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Registrar-Conservateur

By-law No. 124: Subdivision By-Law

The Council of the Municipality of Grand Bay-Westfield under authority vested in it by Section 75 of the *Community Planning Act*, 2017 C.19 enacts as follows:

1. TITLE

This By-law may be cited as the Town of Grand Bay-Westfield Subdivision By-law.

2. INTERPRETATION

In this By-law,

- i) "lot" means a parcel of land or two or more adjoining parcels held by the same owner and used or intended to be used as the site for a building or structure or an appurtenance thereto.
- ii) "type 1 subdivision" means a subdivision of land not creating or extending a street.
- iii) "type 2 subdivision" means a subdivision of land which creates or extends a street.
- iv) "width" means in relation to a lot,
 - i) where the side lot lines are parallel, the distance measured across the lot at right angles to such lines, or
 - ii) where the side lot lines are not parallel, the distance measured across the lot along a line parallel to a line joining the points at which the side lot lines intersect the limits of the abutting street, such parallel line being drawn through the point at which the line of minimum setback (required by law or regulation) intersects a line from the midpoint of and perpendicular to the line to which it is parallel
- v) "tentative subdivision plan" means a plan prepared in accordance with this By-law and the *Community Planning Act* which shows lands to be subdivided.
- vi) "Advisory Committee" means the Planning Advisory Committee established by the Council.

3. SCOPE

This By-law provides for regulation of the subdividing of land in the Municipality.

4 ADMINISTRATION

4.1 Role of Development Officer

The Development Officer administers this By-law and makes all determinations with respect to the provisions of the By-law, except when the Town Engineer makes determinations with respect to the engineering provisions provided within this By-law.

4.2 Role of Planning Advisory Committee

The Development Officer shall seek the views of the Planning Advisory Committee for the following:

- i) In arriving at a decision regarding a recommendation with respect to the location of streets in a proposed subdivision, the Advisory Committee shall give consideration to the relationship between such location and:
 - a) the topography of the land,
 - b) the provisions of lots suitable for the intended use,
 - c) street intersections and interceptions being as nearly as possible level and at right angles,
 - d) convenient access to the proposed subdivision and to lots within it,
 - e) the convenient further subdividing of the land or adjoining lands.
- ii) Names of streets in a subdivision are subject to the approval of the Advisory Committee.
- iii) as a condition of approval of a subdivision plan, land (not including streets) in the amount of 8 percent of the area of the proposed subdivision exclusive of streets intended to be publicly owned (at such locations as may be recommended by the Advisory Committee or otherwise approved by Council) is to be set aside as land for public purposes and so indicated on the plan.
- i) that the Advisory Committee, subject to section (a), has recommended to Council, in writing:

- a) the location and names of streets,
 - b) the location of lands to be set aside for public purposes; and
 - c) any further recommendation deemed appropriate by the Advisory Committee or such recommendations have been rejected by a majority vote of the whole Council and further, granted any variances deemed reasonable by them;
- i) The Development Officer shall not approve a subdivision plan:
- a) if in his opinion and in the opinion of the Advisory Committee:
 - (i) the land is not suited to the purpose for which it is intended or may not reasonably be expected to be used for that purpose within a reasonable time after the plan is approved; or
 - (ii) the proposed manner of subdividing will prejudice the possibility of further subdividing the land or the convenient subdividing or adjoining land.
 - b) until all conditions of approval have been satisfied.

4.3 Role of Council

Council's role in the subdivision approval process includes:

- i) Approving the subdivision plan;
- ii) Drafting and executing an agreement with the developer;
- iii) Delegating authority to the Development Officer to extend tentative approvals for a period of one year.

5 APPLICATIONS

5.1 Application Requirements

5.1.1 Complete Application Submission

- a) A complete application shall include:
 - i) An application signed by the registered property owner or authorized agent in the form prescribed by the Town;
 - ii) The appropriate fee as described in Schedule B;
 - iii) A Tentative Subdivision Plan in accordance with the Community Planning Act;
 - iv) Engineering Drawings in the form prescribed by the Town Engineer, as outlined in section 6 if applicable;
- b) A complete application may include, at the Development Officer's discretion:
 - i) A stormwater management plan or schematic or a drainage plan;
 - ii) A traffic impact study or statement that provides evidence of alignment with the prescribed specifications in Schedule A.

5.1.2 Abandoned or Withdrawn applications

- a) An application that does not satisfy the requirements of section 5 shall be deemed to be abandoned 90 days after the initial submission.
- b) The Development Officer shall not issue a refund for an abandoned application.
- c) The Development Officer shall not issue a refund for an application that is withdrawn.

6 RESPONSIBILITIES OF THE SUBDIVIDER

- a) The person seeking approval of a subdivision plan shall submit to the Development Officer:
- i) a written application for approval of a tentative plan and as many copies of the tentative plan as such officer requires
 - ii) unless exempted by the Development Officer, under section 77 (1)(b) and 77(1)(c) of the *Community Planning Act* the tentative plan must be to the scale of one to five hundred (1:500); one to two thousand (1:2000) or one to five thousand (1:5000) and on material of one of the following sizes:
 - A. 21.5 cm by 35.5 cm,
 - B. 35.5 cm by 43 cm or
 - C. 50 to 75 cm by 50 to 100 cm
 - iii) a tentative plan shall be marked "Tentative Plan" and shall show all details as outlined below in section (A) to (O) unless such requirements are exempted in whole or in part by the Development Officer:
 - a) the proposed name of proposed subdivision;
 - b) the boundaries of that part of the plan to be approved, marked by a black line of greater weight than other all other lines on the diagram of the plan;
 - c) a north point indicated by an arrow oriented other than towards the lower edge of the plan;
 - d) the locations, widths and names of existing streets on which the proposed subdivision abuts and the locations, widths and proposed names of the proposed streets in the subdivision;
 - e) design/posted speeds of all streets within the proposed subdivision;
 - f) location of municipal services available to the land proposed for subdivision;
 - g) the approximate dimensions and layouts of the proposed lots, blocks, land for public purposes, and other parcels of land and the purposes for which they are to be used;

- h) the nature, location and dimensions of any existing restrictive covenant, easement or right of way affecting the land proposed to be subdivided and of an easement intended to be granted within the proposed subdivision;
 - i) any natural and artificial features, including buildings, railways, highways, watercourses, drainage ditches, swamps and wooded areas within or adjacent to the land proposed to be subdivided;
 - j) the availability and nature of domestic water supplies;
 - k) the nature and porosity of the soil;
 - l) any plans for landscaping and tree planting;
 - m) the proposed location of every building,
 - n) flow arrows, contours and elevations as required to indicate lot elevation, drainage patterns and street gradients in accordance with the Flood Overlay Zone in the Town's Zoning By-law; and
 - o) any further information required by the Development Officer to assure compliance with the Subdivision By-law.
- iv) a subdivision plan shall set out the following:
- a) In the Title Block:
 - i. the name of the subdivision;
 - ii. if required by the Development Officer, the name of a street to which the subdivision has access;
 - iii. the name of the Municipality, Parish, County and Province in which the land is located;
 - iv. the scale and date of the survey;
 - b) the name and owner of the land and details of registration of the Deed or Deeds of the land;
 - c) a North Point indicated by an arrow oriented other than towards the lower edge of the plan;
 - d) the distances from, and the relation to, existing survey monuments and markers, including control points established by their respective coordinate

values;

