

2.6 Authority to Inspect

The Developer agrees to permit the City Engineer or his agents to enter on the lands at any time to inspect the work and, if necessary, to make emergency repairs, at the Developer's expense. Such entry and repairs shall not be deemed to be an acceptance of the services or an assumption by the City of any liability.

2.7 Utilities

The Developer covenants and agrees to enter into such agreements as may be necessary with the proper authorities having jurisdiction over power, telephone, and postal services to the Subdivision Development, for installation and payment for the distribution system and necessary

appurtences to service the development. The City shall not be obligated to issue any building permits until provided confirmation by the authorities that the agreement provided for in this clause has been entered into or other satisfactory arrangements have been made.

2.8 Blasting

The Developer shall ensure that any blasting required to be done shall be done in compliance with the Blasting Regulations of the Province of Newfoundland. Before any blasting is commenced, the City Engineer shall be notified at least twenty-four (24) hours in advance of any blasting taking place and shall be provided with proof of blasting insurance, blasting license and preblast survey that are satisfactory to the City.

3. MAINTENANCE AND REPAIRS DURING CONSTRUCTION

3.1 Interim Maintenance of Streets

The Developer covenants and agrees to be responsible for maintaining all streets in the Subdivision in reasonable driving conditions, as determined by the City during the construction period, including all grading, dust control, snow removal and ice control, as required. In the event the Developer fails to maintain standards satisfactory to the City, the City shall have the right to complete the unsatisfactory works and charge the same to the expense of the Developer. Once the City issues a Certificate of Substantial Completion, the City will take over the maintenance of the streets for snow clearing and ice control purposes.

3.2 Street Lighting

The developer covenants and agrees to provide temporary street lighting for the Subdivision Development as requested by the City.

3.3 Removal of Refuse and Debris

The Developer covenants and agrees that all refuse and debris arising from construction in the Subdivision shall be removed from the site to an approved dumpsite when the substantial portion of the Subdivision has been completed or when required to do so by the City. The Developer shall also notify lot purchasers that all excavation carried out by individual building contractors shall be similarly removed and shall not, at any stage of construction or development, be pushed unto the street right of way or any adjacent properties. The Developer agrees to protect the natural ecology and covenants with the City that no trees or natural features will be destroyed unnecessarily.

3.4 Construction Debris

The developer covenants and agrees that the Developer will strictly control construction debris such as wrappings and cuttings so that adjacent areas are not littered by blowing construction debris, and in the event that construction debris does litter adjacent areas, the Developer shall be responsible to carry out the clean up as required by the City.

3.5 Truck Routes

The Developer agrees to designate Thomas Byrne Drive and Topsail Road as the truck route for the construction phase of the Subdivision Development and all trucks and heavy equipment are to access and egress the Subdivision Development from this access connection unless otherwise approved by the City Engineer. All required construction signage and flagpersons shall be provided by Developer.

3.6 Days and Hours of Construction

The Developer covenants and agrees that construction on the site, including building construction will only be conducted between the hours of 7:00 a.m. and sundown from Monday to Saturday. The Developer covenants and agrees to notify the lot purchaser of these days and hours of construction at the time of lot purchase.

3.7 No Burning On Site

The Developer covenants and agrees not to burn material on the site and that the Developer will notify lot purchasers of this requirement at the time of lot purchase.

4. ACCEPTANCE OF WORKS

4.1 Inspections and Standards

The Developer agrees to abide by inspection and testing standards set down by the City. The Developer, at its expense, shall conduct a video inspection of all sanitary and storm sewer mains and appurtences in the presence of the City Engineer and/or his agent. One digital record and written report of the colour video inspection shall be deposited with the City Engineer.

A second digital record is required within two weeks prior to placing finish asphalt course, or one month prior to expiration of the maintenance security, whichever occurs first. The finish asphalt course is to be placed a minimum of twelve (12) months following placing of base course or as approved by the City Engineer. All sidewalk work shall be completed immediately prior to placing of finish asphalt course.

4.2 Completion Date of Works

The Developer covenants with the City to complete the development works for total performance of the Subdivision Development no later than September 30, 2010. Failure to complete the Subdivision to the satisfaction of the Engineering Department by that date shall give the right to the City to complete all outstanding works and/or restore site and charge the works to the Developer all in accordance with the security filed with the City by the Developer pursuant to Clause 7.5 of this Agreement.

4.3 Submissions of Final Construction Drawings

Upon completion of Stage 1 works, the Developer shall provide to the City a complete set of record drawings, in digital and paper format, detailing the final construction of all streets, curbs, water, storm, and sanitary sewer facilities, and any other related works provided in the

Subdivision Development. Stage 1 works consist of all underground water and sewer systems; communication and utility systems; and curb, gutter, granulars, and base course asphalt.

4.4 Certificate of Substantial Completion

Upon completion of Stage 1 works to the satisfaction of the City Engineer and at the request of the Developer, the City will issue a certificate of substantial performance.

4.5 Certificate of Total Performance

Upon completion of the said services and works in accordance with this Agreement and payment of all accounts thereof, the City shall issue to the Developer a certificate of total performance stating that all such services and works have been constructed and installed in accordance with the plan, specifications and City Regulations.

4.6 Services and Works Vesting in City

Upon the processing of a resolution by the City giving final acceptance to the Subdivision Development and upon the City's issuance of the Certificate of Total Performance, the ownership of the services and works referred to in the said certificate shall vest in the City.

5. DRAINAGE, LANDSCAPING AND DESIGN

5.1 Grade Control and Lot Grading Certificate

The Developer covenants and agrees to notify lot purchasers at the time of lot purchase that the lot purchaser is required to supply a grading plan such that the lot conforms to the Developers approved Grading Plan and surface drainage conforms within the design parameters of the City's storm water detention policies and does not impact in any fashion upon adjacent lots. The Developer further agrees to advise the individual lot purchasers that a site grading certificate prepared by a registered Newfoundland and Labrador Land Surveyor indicating that the lot complies with the approved Plan will be required by the City.

5.2 Drainage Works and Improvements

That construction of drainage works and improvements outside the area of development required to accommodate drainage from lands draining through it shall be the responsibility of the Developer.

5.3 Surface Drainage and Grading

The Developer covenants and agrees that all surface drainage and site grading problems appearing prior to the issuance of a Certificate of Total Performance by the City as referred to in Clause 4.5 shall be corrected by the Developer at his expense.