- e) the boundaries of that part of the plan sought to be approved marked by a black line of greater weight than all other lines on the diagram of the plan;
- f) the area of land to be vested in the local government as streets, indicated by the names of the streets and in smaller print immediately below each name, the word "Public" and if a portion only of the street shown on the Plan is so indicated, the portion is to be denoted by a line drawn across and at right angles to the street at each terminus thereof identified by an arrow;
- g) the area of land to be vested in the local government as future streets, indicated by the words "Future Street";
- h) the area of land to be conveyed as land for public purposes, indicated by the words "land for public purpose";
- i) the area of land with respect to which easements are to be granted, indicated by the words describing the easement;
- j) subject to subsection (f) the boundaries of streets and other parcels of land by means of a solid black line;
- k) the location, dimensions and names of existing streets the subdivision names for the proposed streets therein;
- l) the nature, location and dimensions of any existing restrictive covenant, easement or right-of-way affecting the land proposed to be subdivided;
- m) any easement intended to be granted within the proposed subdivision;
- n) any numbers and letters necessary to accurately identify each lot or other parcel of land, and if available, the civic number of the lot or parcel;
- o) any applicable proposed street boundary or building line established by a deferred widening by-law;
- p) a building line or setback affecting the subdivision under paragraph 75(1)(h) or an agreement referred to in section 131 of the Community Planning Act; except in the case of a subdivision plan in a local government that indicates, to the satisfaction of the Development Officer, the location of the subdivision on a diagram of the plan, the location of the proposed subdivision in relation to existing streets or prominent natural features on a small key plan drawn to scale having a ratio of not less than one to 20,000.

- b) The construction of streets shall at least comply with the minimum standards for construction of subdivision roads and streets as shown in Schedule "A". The subdivider is responsible for the entire cost of construction of streets and services within the subdivision. Ordering and placement of street signs including of street name signs and stop signs shall be coordinated through the Works Commissioner at the Developer's expense.
- c) If there are new streets, water lines, sanitary sewers or storm sewers involved, then plans and profiles of these facilities must be delivered to the Development Officer. The Development Officer may request the Developer verify the capacity of any new water, sanitary or storm systems. The Developer must deliver "AS-BUILT PLANS" to the Development Officer when the work has been completed.
- d) Where municipal water is not provided, a water supply source assessment for water quality and quantity for future development, meeting the Canadian Drinking Water Quality Guidelines (CDWQG) is required to be completed by a qualified hydrogeologist, hydrologist or a qualified professional engineer with training in ground water science prior to Tentative Approval being granted, subject to review and acceptance of the report by the Department of Health and Department of Environment and Local Government.
- e) Pursuant to Section 75(1)(d)(ii) of the *Community Planning Act*, a person proposing to subdivide land that utilizes or benefits from streets, curbing, sidewalks, culverts, drainage infrastructure, water and sewer lines, and other infrastructure as may be required by the Town of Grand Bay-Westfield, shall contribute to the cost thereof.
- f) Construction of streets may not proceed until a complete tentative plan has been properly approved.

7 SUBDIVISION DESIGN STANDARDS

7.1 Street Standards

- a) In a subdivision, unless otherwise approved by Council:
 - i) Every right-of-way shall have a minimum width of 20 metres;
 - ii) no street shall have a gradient in excess of 8%;
 - iii) a minimum of 50 metres of separation between staggered intersections on local streets.
- b) Where entry will be gained to a subdivision by means of an existing street or other access, by whomever owned, the person seeking approval of the plan of such subdivision shall:
 - i) make provisions to bring the existing access to the same standards as is required for streets within the proposed subdivision; and
 - ii) should demonstrate connectivity between developments for pedestrians and bicyclists to minimize short-distance trips by motor vehicles.
- c) Reserve strips abutting a street in a subdivision are prohibited, except where such strips are vested in the Municipality.
- d) A cul-de-sac is not to exceed a maximum length of 200 metres measure from the intersection of the existing street to the centre of the proposed turnaround area.
- e) A sidewalk shall be required to be integrated into the new street design when it forms the natural continuation of an established sidewalk line.
- f) In arriving at a decision regarding a recommendation with respect to the location of streets in a proposed subdivision, under Section 88(8) of the Community Planning Act, the Planning Advisory Committee shall give consideration to the relationship between such location and;
 - i) the topography of the land,
 - ii) the creation of lots suitable for the intended use,
 - iii) street intersections and interceptions being as nearly as possible at right angles,

- iv) convenient access to the proposed subdivision and to lots within it,
- v) the convenient further subdividing of the land or adjoining lands.

g) Names of Streets in a Subdivision are subject to the approval of the Planning Advisory Committee.

7.2 LOTS, BLOCKS AND OTHER PARCELS

- a) Every lot, block and other parcel of land in a subdivision shall abut,
 - i) a street owned by the Crown or the Municipality.
- b) The dimensions and area of a lot in a subdivision are subject to the requirements of the Zoning By-law.
- c) Subject to section (b) a block in a subdivision shall,
 - i) be at least 120 metres and not more than 300 metres long, and
 - ii) have a depth of not less than two lots.
- d) Where a proposed subdivision contains a series of crescents and cul-de-sacs, a block may exceed 300 metres in length if pedestrian connectivity with adjacent streets is maintained through trails, and location and width is approved by the Advisory Committee as acceptable for access or circulation to schools, libraries, playgrounds or other such facilities. Such walkways are to be publicly owned and constructed by the Developer.
- e) Easements shall be provided when necessary,
 - i) for utilities and walkways at least 10 metres wide, and
 - ii) for natural water courses at least 15 metres wide.

8 LAND FOR PUBLIC PURPOSES

- a) Subject to this section, as a condition of approval of a subdivision plan, land, not including streets, in the amount of 8 percent of the area of the proposed subdivision exclusive of streets intended to be publicly owned at such locations as may be recommended by the Advisory Committee or otherwise approved by Council, is to be set aside as land for public purposes and so indicated on the plan. Subject to the recommendation of the Advisory Committee, Council's preference is to accept cash-in-lieu of lands for public purposes.
 - i) This section does not apply to that part of a subdivision plan that creates a parcel of land solely for the purpose of being assembled with other parcels for later subdivision.
 - ii) Council may require, in lieu of land set aside under subsection (a), a sum of money to be paid to the Municipality in the amount of 8 percent of the market value of the land in the proposed subdivision at the time of submission for approval of the subdivision plan, exclusive of streets intended to be publicly owned. Market value is determined by the Development Officer using Service New Brunswick assessment data. Should a developer disagree with the Development Officer's determination of market value, they may provide an appraisal to the Development Officer to support the calculation of cash-in-lieu of lands for public purposes.
 - iii) Where, as a condition of approval of a subdivision plan, land has been set aside under subsection (a) or the provisions of subsection (ii) have been satisfied, no further setting aside of land for public purposes or payment of additional sums shall be required as a condition of approval of any further or other subdividing of the land with respect to which the land has been set aside or sum paid.

9 MUNICIPAL FACILITIES

- a) Where a person proposes to subdivide land in such a manner that a street is required to be provided, or in such location that Municipal water or sewer facilities or both are required to be provided, the Development Officer shall not approve a subdivision plan unless;
 - i) Council will be able, in the foreseeable future, to approve the provision of a street and where required, water and sewer lines or both, to the boundaries of a subdivision, or such person has made satisfactory arrangements for providing such facilities, and
 - ii) such person has deposited a sum of money or a performance bond with the Municipality or has entered into a Subdivision Developer's Agreement with Council that is binding on his heirs, successors, and assigns to pay the cost of facilities required within the subdivision, and if applicable to the subdivision.
- b) The attached Schedule A, Specifications for Developers, is adopted as minimum standards for the construction of a subdivision within the Town of Grand Bay-Westfield. The subdivision will not be accepted by the Municipality until construction is completed in accordance with these standards and the Subdivision By-law.

10 SUBDIVISION APPROVAL

- a) Pursuant to section 75(1)(l) and 88(4) of the *Community Planning Act*, Council shall not assent to a subdivision plan until the following steps have been taken:
- i) that the Advisory Committee, has recommended to Council, in writing, the location and names of streets, the location of lands to be set aside for public purposes or such recommendations have been rejected by a majority vote of the whole Council and further, granted any variances deemed reasonable by them;
 - ii) that a Subdivision Developers Agreement binding upon the Developer and the Council, has been properly drafted and executed so as to become effective upon approval of the subdivision plan; and
 - iii) that the subdivider has deposited with the Town Clerk sufficient money, bonds or securities to cover 100% of the cost to complete the installation and construction of all services within the subdivision and has given a performance bond to guarantee the labour and materials within the subdivision for a period of 12 months after the date of final inspection and acceptance by the Town of these services. The security for subdivision agreements must be in the form of cash, bond, irrevocable standby letter of credit or letter of guarantee.
- b) The Development Officer shall not approve a Subdivision Plan if in their opinion and in the opinion of the Planning Advisory Committee:
- I) the land is not suited to the purpose for which it is intended or may not reasonably be expected to be used for that purpose within a reasonable time after the plan is approved; or
 - II) the proposed manner of subdividing will prejudice the possibility of further subdividing the land or the convenient subdividing or adjoining land.
 - III) until all conditions of approval have been satisfied.

BY-LAW REPEALED

25. By-law No. 113 entitled, Town of Grand Bay-Westfield Subdivision By-law and any amendments thereto, enacted the 27th day of July, 2009 is hereby repealed.

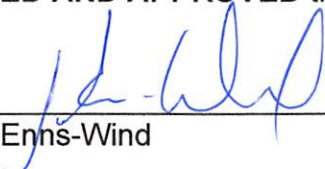
26. This By-law entitled, By-Law No. 123 Town of Grand Bay-Westfield Subdivision By-law, comes into effect on the date of filing in the Registry Office.

READ A FIRST TIME in its entirety this 27 th day of June, 2022.


READ A SECOND TIME by title this 27 th day of June, 2022.

READ A THIRD TIME in its entirety and ENACTED on this 11 th day of July, 2022.

SIGNED AND APPROVED this 6 day of Oct, 2022.



John Enns-Wind
CAO



Brittany Merrifield
Mayor

Seal





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SIGNED AND VERIFIED THE 17th day of 1968

BEFORE A THIRTEEN DAY OF 1968, I, the undersigned, being a Justice of the Peace for the County of Middlesex, New Jersey, do hereby certify that the within and foregoing is a true and correct copy of the original thereof as the same appears from the records of the County of Middlesex, New Jersey.

BEFORE A SECOND DAY OF 1968, I, the undersigned, being a Justice of the Peace for the County of Middlesex, New Jersey, do hereby certify that the within and foregoing is a true and correct copy of the original thereof as the same appears from the records of the County of Middlesex, New Jersey.

BEFORE A THIRD DAY OF 1968, I, the undersigned, being a Justice of the Peace for the County of Middlesex, New Jersey, do hereby certify that the within and foregoing is a true and correct copy of the original thereof as the same appears from the records of the County of Middlesex, New Jersey.

BY THE COURT CLERK OF THE COUNTY OF MIDDLESEX, NEW JERSEY, I do hereby certify that the within and foregoing is a true and correct copy of the original thereof as the same appears from the records of the County of Middlesex, New Jersey.

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TOWN OF GRAND BAY-WESTFIELD

SUBDIVISION BY-LAW #124
SCHEDULE "A"

STANDARD SPECIFICATIONS FOR DEVELOPERS

REVISED MAY 2022

STANDARD SPECIFICATIONS FOR DEVELOPERS

DIVISION ONE	GENERAL INFORMATION
DIVISION TWO	STREET SYSTEM
DIVISION THREE	SANITARY SEWER SYSTEM
DIVISION FOUR	STORM RUNOFF CONTROL SYSTEM

DIVISION ONE

GENERAL INFORMATION

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1. Introduction
2. Responsibility of Developer
3. Standards and Codes
4. By-Laws
5. Conflicts
6. Engineer
7. Inspection of Work
8. Approval Procedure
9. Record Information
10. Easements
11. Protection of Property and the Public
12. Hours of Work

1. Introduction

The Town of Grand Bay-Westfield supports the need for sustainable municipal infrastructure and will require developers to incorporate innovation and best practices in the development of lands within the Town boundaries.

Many of these best practices have been included in the Specifications for Developers but each new project will be reviewed to see what other innovations may be part of the design to produce a better development.

These standards are adopted as minimum standards for the construction of a subdivision within the Town. The subdivision will not be accepted by the Town until construction is completed in accordance with these standards and the Subdivision By-law.

2. Responsibility of Developer

The Developer shall be responsible for all work required to complete the subdivision which shall include:

1. Obtaining all required approvals and permits from regulatory agencies and the payment of any associated fees.
2. Design by a Registered Professional Engineer of all systems required for the subdivision, including but not limited to the street system, storm drainage system, sanitary sewer system, and water lines if applicable.
3. Construction.
4. Provision of on site supervision by qualified personnel during the course of the work.
5. All testing and certification.
6. Provision of "AS BUILT" information in both digital and reproducible hard copy format. Record information to include tie-ins and co-ordinates for all laterals, manholes and other buried components of the work.

3. Standards and Codes

The following standard specifications shall apply as if written out in full:

- 1) The Province of New Brunswick Department of Transportation and Infrastructure Standard Specifications D.T.I Standard Specifications
- 2) CANADIAN STANDARDS ASSOCIATION C.S.A.

Commented [BJ1]: Confirm appropriateness of acronym

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|----|--|----------|
| 3) | AMERICAN WATER WORKS ASSOCIATION | A.W.W.A. |
| 4) | AMERICAN SOCIETY FOR TESTING MATERIALS | A.S.T.M. |

Reference to standards, codes, specifications and recommendations shall mean the latest edition of such publications adopted and published at the date of signing of the Developer's Agreement.

4. By-Laws

The following Municipal By-Laws contain information pertinent to the development and subdivision of land in the Town. The By-Laws provide minimum requirements only and the Developer is advised that additional requirements may be necessary as a condition of approval of the proposed development.

Municipal Plan By-Law
Zoning By-Law
Subdivision By-Law
Sanitary Wastewater System By-Law

The Developer shall be familiar with the requirements of these By-Laws as they apply to the proposed development and ensure that the proposed subdivision is in compliance with the requirements of the latest revision of these By-Laws. In the event that compliance is not possible, the Developer shall apply for and receive such variances to permit the project to proceed.