5.4 Topsoil

The Developer covenants and agrees that no topsoil shall be removed from the lands outlined on the Plan, without written consent of the City. Where it becomes necessary to temporarily remove any topsoil, it shall be stock-piled and replaced on the lot to a depth of at least fifteen centimetres (15 cm) over the entire area not covered by buildings, driveways or paved areas. If the existing topsoil on the site is not

sufficient, additional topsoil will be supplied by the Developer to maintain the required depth over the area.

5.5 Landscaping

The Developer covenants and agrees to notify the lot purchasers that a landscaping plan for each lot is required to be submitted to the City for approval and to ensure that grass sods are laid over fifteen centimetres (15 cm) depth of screened topsoil on the unpaved portions of all road allowances and on all slopes after all streets, sidewalks, curbs, adjacent driveways, and buildings are completed.

6. LANDS TO BE CONVEYED

6.1 Dedication and Conveyance of Public Purpose Lands

The Developer covenants and agrees, at the Developer's expense, to grant to the City free from encumbrance all lands which are required for public purposes, and the Developer covenants to provide to the City all necessary Deeds of Conveyance as are required from time to time to confirm title of the same into the City.

6.2 Dedication and Conveyance of Streets and Roads

The Developer covenants and agrees that the streets, when completed as per the plans, will be dedicated to the City by the Developer free from encumbrance and the Developer covenants to provide to the City all necessary Deed of Conveyance as is required from time to time to confirm title of the same into the City. Further, the Developer covenants and agrees to allow the City to come on those lands to complete the works if the Developer fails to complete the works as per his covenant in the development agreement.

6.3 Easements and Right of Ways

The Developer covenants with the City to provide all necessary easements and/or rights of way required by utility companies for the purpose of supplying electrical, communication services, street lighting, and any other utility services within the Subdivision Development, and the Developer shall provide all necessary conveyances to the utility companies to complete the same. Utility companies shall supply a suggested layout plan for City approval prior to the erection/installation of any structures.

7. FINANCIAL PROVISIONS

7.1 Assessments

The Developer covenants and agrees to the following.

(a) To pay to the City the following service levies per hectare for the XXXXX hectares of the area available for industrial development at the time of this Agreement:

(i) Topsail Road Upgrading Service Levy Fee of XXXX per hectare;

(ii) Trunk Sewer Service Levy Fee of XXXX per hectare; and

(iii) Kenmount Business Park Signalized Traffic Light Service Levy Fee of XXX per hectare.

It should be noted that this area is approximate only and the area will be determined from the master survey when prepared and the service levy will be adjusted accordingly.

(b) The service levies shall be paid on a per-lot area basis. The service levies are due and payable prior to the issuance of a building permit for the individual lot development. The service levies are to accompany the development application for the individual lot, along with any other fee or assessment required for building to occur on the lot.

For each individual lot, the total service levy for the lot is based on the area of the lot and is calculated to be XXXX per hectare.

The total amount of the service levies due for the XXXXXXXXXXXX Subdivision Development is calculated to be

XXXX based on the area available for the individual lot development within the Subdivision Development of **XXXX**.

(c) That no individual lot building permits will be issued by the City until the full payment for the service levy fees and the required securities for the individual lot have been received by the City.

(d) To obtain a Tax Certificate from the City's Finance Department indicating that all property taxes for the Subdivision Development have been paid and a copy of the said Tax Certificate shall be forwarded by the City's Finance Department to the Engineering Department prior to issuance of any building permits for the Subdivision Development.

7.2 Taxes

The Developer covenants and agrees to pay in full all taxes in arrears.

7.3 Indemnity and Liability Insurance

The Developer covenants and agrees to indemnify and save harmless the City and its agents from any damage resulting directly or indirectly to the City and/or any persons upon the property or Subdivision Development that is a result of the negligence of the Developer, his agents or servants, contractors or subcontractors as consequence of construction taking place in the Subdivision. The Developer covenants that it shall immediately rectify o the satisfaction of the City all works necessary to be undertaken as a result of the said negligence and to be responsible to the City for all damages of whatsoever nature or kind flowing from the acts of negligence. The Developer further covenants that upon signing this Agreement, it shall file with the City standard policies of comprehensive liability insurance for a minimum of one million dollars ($1,000,000.00).

7.4 Public Liability Insurance

The Developer shall ensure that all contractors employed on the works are adequately covered by public liability insurance or other insurance as may be required by the City. Proof of such insurance must be provided to the City prior to the start of construction or upon request during construction.

7.5 Irrevocable Letter of Credit

The Developer agrees that, prior to issuance of a construction permit by the City, to furnish the City with a Security in the form of an Irrevocable Letter of Credit worded as per the City's requirements (refer to copy attached) or cash for ten percent (10%) of the total estimated cost of the Subdivision Development which has been estimated at **XXXXX** including HST, to cover the costs of restoration to the lands having been affected by this development.

The Developer further agrees that upon request for a building permit and prior to the City issuing same, to furnish the City with a Security in the form of an Irrevocable Letter of Credit or cash based upon one hundred percent (100%) of the total estimated cost to complete the construction of the XXXXXXXXXXXX Development and which will be estimated by the City at the time of request and which amount will be estimated by the City Engineer to be sufficient to cover the provisions of all public works, open space development and restoration required by this Agreement. The Security shall be drafted to remain in effect until the issuance of the Certificate of Total Performance, as outlined in Clause 4.3 of this Agreement. Thereafter, a Maintenance Security shall be furnished by the Developer for twice the estimated cost to complete any deficiencies where for reasons of inclement weather or other reasons cannot be completed at the requested time.

The Developer shall have the right to apply to the City for reduction of the amount of the Irrevocable Letter of Credit based on the percentage of work completed to date provided that the Developer provides the City with security sufficient to obtain building permits.

7.6 City's Right to Demand

The Developer agrees that if it fails to meet the conditions of this Agreement in any respect, the City shall have the right to demand from the security agent any monies necessary to complete the public works and open space development up to the amount specified in the security.

8. MISCELLANEOUS PROVISIONS

8.1 Marketing Materials and Information

The Developer covenants and agrees that all marketing materials and information shall be submitted and reviewed by the City to ensure their accuracy to the municipal plan, City regulations, and approved recreation plans and structures, prior to the Developer distributing material and information to prospective lot purchasers and the selling of the individual lots to the prospective lot purchasers.

8.2 XXX Drive and Topsail Road Intersection

The Developer covenants and agrees that this Subdivision Development will include the connection of XXX Drive with Topsail Road and the Developer shall be responsible for the construction of the XXXX Drive and Topsail Road intersection to accommodate the subdivision development.

The Developer covenants and agrees that the intersection will be completed prior to the issuance of occupancy permit for the buildings in the subdivision development.