5. Conflicts

In the event of conflicts in the specifications the one requiring the more restrictive grade of work or material shall govern.

6. Engineer

Engineer shall mean the Engineer employed by the Town of Grand Bay-Westfield to act on its behalf. In order to avoid cumbersome and confusing repetition of expressions in these specifications it is hereby provided that any and all of the following words or any form of such words, unless clearly indicated otherwise shall be understood to be followed by the words "By the Engineer" or "To the Engineer": Accepted, approved, authorized, condemned, considered or deemed necessary, designated, determined, directed, disapproved, given, indicated, insufficient, ordered, permitted, rejected, required, satisfactory, specified, sufficient, suitable, suspended, unacceptable, unsatisfactory.

7. Inspection of the Work

The Town and the Engineer and their authorized representatives shall have access to the Work for inspection wherever it is in preparation or progress. If the Developer covers or permits to be covered any of the Work that is subject to inspection or special tests before receiving approval, the Developer shall uncover the Work, have the inspections satisfactorily completed and make good the Work at his own expense.

The Developer's Engineer shall inspect the works at the following milestones:

- 1) upon completion of rough grading of streets prior to placement of pit run gravel sub-base material;
- 2) upon completion of placement of pit run gravel sub-base prior to placement of crushed gravel base material;
- 3) upon completion of placement of crushed gravel base prior to hard surfacing.

The duties of the Developer's Engineer's Representative are to watch over and to inspect the Work and to supervise the testing and examine all materials to be used or workmanship employed in connection with the Work. They shall have no authority to relieve the Developer of any of their duties or obligations under the Agreement nor, except as expressly provided in the Agreement, to order any work involving delay or to make any variations of or in the Work.

Failure of the Developer's Engineer's Representative to disapprove any work or materials shall not prejudice the power of the Engineer thereafter to disapprove such work or materials and to order the pulling down, removal or breaking up thereof.

If the Developer shall be dissatisfied by reason of any decision of the Engineer's Representative he shall be entitled to refer the matter to the Engineer who shall thereupon confirm, reverse or vary such decision.

8. Approval Procedure

Upon completion of all inspection and testing operations referenced in this specification, the Developer's Engineer shall provide the Town with a signed and sealed Certificate or Report indicating that all required inspections and tests have been completed and certifying that all systems installed meet or exceed the requirements specified.

In addition, upon completion of the work or more often if requested by the Town, the Developer's Engineer shall provide the Town with a signed and sealed Certificate of Progress Report identifying the amount of work completed to date and certifying that all work completed meets or exceeds the requirements specified.

9. Record Information

Upon completion of the work, the Developer shall provide the Town with one digital copy, one transparent set and two copies of AS BUILT drawings. The AS BUILT drawings shall show:

- 1) Actual geodetic elevations, dimensions, grades and location of each street;
- 2) Location and dimensions of right-of-ways;
- 3) Culvert locations;
- 4) Location, grade and geodetic elevation of all sanitary sewer mains and manholes;
- 5) The location of each service pipe at the sewer main;
- 6) The location and depth of each service pipe at the property line with three separate measurements between the end of the service line and a permanent structure or lot pin;
- 7) Co-ordinates of manholes and other structures and co-ordinates of service pipes at property line;
- 8) Location, grade and geodetic elevation of all storm sewers, catch basins and manholes;
- 9) Co-ordinates of manholes and catch basins.
- 10) Should the Town install a municipal water system in the future, the AS BUILT drawings shall show the location and depth of each service pipe at the property line with three separate measurements between the end of the service line and a permanent structure or lot pin; Co-ordinates of manholes and other structures and co-ordinates of service pipes at property line; Location, grade and geodetic elevation of all storm sewers, catch basins and manholes; and Co-ordinates of manholes and catch basins.

10. Easements

All easements for underground services or drainage shall be a minimum width of ten (10) metres. The Developer shall show all easements within the subdivision on the registered subdivision plan. Easements which are required outside of the subdivision boundaries shall be obtained and registered by the Developer. When installing underground utilities or ditching on easements they shall be installed such that a minimum of 3 metres exists between the edge of the easement and the centerline of the pipe or ditch.

As required by the Community Planning Act, a Developer seeking an easement to facilitate a public utility must seek input from:

- 1) New Brunswick Department of Environment and Local Government - If a

Watercourse Alteration Permit is required;

- 2) N.B.D.T.I. - if the subdivision has access from a provincially designated highway;
- 3) Canadian Transport Commission or NB Southern - if construction of the street system requires crossing a railroad right-of-way or is within 300 metres of a rail line.

11. Protection of Property and the Public

The Developer shall protect property adjacent to the Work Site, the public and public utilities from damage as a result of their operations.

Before the Developer starts work they shall be responsible for locating all underground structures and contacting the Town, NB Power, Bell Aliant, Rogers Cable Inc., and other utilities providing local services. Should any damage occur to property or utilities the Developer shall make good such damage at their own expense or pay all costs incurred by others in making good such damage.

The Developer shall maintain safe and passable traffic accommodations for public travel, preventing dust nuisance, furnishing, erecting and maintaining construction signs, barricades, lights, flashers and other warning devices required to protect the site and the public.

The Developer shall carry on the Work in such a manner as to not prevent the passage of traffic on the public streets. However, should it be necessary in the performance of the Work to close streets to traffic, the Developer shall obtain the necessary permission from the responsible authority and make all necessary arrangements.

The Developer shall carry on the Work in such a manner as to not disturb adjacent watercourses and shall be responsible for providing such environmental protection measures as may be necessary to comply with all Municipal, Provincial and Federal requirements.

If the Developer fails to protect, repair, rebuild or otherwise restore such property as may be deemed necessary, the Engineer, after giving notice, may proceed to protect or to have repairs made by others and the cost thereof will be deducted from the development performance guarantee.

12. Hours of Work

The Developer shall limit their work to the period of 7 AM to 8 PM Monday to Saturday and shall not permit blasting without prior approval from Council.

DIVISION TWO

STREET SYSTEM

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ITEM 1 SYSTEM INFORMATION

1. General

All subdivision streets shall be constructed by the Developer. The Town may require the Developer to upgrade existing streets which are providing access to the proposed subdivision.

2. Reference Specifications

Construction of subdivision streets and upgrading of existing streets if required, shall be in accordance with these specifications.

3. Approvals

The Developer shall be responsible for obtaining all necessary approvals required to construct the subdivision streets including but not be limited to:

- 1) New Brunswick Department of Environment and Local Government - If a Watercourse Alteration Permit is required;
- 2) N.B.D.T.I. - if the subdivision has access from a provincially designated highway;
- 3) Canadian Transport Commission or NB Southern - if construction of the street system requires crossing a railroad right-of-way or is within 300 metres of a rail line.

4. Scope of Work

The street system shall be completed by the Developer and shall include the following work:

- 1) Construction of the street to lines and grades approved by the Town including excavation and embankment of insitu materials, granular borrow sub-base, and crushed gravel base and hot-mix asphalt concrete;
- 2) Construction of concrete curb and gutter if required by the Developers Agreement;
- 3) Construction of reinforced concrete sidewalk if required by Developers Agreement;
- 4) Construction of shoulders and ditches, if applicable;
- 5) Roadway culverts complete with headwalls;
- 6) Driveway culverts at each lot.

5. Cul-de-Sacs

Residential Cul-de Sacs

A dead end street shall be constructed as a cul-de-sac as per detail drawing 2L, with a cul-de-sac right-of-way circle to a 18 metre radius. The paved turning circle shall be a minimum of 14 metres radius. Where provision is made for future street extension in the subdivision, a temporary turn-around shall be constructed to the cul-de-sac dimensions or as a "T" intersection turn around designed as per detail drawing 3L.

6. Standards

The Town will require the Developer to construct the street system to meet or exceed the following minimum standards:

Residential

- 1) All street right-of-ways shall have a minimum width of 20 metres.
- 2) Streets shall be constructed as shown on the appropriate typical street detail drawing.
- 3) Street grades shall not exceed 8%.
- 4) All intersections between streets shall be at right angles.
- 5) All intersections shall be designed as near as possible to be level.

ITEM 2 TECHNICAL SPECIFICATIONS

1. Description

The Developer is required to construct all streets in accordance with these specifications, and, where applicable, Department of Transportation and Infrastructure- Standard Specifications. The Developer must also comply with any additional or unique requirements as contained in the Developer's Agreement.

Generally, the work covered by this section includes clearing and grubbing, initial cuts and fills and shaping of road bed to subgrade, gravel sub-base, crushed gravel base, hot-mix asphalt surfacing, concrete curb and gutter, reinforced concrete sidewalk, shouldering, ditching, culverts and driveways.

2. Materials

Unless otherwise specified approved materials shall meet the following specifications:

2.1 Sediment Control Fence and Support Posts

Shall be as specified by the NBDTI Standard Specifications Item No. 602 Sediment Control Fence.

2.2 Erosion Control Structures

Shall be as specified by the NBDTI Standard Specifications Item No. 605 Erosion Control Structure.

2.3 Borrow Fill

This item refers to fill material required to bring the road bed elevation up to the required subgrade.

Excess material from road cuts may be used for this purpose provided that it can be moved and re-compacted in embankments and does not contain more than 50 percent passing the 75um sieve.

Borrow material not originating from roadway cuts must be approved as to source and suitability.

2.4 Crushed Gravel Base

Shall be bank gravel which has been crushed and screened to meet the following grading limits:

<u>ASTM Sieve Size</u>	<u>Percentage Passing</u>
37.5	100
31.5	95 - 100
25	83 - 100
19	70 - 90
12.5	55 - 78
9.5	45 - 72
4.75	30 - 57
2.36	20 - 46
1.18	14 - 35
300um	5 - 19
75um	0 - 6

2.5 Gravel Sub-Base

Shall be pit run gravel in its natural, screened and/or crushed condition with the following gradation limits. Material shall be composed of clean, hard, durable particles, free from lumps of clay or other deleterious material. Abrasion loss shall not exceed 50%.

<u>ASTM Sieve Size</u>	<u>Percentage Passing</u>
125	100
100	95 - 100
75	82 - 100
50	62 - 100
37.5	52 - 100
19	30 - 90
9.5	22 - 79
4.75	16 - 66
2.36	12 - 55
1.18	9 - 44
300um	4 - 25
75um	0 - 7

2.6 Screened Stone

<u>ASTM Sieve Size</u>	<u>Percentage Passing</u>
37.5	100
25	35 - 100
12.5	20 - 60
4.75	0

2.7 Shoulder Material

<u>ASTM Sieve Size</u>	<u>Percentage Passing</u>
125.0	
100.00	
75.0	
50.0	
37.5	100
31.5	95 - 100
25.0	84 - 100
19.0	70 - 90
12.5	55 - 78
9.5	45 - 72
4.75	30 - 57
2.36	20 - 46
1.18	14 - 35
300um	7 - 21
75um	3 - 12

2.8 Hot-Mix Asphalt Concrete

Shall be as specified in the NBDTI Standard Specifications Item No. 260 (Asphalt Concrete).

2.9 Concrete

The Canadian Standards Specifications A 23.1 for concrete and reinforced concrete, and have a compressive strength of 35 MPa after twenty-eight (28) days curing time with 20mm maximum aggregate and entrained air between five percent (5%) and eight percent (8%).

Each load shall be accompanied by an official invoice from the supplier showing the mixture employed, the size of the coarse aggregates, admixtures, the quantity of concrete, and any other information required.

The Contractor shall submit certification that the concrete supplier is certified in the appropriate categories in accordance with Atlantic Provinces Ready Mix Concrete Association, Plant Certification Program or equivalent.

The addition of water and/or air-entraining agent to the mixture will not be permitted unless approved by the testing firm. If additional water and/or air-entraining agent is added, it shall be the minimum amount necessary and the concrete shall be additionally mixed by a minimum of thirty (30) turns of the drum and shall satisfy all required tests including slump, air content and compressive strength.

2.10 Reinforcing

The Canadian Standards Association Specification G30.5, latest revision, for Wire Mesh.

2.11 Joint Filler

Joint filler shall be an approved 12 mm thick asphalt impregnated fibreboard of good quality cut to fit the required cross section of the joint.

2.12 Culvert Pipe Bedding Material

a) Bedding Material For Concrete Pipe

This shall be a granular material conforming to the gradation limits for Screened Stone and shall be uniformly compacted using approved compaction methods as outlined in Division Three, Section 3.2 Pipe Installation.

2.13 Random Rip-Rap

Shall be quarry stone, field stone or broken ledge and consist of sound, durable rock. Average rock size shall be 0.03 cubic metres with a maximum rock size of 0.06 cubic metres and with a portion of about 20 percent of smaller stones and spalls intermixed.

2.14 Culvert Pipe

Shall be reinforced concrete conforming to the following specifications:

a) Reinforced Concrete Pipe

Shall be reinforced concrete pipe meeting ASTM Standard C-76 Minimum Class 3 or as specified on drawings. Joints shall be non-gasketed and shall be wrapped. The minimum diameter for roadway and driveway culverts shall be 450 mm.

2.15 Pipe Joint Wrap

Shall be Terrafix 200R or approved equal.

3. Construction Methods

3.1 Environmental Protection

The Developer shall install and maintain sediment control fence and erosion control structures sufficient to adequately protect the environment to a degree acceptable to the New Brunswick Department of Environment and Local Government and other concerned Federal, Provincial and Municipal agencies.

The Developer shall take the necessary precautions to prevent undue damage to trees that provide a buffer and natural erosion control along the boundaries of adjacent properties, subdivisions, or at the entrance to the subdivision.

3.2 Clearing and Grubbing

All trees, stumps, brush and other perishable material shall be close cut within three hundred (300) millimetres of the ground surface and shall be disposed of in a satisfactory manner.

All roots, stumps and other objectionable material shall be excavated and removed.

Grubbing shall be completed in advance of the excavation and grading operations unless otherwise approved.

No burning will be permitted. The Developer shall dispose of all objectionable material in a satisfactory manner. Disposal areas must be approved and shall be left with a neat and finished appearance. It will be the responsibility of the Developer to obtain permission for the use of land from the property owner for these disposal areas.