The Developer further covenants and agrees that the proposed intersection will be developed in accordance with the plans and specifications as approved by the City Engineer. The Developer shall be responsible for the costs associated with the development of the intersection including the construction of the road, left turn lane, merge lanes, sidewalks, traffic signage, water and sewer services, utilities, and landscaping. The Developer shall also place the infrastructure require for the placement and erection of signalized traffic lights at this intersection. The City will acquire the signalized traffic lights and will erect them on the infrastructure provided by the developer.

8.3 Development and Building Permits

The Developer covenants and agrees that it will notify the lot purchasers that a development application is required to be submitted to the City and both a development permit and building permit are to be obtained from the City prior to the construction of a building commencing on each individual lot.

8.4 Building Construction at Developer's Risk

Any building construction started prior to substantial completion of underground services will be at the Developer's risk. The lot owner shall supply to the City a complete record drawing for each lot is to be submitted for approval as a requirement of permit. No building construction is to be started prior to obtaining a building permit.

8.5 Occupancy Permit

No occupancy permit shall be issued by the City prior to completed installation of all underground services, curb and gutter, utilities, granular, and base course asphalts (including testing).

8.6 Signs and Advertisements

The Developer agrees that it shall not erect any signs, billboards, or other advertising or notices except in accordance with the City of Mount Pearl Land Use, Zoning, Subdivision and Advertisement Regulations, and with the approval or permit from the City.

8.7 Civic Numbers

The Developer covenants and agrees to place on the Subdivision Plan the civic number designated by the City for each lot. It shall be the responsibility of the Developer to advise the subsequent purchaser of each lot of the correct civic number.

8.8 Landscaping Of Visible Slopes

The Developer covenants and agrees to landscape those slopes that are publicly visible from XXXX Road and XXXX Road and that such landscaping in the form of a minimum of fifteen centimetres (15 cm) depth of screened topsoil covered with grass sods and that the completion of the landscaping shall be to the satisfaction of the City.

XXXXXXXXXXXXX SUBDIVISION

SCHEDULE 'A'

Schedule 'A' consists of the following documents, drawings, and specifications:

- Proof of ownership of lands to be developed in the XXXXXXXXXXXXX Subdivision Development in the form of a legal survey, property description and Deed of Conveyance.

- Siteplan Drawing.

- Grading Plan Drawing.

- Street “B” Plan & Profile Drawing.

- Street “C” Plan and Profile Drawing.

- Street “C” Plan and Profile Drawing.

- Topsail Road Storm Sewer Drawing.

- Perimeter Survey Plan, as prepared by a registered Newfoundland and Labrador land surveyor.

- Municipal Water, Sewer and Road Specifications as prepared by the Provincial Government and the City of Mount Pearl Subdivision Development Standards.

Correspondence pertaining to the Development.

SCHEDULE 5

APPROVED PRODUCTS AND MANUFACTURERS

5.1 SEWER SYSTEMS

	ITEM	PRODUCT	MANUFACTURER
5.1.1	Sewer mains	PVC SDR 35	Ipex Rehau Royal
	Concrete (reinforced)	PVC SDR 35	L.E. Shaw
	PVC Ribbed	Perma Lock Class V	Ipex Rehau Royal
5.1.2	Service Laterals Within R.O.W.	PVC SDR 28	Ipex Sceptor Rehau
5.1.3(a)	Services Private	PVC SDR 35	Ipex Sceptor Rehau
5.1.3(b)	PVC Fittings		Ipex Rehau Royal
5.1.4	Repair Couplings	Appropriate Series	Preper Fernco Mission Rubber Pipe Connects

5.1.5	Manholes	Precast	L.E. Shaw Atlantic Concrete Terra Nova Precast
5.1.6	Manhole Frames and Covers	BM 34 BM 2	Labco Foundry
5.1.7	Catch Basin Frames & Covers	BM 12A BM 1614	Labco Foundry
5.1.8(a)	Storm Mains	PVC Ribbed HDPE	Ipex Rehau Royal Soleno
5.1.8(b)	Structures	Structural Multi-Plate With Cement Foundations	Armtec
	Culverts	HDPE	Soleno

5.2 Water Systems

	ITEM	PRODUCT	MANUFACTURER
5.2.1	Water Main	Ductile Iron (Class 52), Cement Lined; Seal Coat To Be Applied To The Cement-Mortar Lining	Canada Pipe U.S. Pipe
5.2.2	Fittings	Ductile Iron Ductile Iron	Star Pipe Stigma U.S. Pipe
5.2.3	Sleeves	Ductile Iron Ductile Iron	Star Pipe Stigma U.S. Pipe
5.2.4	Tapping Sleeves & Valves	Cast Iron M.J. Stainless Steel	Muller
5.2.5	Hydrants	M67 B50B18	McAvity Darling
5.2.6	Valves	Single Resilient Seated	McAvity Muller
5.2.7	Valve Boxes (Screw/Slide)	MVB Composite Buffalo Bibby	Muller Bibby
5.2.8	Copper	Copper Type K	Wolverine Cerro
5.2.9	Corporation Stops	102CF F600	Muller Cambridge Brass Ford
5.2.10	Curb Stops (Flared/	Inverted Key Stop & Drain A617	Muller

	Compressed)	129CF Z22	Cambridge Brass Ford
5.2.11	Couplings	Compressed A319 118CF C22 138	Muller Ford Dresser
5.2.12	Curb Stop Boxes	A726 D1-T5	Muller Clow Star
5.2.13	Curb Box Extension	A:12	Muller Clow Star
5.2.14	Curb Box Cap	800 OR 808	Muller Clow Star
5.2.15	Repair Clamp	300 mm C Clamp/Split/Stainless Steel	Muller Robar
5.2.16	Repair Clamp	Solid Split Sleeve	Canada Pipe U.S. Pipe
5.2.17	Mechanical Join Restrainers	Mega Holder	EBBA Iron Star Sigma Clow

SCHEDULE 6

APPENDICES – STANDARD FORMS AND DRAWINGS

Appendix A - Storm Sewer Calculation Forms

Computations For Capacities Of Storm Sewers

For _____ Date _____ Sheet No _____

DWG. No. (1)	Location (2)	Manhole No. From (3)	Manhole No. To (4)	Length (m) (5)	Tributary Area Increment (ha) (6)	Tributary Area Total (ha) (7)	Runoff Coefficient (8)	Time Of Concentration Inlet Time (Min) (9)	Time Of Concentration In Section (Min) (10)	Time Of Concentration Total (Min) (11)	Runoff (L/s) (12)	Pipe Diameter (m/m) (13)	Pipe Slope (m/m) (14)	Pipe Capacity Full Capacity (L/s) (15)	Pipe Capacity Velocity (m/s) (16)	Additional Capacity Available (L/s) (17)	Remarks (18)

STORM

MANHOLE TEST RESULTS

DATE:

MH #	LOCATION	ALLOWABLE LEAKAGE	TEST TIME	ACTUAL LEAKAGE	PASS/FAIL	DEPTH OF TEST WATER ABV INV.	REMARKS

CITY OF MOUNT PEARL
MANHOLE TEST RESULTS FORM
PROJECT : _____
CONSULTING ENGINEER : _____

Appendix B - Standard Sanitary Sewer Calculation Forms

SANITARY SEWER TEST RESULTS

LOCATION (STREET):

DATE D/M/Y	LOCATION MH No. to MH No.	DIA OF PIPE	m OF PIPE	ALLOWABLE LOSS (LITRES)	No. BLDG SERV'S	m OF SERVICE PIPE	EXFILTRATION TEST DURATION (MIN)	EXFILTRATION MEASURED LOSS (LITRES)	EXFILTRATION PASS/REJ	INFILTRATION TEST DURATION (MIN)	INFILTRATION MEASURED INFLOW LITRES	INFILTRATION PASS/REJ	REMARKS
LOCATION (STREET):													
LOCATION (STREET):													

ALLOWABLE EXFILTRATION= 0.000023 L/MIN/mm,DIA/M
ALLOWABLE INFILTRATION= 0.000003767 L/MIN/mm,DIA/M

I HEREBY CERTIFY ALL TESTS HAVE BEEN CARRIED OUT ACCORDING TO CONTRACT SPECIFICATIONS AND THIS/THESE SECTION(S) OF PIPE WAS PASSED THE REQUIRED TESTS.

CONTRACTOR'S FOREMAN _____

SITE REPRESENTATIVE _____

CITY OF MOUNT PEARL
SANITARY SEWER TEST RESULTS FORM
PROJECT : _____
CONSULTING ENGINEER : _____

CITY OF MOUNT PEARL [illegible]

SANITARY SEWER ANALYSIS

DESIGN CAPACITIES AND FLOWS

UPSTREAM MH#	DIAMETER (mm)	CAPACITY (l/s)	VELOCITY (part) (m/s)	SPARE CAPACITY (l/s)	INFILTRATION (l/s)	AVERAGE FLOW (l/s)	PEAK FLOW (l/s)

CITY OF MOUNT PEARL – ENGINEERING DEPARTMENT

SANITARY SEWER ANALYSIS

PIPE GEOMETRY

CURRENT		CONT				
UP MH#	DOWN MH#	DOWN MH#	DESCRIPTION (STREET)	GRADE	n	DIA.

TRIBUTARY AREAS

UPSTREAM MH#	ZONINGS								

VERTICAL & HORIZONTAL INFORMATION

UPSTREAM MH	NORTHING	EASTING	INVERT	LENGTH M.	INVERT DOWN	GROUND ELEVATION

SANITARY

MANHOLE TEST RESULTS

DATE:

MH #	LOCATION	ALLOWABLE LEAKAGE	TEST TIME	ACTUAL LEAKAGE	PASS/FAIL	DEPTH OF TEST WATER ABV INV.	REMARKS

CITY OF MOUNT PEARL
MANHOLE TEST RESULTS FORM
PROJECT : _____
CONSULTING ENGINEER : _____

Appendix C - Standard Hydrostatic Pressure Test Form

HYDROSTATIC PRESSURE TEST RESULTS

DATE	STREET NAME	CHAIN STA TO STA	PRESSURE (kPa)		LEAKAGE (L)		TEST TIME (MIN)	TYPE OF PIPE	DIA OF PIPE (mm)	LENGTH OF TEST SECTION	REMARKS
			WORKING	TEST	ALLOW	ACT.					

I HEREBY CERTIFY ALL TESTS HAVE BEEN CARRIED OUT ACCORDING TO CONTRACT SPECIFICATIONS AND THIS SECTION OF PIPE HAS PASSED THE REQUIRED TESTS ON _____