3.3 Roadway Excavation

All approved material shall be used in the formation of embankments as directed. Unless otherwise approved, all excavated materials shall be maintained on site in accordance with the requirements of the Zoning By-Law.

All material considered surplus or unsatisfactory shall be disposed of in an approved manner. When practical, surplus and unsatisfactory material shall be utilized for grading slopes or other grading, as directed, within the project.

If, during the excavation, material is encountered that is suitable for use as described under any item of this contract, the Developer will reserve this material and use it as directed.

All breakage and slides shall be removed by the Developer and disposed of in an approved manner. Ditches shall be excavated to the depth and width as shown on the drawings or as directed. During construction the ditches shall be maintained in such condition that the roadway will be well drained at all times.

Excavated material shall be placed and compacted to a density of at least ninety-five (95) percent Standard Proctor Density using approved compaction methods.

In un-grubbed areas, swamps and rough terrain, the initial layer shall be as directed.

Excavated material may be common excavation or solid rock excavation.

It is the responsibility of the Developer to conduct sufficient soil investigations prior to submission of final plans so as to determine the extent of solid rock excavation.

Major changes in roadway design will not be permitted after final approval solely on the basis of solid rock encountered during construction.

Prior to undertaking any blasting, the Developer shall arrange to have done and pay all costs associated with a PREBLAST SURVEY which shall be presented to Council as part of any blasting approvals. The survey shall be completed by a Registered or Licensed Professional Engineer qualified and experienced in the area of Preblast Surveys. The survey shall examine and report on the preblast conditions of all structures, wells, etc., within a minimum radius of 250 feet or greater, as determined by the Engineer conducting the survey. A copy of the preblast survey shall be filed with the Town prior to the commencement of the work.

The Developer is advised they must have in place insurance coverage for drilling and blasting acceptable to the Town.

Width and depth of roadway excavation will be sufficient to provide a final street cross section as per plans and specifications.

Embankment fills shall be shaped during construction so as to provide adequate drainage at all times.

Excavated material or imported borrow shall be placed in layers not more than 300 mm and compacted to a density of at least ninety-five percent (95%) Standard Proctor Density using approved compaction methods.

Special placing procedures may be permitted or required where initial ground is ungrubbed, swampy or rough terrain.

Embankments constructed of blasted rock shall be placed in layers not exceeding a total height of 1 metre and tramped with a tractor having a weight of not less than 20 tonnes.

3.4 Road Sub-Base

Upon completion of roadway excavation and embankments and the initial shaping of the road bed and ditches, a layer of gravel sub-base having a minimum depth of 450 mm shall be placed over the road bed.

This material shall be shaped to required grades as it is placed and compacted to a density of at least ninety-five percent (95%) Standard Proctor Density. Gravel sub-base shall not be placed on wet or muddy surfaces.

3.5 Crushed Gravel Road Base

Road Base shall consist of 150 mm minimum layer of 31.5 mm minus crushed gravel.

The gravel sub-base shall be well graded and compacted prior to application of crushed base material. Crushed gravel base shall be placed with a motor grader and compacted to a density of at least ninety-five percent (95%) Standard Proctor Density.

The road surface shall be periodically graded to prevent excessive accumulation of ruts and pot holes.

3.6 Roadway Culverts

Culverts shall be as indicated on drawings. Pipe laying methods shall be as per those for storm sewer pipe where applicable. All joints shall be wrapped with pipe joint wrap.

Culvert invert elevations shall match bottom of ditch elevations. Roadway culverts shall have a minimum cover of 1 metre. Culverts shall be bedded with gravel sub-base material.

If culverts are installed after construction of roadway, backfill material shall correspond to roadway materials as per the Detail Drawing.

Approved culvert headwalls shall be constructed at all inlets and outlets. Culvert ends shall be kept clear of debris after installation.

3.7 Concrete Curb and Gutter

Unless otherwise specified, concrete curb and gutter shall be installed in strict compliance with the NBDTI Standard Specification Item No. 53.

Concrete shall be supplied, formed, placed, finished and cured in strict compliance with CSA Specification A 23.1.

Concrete shall be placed under the direction of a competent experienced supervisor and shall be finished by experienced finishers.

The surface of the concrete shall be uniform in appearance; shall have the required grade and contour; and shall be free from rough and porous spots, irregularities, depressions, and other objectionable surface features. The entire operation shall be executed to the satisfaction of the Town Engineer.

Any section of the curb and gutter not conforming to the required line and grade shall be removed and replaced correctly.

Any irregularities resulting from overslump, grade deficiency, poor line preparation, tearing or weather factors shall be corrected using steel formwork. All formwork shall be clean, straight and well braced to prevent sagging of edges. All concrete placed in formwork shall be tamped to ensure total consolidation.

All concrete curb and gutter shall be floated and textured immediately after being laid. The texturing method must be approved by the Engineer and shall be used consistently throughout the job. Any voids or surface irregularities shall be repaired using concrete grout from the same concrete load and a float shall be used on the repaired area prior to texturing. All edges of concrete shall be rounded with an approved edging tool while the concrete is still plastic to leave a true smooth surface.

Driveway sections and wheelchair ramps shall be constructed as shown on the accompanying detail drawings and/or as directed.

Unless otherwise directed, the standard width for depressed driveway sections shall be 7.5 metres. If the distance between depressed sections is less than three (3) lineal metres, the Contractor shall form one continuous depressed section.

Contraction joints at driveway and wheelchair ramps shall be placed at the bottom of the taper at each end and shall be equally spaced along the depressed section with a span of not greater than three (3) metres. Contraction joints along the curb and gutter not including depressed driveway sections and wheelchair ramps should be installed at a maximum of three (3) lineal metre intervals and on either side of catch basin structures and shall be constructed by sawcutting. Sawcutting is only at the approval of the Town's Works Commissioner.

At intersections, the Contractor shall ensure that all points along the curb and gutter line are equidistant from a predetermined radius point to allow a smooth uniform curvature.

Commented [BJ2]: Contractor or developer?

Immediately after finishing, the concrete shall be cured by application of a pigmented curing compound or other method as specified in CSA 23.1.

The Contractor shall at their expense engage a qualified Materials Testing Firm to test each load of concrete for air content and slump and take one cylinder which shall be tested for compressive strength. Two additional cylinders shall also be taken and tested for compressive strength on the initial load and every twenty (20) cubic metres thereafter. If only one (1) load is being placed on any day then four (4) cylinders shall be taken to provide one (1) seven day and three (3) twenty eight compressive strength test results. The Testing Firm shall keep a careful record of the location where each load of concrete is placed and the location shall be carefully cross referenced with the test cylinders. A copy of the placement report shall be provided with the test results. The firm must be CSA Certified and be approved by the Engineer. Testing will be in accordance with CSA Standard A23.2. Seven day and twenty-eight day compressive strength test results shall be faxed to the Engineer by the Materials Testing firm on the day that the tests are completed. Complete test results and a letter signed and sealed by a Professional Engineer registered in the Province of New Brunswick and employed by the Materials Testing firm stating that the materials supplied met or exceeded the materials specified or identifying any variation from the specification must be received prior to approving final payment.

3.8 Reinforced Concrete Sidewalk

Unless otherwise specified, concrete sidewalk shall be installed in strict compliance with the NBDTI Standard Specification Item No. 51.