CONTRACTOR'S FOREMAN _____

SITE REPRESENTATIVE _____

CITY OF MOUNT PEARL
HYDROSTATIC PRESSURE TEST RESULTS FORM
PROJECT : _____
CONSULTING ENGINEER : _____

Appendix D - Standard Bench Mark Location Form

CITY OF MOUNT PEARL  ENGINEERING DEPARTMENT

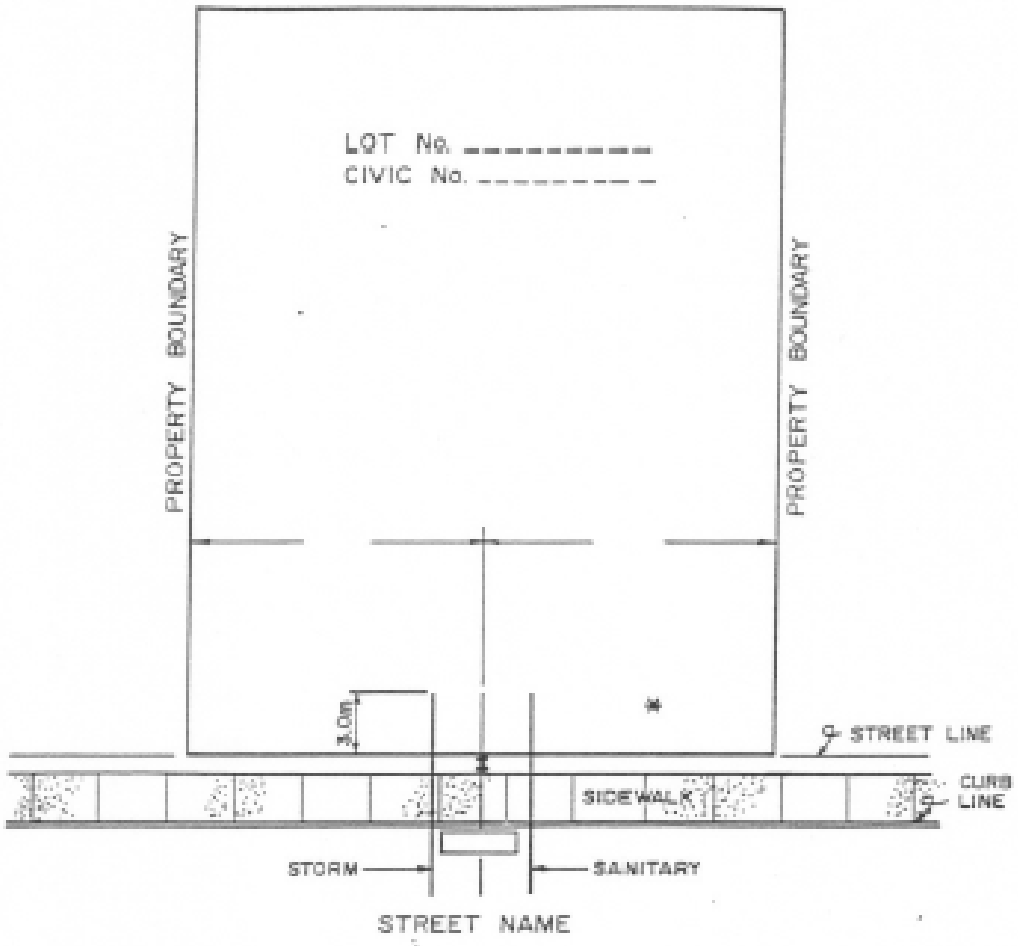
BENCH MARK LOCATION FORM

VERTICAL CONTROL SURVEY	BENCH MARK NO.

KEY PLAN	REFERENCES
VICINITY:	VERTICAL:
INSPECTION DATES:	
TYPE:	ELEVATION:

DESCRIPTION:

Appendix E - Standard House Service Information Form



TOP OF CURB ELEVATIOIN AT CENTER OF LOT_____

SANITARY SEWER INVERT_____

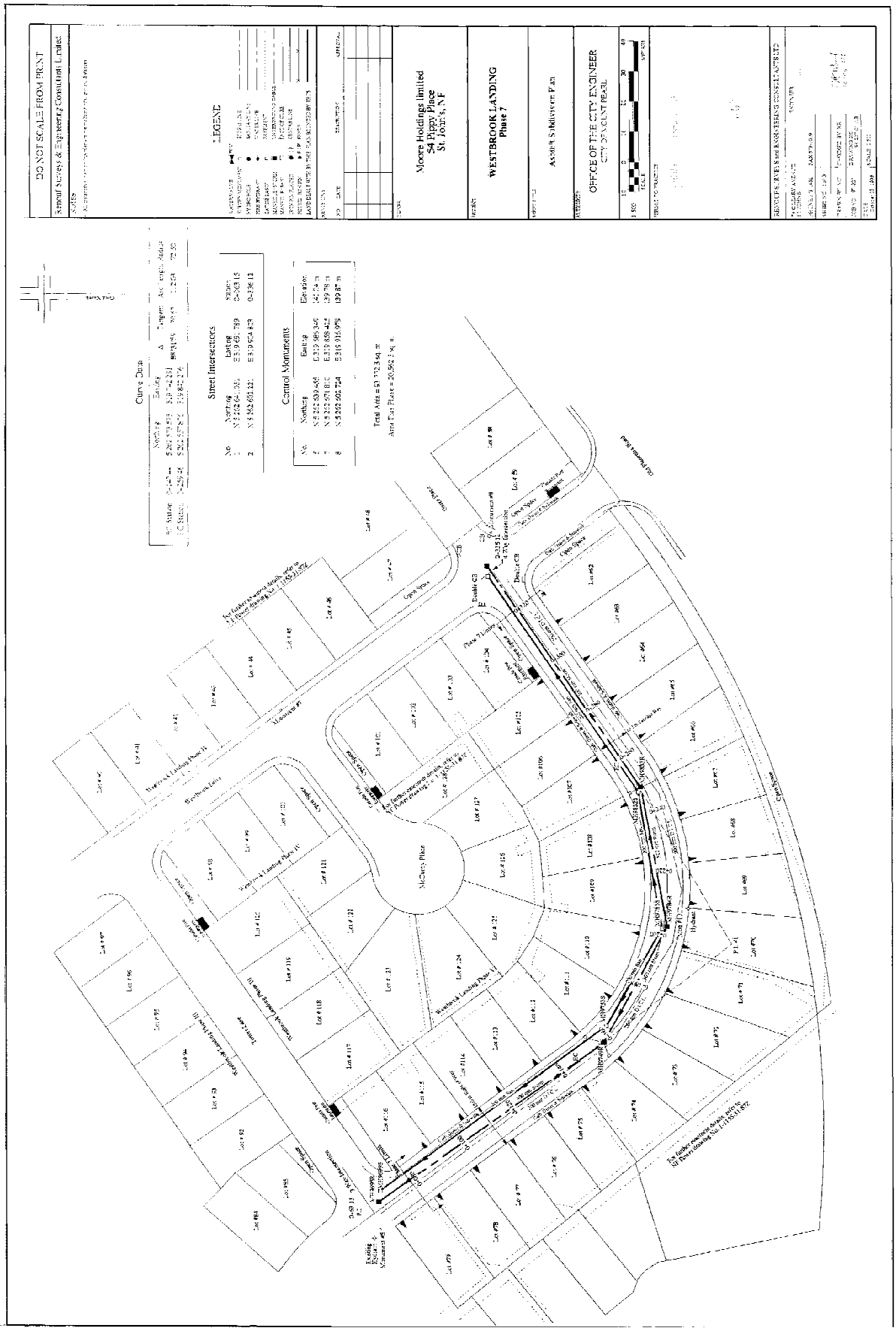
STORM SEWER INVERT_____

CURB STOP TO BE LOCATED IN EASEMENT BETWEEN STREET LINE AND BACK OF SIDEWALK.

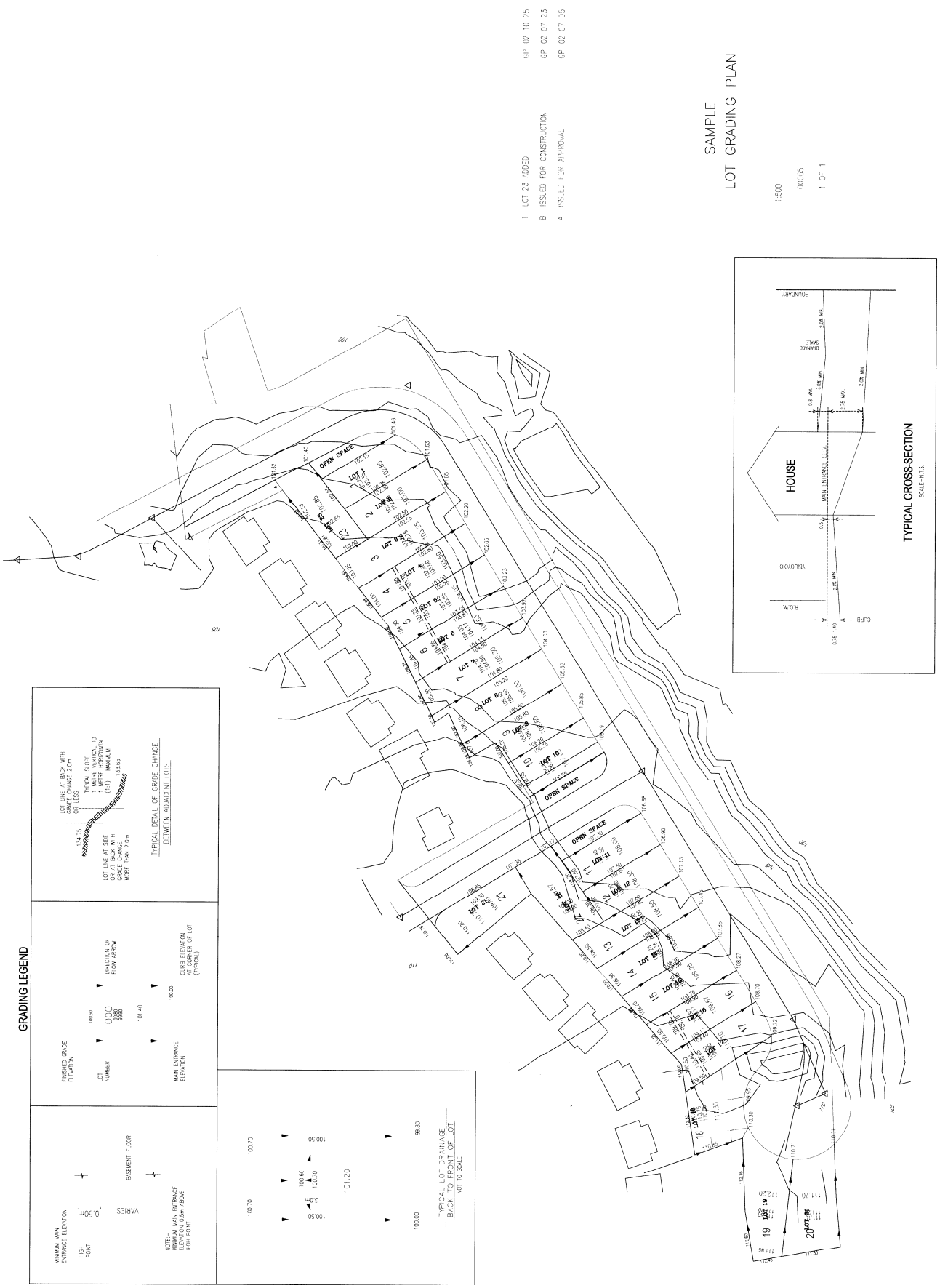
DRIVEWAY LOCATION

REVISIONS	DR. BY TRA. BY CHD. BY DATE SCALE		CITY OF MOUNT PEARL SUBDIVISION NAME _____ HOUSE SERVICE INFORMATION

Appendix F - Standard Subdivision Plan


DO NOT SCALE FROM PRINT
LEGEND
Moores Holdings limited
54 Piggy Place
St. John's, NF
WESTBROOK LANDING
Phase 7
OFFICE OF THE CITY ENGINEER
CITY OF MOUNT PEARL
Curve Data
Street Intersections
Control Monuments
Total Area = 93 772.3 sq. m
Area For Phase = 20,562.1 sq. m

Appendix G - Standard Lot Grading Plan


SAMPLE
LOT GRADING PLAN
1 LOT 23 ADDED GP 02 10 25
B ISSUED FOR CONSTRUCTION GP 02 07 23
A ISSUED FOR APPROVAL GP 02 07 05
1:500
00065
1 OF 1
GRADING LEGEND
FINISHED GRADE ELEVATION
LOT NUMBER
DIRECTION OF FLOW ARROW
CURB ELEVATION AT CORNER OF LOT (TYPICAL)
MAIN ENTRANCE ELEVATION
LOT LINE AT BACK WITH GRADE CHANGE 2.0m OR LESS
LOT LINE AT SIDE OR AT BACK WITH GRADE CHANGE MORE THAN 2.0m
TYPICAL SLOPE NOT TO EXCEED 1 METRE VERTICAL TO 3 METRE HORIZONTAL (1:3) MAXIMUM
TYPICAL DETAIL OF GRADE CHANGE BETWEEN ADJACENT LOTS
MINIMUM MAIN ENTRANCE ELEVATION
HIGH POINT
BASEMENT FLOOR
VARIES
NOTE: MINIMUM MAIN ENTRANCE ELEVATION, 0.5m ABOVE HIGH POINT
TYPICAL LOT DRAINAGE BACK TO FRONT OF LOT
NOT TO SCALE
OPEN SPACE
HOUSE
MAIN ENTRANCE ELEV.
BOUNDARY
SWALE
DRAINAGE
R.O.W
CURB
TYPICAL CROSS-SECTION
SCALE-N.T.S.