Concrete shall be supplied, formed, placed, finished and cured in strict compliance with CSA Specification A 23.1.

All reinforcing shall be placed as shown on the detail drawings and as directed.

Concrete shall be placed under the direction of a competent experienced supervisor and shall be finished by experienced finishers.

The surface of the concrete shall be uniform in appearance; shall have the required grade and contour; and shall be free from rough and porous spots, irregularities, depressions, and other objectionable surface features. The entire operation shall be executed to the satisfaction of the Town Engineer.

All reinforcing shall be placed as shown on the detail drawing and as directed. The welded wire fabric shall be located 50 millimetres below the top surface of the sidewalk slab.

The top surface of the sidewalk shall be generally "struck" with a straight edge and floated after the stone aggregate has been forced below the finished elevation of the concrete. A margin fifty (50) millimetres in width shall be defined and finished smooth along the joint of each slab, and all edges shall be rounded to a radius of six (6) millimetres with an approved edging tool. Sidewalks shall be finished with a slightly roughened surface to ensure a safe foothold in wet weather. To obtain this, sidewalks shall be finished with a wood float or be lightly broomed. Any other approved method of finishing will be acceptable.

Any section of sidewalk not conforming to the required line and grade shall be removed and replaced at the Contractor's expense.

Any irregularities resulting from overslump, grade deficiency, poor line preparation, tearing, or weather factors shall be corrected using steel formwork. All formwork shall be clean, straight and well braced to prevent sagging edges. All concrete placed in formwork shall be tamped to ensure total consolidation.

Any voids or surface irregularities shall be repaired using concrete grout from the same concrete load and a float shall be used on the repaired area prior to texturing.

Dummy joints shall be formed in the concrete at intervals equal to the width of the sidewalk by cutting a slot in the sidewalk twenty (20) millimetres deep.

Every fourth joint shall be to the full depth of the concrete.

Full depth joints shall also be constructed at both ends of depressed sidewalk sections and to isolate obstructions (such as buildings, hydrants, etc.) from the sidewalk.

Joints shall be made in an approved manner while the concrete is still plastic using a fibreboard joint filler.

Driveway sections and wheelchair ramps shall be depressed as shown on the accompanying drawings. Contraction joints shall be placed at the bottom of the taper at each end and shall be equally spaced along the depressed section.

The back edge of the sidewalk shall not be depressed. If the distance between depressed sections is less than three (3) lineal metres, the Contractor shall make one continuous drop section. The standard driveway width shall be 7.5 lineal metres.

Immediately after finishing, the concrete shall be cured by application of a curing compound or other method as specified in CSA 23.1.

The Contractor shall at their expense engage a qualified Materials Testing Firm to test each load of concrete for air content and slump and take one cylinder which shall be tested for compressive strength. Two additional cylinders shall also be taken and tested for compressive strength on the initial load and every twenty (20) cubic metres thereafter. If only one (1) load is being placed on any day then four (4) cylinders shall be taken to provide one (1) seven day and three (3) twenty eight compressive strength test results. The Testing Firm shall keep a careful record of the location where each load of concrete is placed and the location shall be carefully cross referenced with the test cylinders. A copy of the placement report shall be provided with the test results. The firm must be CSA Certified and be approved by the Engineer. Testing will be in accordance with CSA Standard A23.2. Seven day and twenty-eight day compressive strength test results shall be faxed to the Engineer by the Materials Testing firm on the day that the tests are completed. Complete test results and a letter signed and sealed by a Professional Engineer registered in the Province of New Brunswick and employed by the Materials Testing firm stating that the materials supplied met or exceeded the materials specified or identifying any variation from the specification must be received prior to approving final payment.

3.9 Driveway Culverts

A driveway culvert must be installed prior to the issuance of a building permit for any lot within the development. Driveway culverts will be installed by the Developer.

At least one driveway culvert shall be installed for each lot within the development. Culverts shall be minimum 450 mm in diameter and 7.3 m minimum in length. Driveway culverts may not be extended beyond a total length of 15 metres without prior approval from the Town. The Town, upon acceptance of the works, only maintains one (1) culvert per lot.

Commented [BJ3]: Confirm this standard is working and doesn't need to be increased.

Culvert invert elevations and alignment shall match that of finished ditch line. Culvert pipe shall be installed in accordance with methods described under the Storm Runoff Control System. All joints shall be wrapped with concrete pipe joint wrap. Culverts shall have a minimum cover of 600 mm.

3.10 Driveway Construction

Driveways shall be constructed by the Developer to the property line complete with a driveway culvert. Access to each lot shall be by a driveway having a minimum finished width of 6 metres. The top surface shall be graded with a layer of crushed gravel having a minimum depth of 150 mm.

Driveway side slopes in the ditch area shall not exceed a 2:1 slope unless the culvert length is extended beyond the minimum length required or culvert headwalls are constructed.

Final vertical driveways alignment shall match the abutting street grades at the edge of shoulder line.

3.11 Shoulders and Ditches

In areas not required to be storm sewered, shoulders shall be minimum 1.20 metres wide as per the Detail Drawing. Following each paving operation, shoulders shall be graded and compacted so that the finished surface is flush with the edge of asphalt and has a cross slope matching that of the adjacent driving lane. Fore slopes and ditch inverts shall be clear of excess material following final shoulder grading.

Open ditches shall be constructed generally as shown on the Detail Drawing. Ditch depth shall match adjacent driveway and roadway culvert invert elevations.

Ditch sides shall have a maximum slope of 2:1 except in the case of ditches constructed in solid rock where the slope may be 1:1. Toe of back slope or bottom of rock slope to be minimum 2.5 metres behind curb.

In areas where in situ soils are unstable or subject of erosion, additional work may be required in the construction of ditch back slopes. Generally this situation will have to be assessed based on:

- a) nature of soil condition
- b) depth of ditch or total vertical height of back slope at property line
- c) water runoff volume and slope of ditch.

In areas of relatively low runoff, a swale may be acceptable in lieu of an open ditch. However, each area proposed will be evaluated on its own merits and must be approved by the Town.

3.12 Hot-mix Asphalt Concrete

The Developer of a Residential Subdivision will be required to place a 50 mm compacted thickness asphalt base course during the year of initial construction followed by a 37 mm compacted thickness asphalt surface course the next year.

The asphalt concrete pavement shall be mixed, hauled placed and compacted in strict compliance with the NBDOT Standard Specification Item No. 260 (Asphalt Concrete).

The finished surface of any pavement course shall have a uniform texture and be free of surface defects.

Surface defects shall include but not be limited to:

- 1) individual bumps and dips that exceed 13 mm in the vertical direction
- 2) segregated areas
- 3) areas of excess or insufficient asphalt cement
- 4) roller marks
- 5) cracking or tearing
- 6) improper matching of longitudinal and transverse joints tire marks
- 7) sampling locations not properly reinstated
- 8) improperly constructed patches
- 9) improper cross slope
- 10) fuel spills on the mat.

Surface defects shall be removed and replaced or otherwise repaired to the satisfaction of the Engineer. All costs associated with removal and replacement or repair of surface defects shall be the Developer's responsibility.