Appendix H - Privacy Fence Standard Drawing

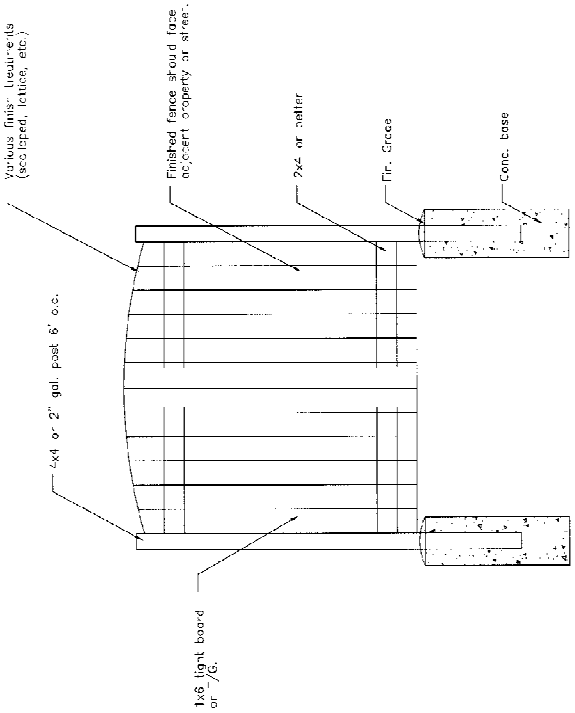
CITY OF Mount Pearl

UNLESS NOTED OTHERWISE ALL DIMENSIONS ARE IN MILLIMETRES

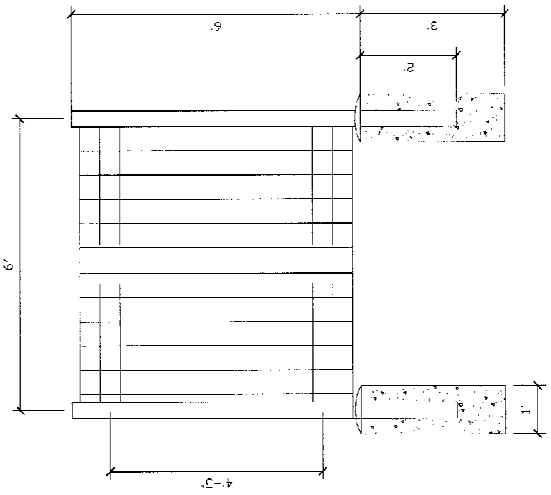
project: ENGINEERING STANDARDS

drawing: PRIVACY FENCE

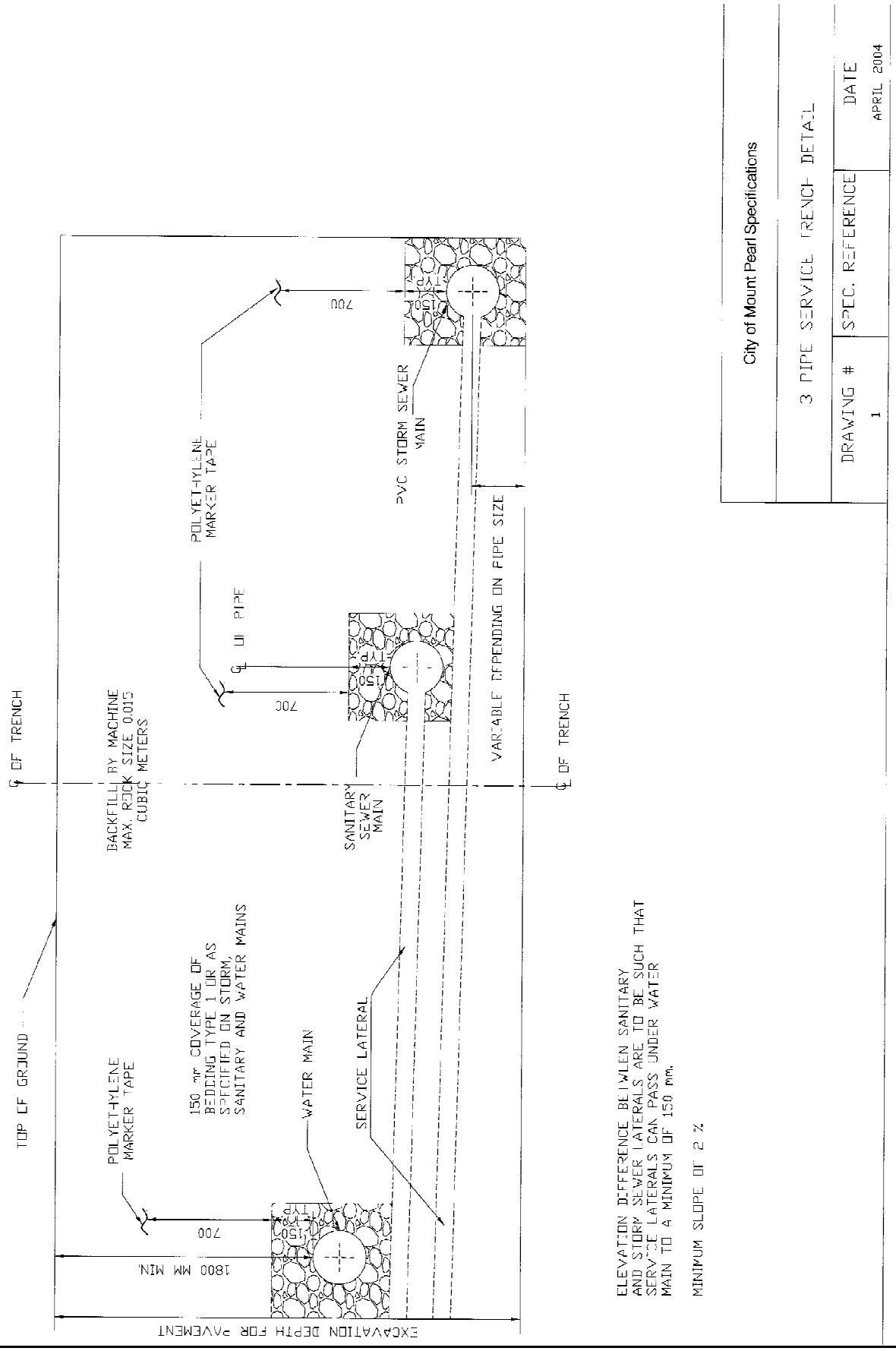
designed: B.M
drawn: B.M
reviewed: B.M
scale: N.T.S
date: July 14,2004
project no.: C.C.C.1
drawing no.: 04-003



Note: Privacy fence to be located on high portion of slope.
All timbers to be pressure treated.
Post to be rated per NBC for u/g.



Appendix I - Sewer Lateral Detail


City of Mount Pearl Specifications
3 PIPE SERVICE TRENCH DETAIL
DRAWING # 1
SPEC. REFERENCE
DATE APRIL 2004
EXCAVATION DEPTH FOR PAVEMENT
1800 MM MIN.
TOP OF GROUND
℄ OF TRENCH
BACKFILL BY MACHINE MAX. ROCK SIZE 0.015 CUBIC METERS
POLYETHYLENE MARKER TAPE
150 mm COVERAGE OF BEDDING TYPE 1 OR AS SPECIFIED ON STORM, SANITARY AND WATER MAINS
WATER MAIN
SERVICE LATERAL
SANITARY SEWER MAIN
VARIABLE DEPENDING ON PIPE SIZE
PVC STORM SEWER MAIN
POLYETHYLENE MARKER TAPE
℄ UP PIPE
700
150
ELEVATION DIFFERENCE BETWEEN SANITARY AND STORM SEWER LATERALS ARE TO BE SUCH THAT SERVICE LATERALS CAN PASS UNDER WATER MAIN TO A MINIMUM OF 150 mm.
MINIMUM SLOPE OF 2 %

Appendix J – Land Use Zoning Tables

APARTMENT (APT)
USE ZONE DEVELOPMENT STANDARDS

Minimum Lot Area	650 m^2
Minimum Lot Frontage	20 m
Maximum Lot Coverage	50%
Maximum Density	Not more than 1 dwelling unit per 90 m^2 of lot area
Minimum Building Line Setback	6 m
Minimum Side Yard Width	1 m per storey
Minimum Side Yard Width on Flanking Street	6 m
Minimum Rear Yard Depth	6 m
Maximum Height	24 m (not More than 6 Storeys)
Minimum Landscaping on Lot	30%

RESIDENTIAL-ART GALLERY (R-AG) USE ZONE DEVELOPMENT STANDARDS

	Single Dwelling	Double Dwelling	Row Dwelling
Minimum Lot Area	450 m^2	390 m^2 *	180 m^2 *
Minimum Floor Area	85 m^2	80 m^2 *	65 m^2 *
Minimum Lot Frontage	15 m	22 m	6 m *
Maximum Lot Coverage	33%	33%	33%
Minimum Building Line Setback	8 m	8 m	8 m
Minimum Side Yard Width	2.4 m + 1.2 m	2.4 m	8 m
Minimum Side Yard Width on Flanking Street	8 m	8 m	
Minimum Rear Yard Depth	8 m	8 m	8 m
Maximum Height	8 m	8 m	10 m

*** Per Dwelling Unit**

RESIDENTIAL HIGH DENSITY (RHD) USE ZONE DEVELOPMENT STANDARDS

				Apartment Building			
	Single Dwelling	Double Dwelling	Row Dwelling	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom
Minimum Lot Area	330 m^2	275 m^2 *	135 m^2 *	170 m^2 *	210 m^2 *	230 m^2 *	250 m^2 *
Minimum Floor Area	70 m^2	70 m^2 *	60 m^2 *	40 m^2 *	50 m^2 *	60 m^2 *	70 m^2 *
Minimum Lot Frontage	12 m	18 m	5 m *	30 m			
Maximum Lot Coverage	33%	33%	33%	33%			
Minimum Building Line Setback	8 m	8 m	8 m	10 m			
Minimum Side Yard Width	2.4 m + 1.2 m	2.4 m	3 m	8 m			
Minimum Side Yard Width Flanking Street	8 m	8 m	8 m	10 m			
Minimum Rear Yard Depth	8 m	8 m	8 m	12 m			
Maximum Height	8 m	8 m	10 m	10 m			

*** Per Dwelling Unit**

RESIDENTIAL HIGH DENSITY (SPECIAL) (RHD-S) USE ZONE DEVELOPMENT STANDARDS

	Single Dwelling	Double Dwelling
Minimum Lot Area	200 m^2	200 m^2 *
Minimum Floor Area	80 m^2	80 m^2 *
Minimum Lot Frontage	8 m	16 m
Maximum Lot Coverage	33%	33%
Minimum Building Line Setback	6 m	6 m
Minimum Side Yard Width	1.5 m	1.5 m (See Condition 1)
Minimum Side Yard Width on Flanking Street	4.5 m	4.5 m
Minimum Rear Yard Depth	7.5 m	7.5 m
Maximum Height	8 m	8 m

*** Per Dwelling Unit**

RESIDENTIAL INSTITUTIONAL (RI) USE ZONE DEVELOPMENT STANDARDS

	Single Dwelling	Double Dwelling
Minimum Lot Area	450 m^2	390 m^2 *
Minimum Floor Area	85 m^2	80 m^2 *
Minimum Lot Frontage	15 m	22 m
Maximum Lot Coverage	33%	33%
Minimum Building Line Setback	8 m	8 m
Minimum Side Yard Width	2.4 m + 1.2 m	2.4 m
Minimum Side Yard Width on Flanking Street	8 m	8 m
Minimum Rear Yard Depth	8 m	8 m
Maximum Height	8 m	8 m

*** Per Dwelling Unit**

RESIDENTIAL LOW DENSITY (RLD) USE ZONE DEVELOPMENT STANDARDS

Minimum Lot Area	585 m^2
Minimum Floor Area	110 m^2
Minimum Lot Frontage	18 m
Maximum Lot Coverage	33%
Minimum Building Line Setback	8 m
Minimum Side Yard Width	One of: 3.0 m and another of: 1.2 m
Minimum Side Yard Width on Flanking Street	8 m
Minimum Rear Yard Depth	10 m
Maximum Height	8 m

RESIDENTIAL MEDIUM DENSITY (RMD) USE ZONE DEVELOPMENT STANDARDS

	Single Dwelling	Double Dwelling	Row Dwelling
Minimum Lot Area	450 m^2	390 m^2 *	180 m^2 (Average)*
Minimum Floor Area	85 m^2	80 m^2 *	65 m^2 *
Minimum Lot Frontage	15 m	22 m	6 m *
Maximum Lot Coverage	33%	33%	33%
Minimum Building Line Setback	8 m	8 m	8 m
Minimum Side Yard Width	2.4 m + 1.2 m	2.4 m	3 m
Minimum Side Yard Width on Flanking Street	8 m	8 m	8 m
Minimum Rear Yard Depth	8 m	8 m	8 m
Maximum Height	8 m	8 m	10 m

*** Per Dwelling Unit**

RESIDENTIAL SINGE UNIT DETACHED 1 (RSU-1) USE ZONE DEVELOPMENT STANDARDS

Minimum Lot Area	650 m^2
Minimum Floor Area	145 m^2
Minimum Lot Frontage	20 m
Maximum Lot Coverage	33%
Minimum Building Line Setback	10 m
Minimum Side Yard Width	One of: 3 m and another of: 2 m
Minimum Side Yard Width on Flanking Street	10 m
Minimum Rear Yard Depth	10 m
Maximum Height	8 m

RESIDENTIAL SINGE UNIT DETACHED 2 (RSU-2) USE ZONE DEVELOPMENT STANDARDS

Minimum Lot Area	450 m^2
Minimum Floor Area	85 m^2
Minimum Lot Frontage	15 m
Maximum Lot Coverage	33%
Minimum Building Line Setback	8 m
Minimum Side Yard Width	One of: 2.4 m and another of: 1.2 m
Minimum Side Yard Width on Flanking Street	8 m
Minimum Rear Yard Depth	8 m
Maximum Height	8 m

RESIDENTIAL SINGE UNIT DETACHED 3 (RSU-3) USE ZONE DEVELOPMENT STANDARDS

Minimum Lot Area	330 m^2
Minimum Floor Area	70 m^2
Minimum Lot Frontage	12 m
Maximum Lot Coverage	33%
Minimum Building Line Setback	8 m
Minimum Side Yard Width	One of: 2.4 m and another of: 1.2 m
Minimum Side Yard Width on Flanking Street	8 m
Minimum Rear Yard Depth	8 m
Maximum Height	8 m