The Developer shall at their expense engage a qualified Materials Testing Firm to test the asphalt. The firm must be approved by the Engineer and shall perform a complete set of Marshall Tests at the asphalt plant daily. These tests shall include but not be limited to tests for stability, flow, V.M.A., Air Voids, Extracted Liquid Content and Grading Extracted Aggregate. In addition the testing firm shall take one field compaction sample daily and the resulting holes shall be patched immediately with no samples to be cut from the pavement after paving operations have ceased. A copy of all test reports shall be mailed directly to the Engineer by the Testing Firm.

The Testing Firm shall also provide a letter signed and sealed by a Professional Engineer registered in the Province of New Brunswick employed by the Materials Testing Firm stating that the materials supplied met or exceeded the materials specified or identifying any variation from this specification. Payment will not be made until all test results and the letter have been received.

DIVISION THREE

SANITARY SEWER SYSTEM

Contents

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	2. Materials
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ITEM 1 SYSTEM INFORMATION

1. General

Where the proposed subdivision is required to be serviced by a sanitary sewer system, the Developer shall be responsible for the installation of a complete sanitary sewer system including sewer mains and sanitary service lines to the property line of each lot. If the existing municipal sanitary sewer system is required to be extended outside of the subdivision boundaries to service the proposed subdivision, the extension shall be completed by the Developer.

2. Reference Specifications

All work on the sanitary sewer system shall be in accordance with these specifications, additional requirements stipulated by the New Brunswick Department of the Environment and Local Government and any additional requirements stipulated by the Town at the time of approval of the subdivision.

3. Approvals

The Developer shall be responsible for obtaining all necessary approvals required for construction of the sanitary sewer system. This shall include but not be limited to:

New Brunswick Department of Environment and Local Government - Sanitary Sewer Design and if required a Watercourse Alteration Permit.

N.B.E.P.C. - If required for extension of power lines for sewage lift stations or trenching across underground utilities.

Bell, Rogers, or NB Power - If required for trenching across underground utilities.

N.B.D.T.I. - If sewers are installed across or along a provincial designated highway.

NB Southern - If sewers are installed on a railroad right-of-way.

4. Scope of Work

The construction of the sanitary sewer system shall include the following items:

- 1) All sewer mains complete with precast concrete structures.
- 2) A service line from the sewer main to the property line at each lot.

- 3) High pressure cleaning and video inspection of 100% of all sewer mains.
- 4) Air testing of a minimum of 100% of all sewer mains and visual inspection of all manholes.
- 5) All wastewater pumping stations if required including force mains and testing, flap gate chambers and electric utility extensions.

Site restoration of existing lawns, asphaltic pavement, chipseal, easements, etc.

5. Wastewater Pumping Stations

If the sanitary sewer system requires the construction of a wastewater pumping station, the type of station, manufacturer, size and features shall be subject to review and approval by the Town.

ITEM 2 TECHNICAL SPECIFICATIONS

1. Description

All work on the sanitary sewer system shall be in accordance with the following technical specifications and shall meet all requirements of the New Brunswick Department of the Environment and Local Government.

2. Materials

Unless otherwise specified approved materials shall meet the following specifications:

2.1 Gravity Sewer - Polyvinyl Chloride 1120 Pipe and Fittings

Shall be PVC 1120 pipe and fittings, CSA Standard B182.2 with a DR of 35. The bell will be an integral and homogeneous part of the pipe barrel. The pipe shall be marked to show the manufacturer, class and CSA certification.

Joints for sanitary sewer pipe will be bell and spigot type with a rubber gasket made as recommended by the manufacturer. All sanitary sewer pipe joints must be water tight within the limits by the New Brunswick Department of the Environment and Local Government.

2.2 Flexible Couplings

Shall be Fernco Couplings, certified to CSA B602.

2.3 Saddles

- a) All saddles on concrete pipe shall be Crowle, Daigle or approved equal complete with gasket and stainless steel bands.
- b) All saddles on PVC pipe shall be of an approved type complete with gasket and stainless steel bands.

2.4 Precast Concrete Sections

ASTM Standard C-478 for concrete manhole sections.

2.5 Cast Iron Frames and Covers

NBDTI Standard Specifications Standard Drawing No. 407-2 -Typical Frame And Cover Round.

2.6 Screened Stone

Shall conform to the following grain size distribution:

<u>ASTM Sieve Size</u>	<u>Percentage Passing</u>
37.5	100
25	35 - 100
12.5	20 - 60
4.75	0

2.7 Crushed Gravel

Shall be as specified in Division Two for Crushed Gravel Base.

2.8 Pit Run Gravel

Shall be as specified in Division Two for Gravel Sub-base.

2.9 Force Main - Polyvinyl Chloride Pipe

Shall be AWWA Standard C-900 for Polyvinyl Chloride (PVC) Pressure Pipe with a DR of 25.

2.10 Force Main Fittings

a) Iron Fittings

Shall be Class 250 grey cast iron or Class 350 ductile iron. Radius of curvature shall conform with AWWA C-110 or AWWA C-153; cement lining shall be in accordance with AWWA C-104 and mechanical joints shall be in accordance with AWWA C-111.

b) Polyvinyl Chloride Fittings

AWWA Standard C-907 for Polyvinyl Chloride (PVC) Pressure Fittings for Water 4 in through 8 in (100-200 mm) and certified to CSA 137.2.

2.11 Perforated Drain Pipe

Shall be PVC BDS SDR35 solvent weld perforated pipe as manufactured by IPEX Inc. or approved equal. Joints shall be friction fit. Pipe shall be certified with CSA Standard B182.1. Pipe shall be marked to show the manufacturer, DR and CSA certification.

3. Construction Methods

3.1 Excavation

Construction methods used by the Developer in making the excavation must safeguard public and private property and must be carried out in strict compliance with the Occupational Health and Safety Act of the Province of New Brunswick.

The Developer shall be responsible for the condition of all excavations. He shall be held solely responsible for damages that may be caused through lack of proper sheeting, bracing, water control, etc., and for any damage to person or property resulting from the same.

The excavation shall be dewatered and kept continuously dewatered. In areas where the bottom of the trench is below the water table, the Developer shall install permanent perforated drains as required to drain the pipe trench.

Any part of the trench excavated below the specified grade shall be corrected with approved granular fill material thoroughly compacted. Where the subgrade is considered too soft to support the pipe or structure then deeper excavation will be required to permit the installation of additional granular base material.

Excavated material when approved shall be used to backfill excavations.

Rock-blasting shall be carried out under the supervision of experienced persons employed by the Developer. No blasting shall be done outside the Developer's normal working hours.

Prior to undertaking any blasting, the Developer shall arrange to have done and pay all costs associated with a PREBLAST SURVEY. The survey shall be completed by a Registered or Licensed Professional Engineer qualified and experienced in the area of Preblast Surveys. The survey shall examine and report on the preblast conditions of all structures, wells, etc., within a minimum radius of 250 feet or greater, as determined by the Engineer conducting the survey. A copy of the preblast survey shall be filed with the Town prior to the commencement of the work.

The Developer is advised he must have in place insurance coverage for drilling and blasting.

In excavations requiring blasting, the mouth of the pipe and any portion not backfilled shall be adequately protected. No blasting will be allowed within five (5) metres of any installed pipe.

3.1 Excavation (Continued)

Immediately prior to a blast, the Developer shall clear the blasting area of all residents, vehicular and pedestrian traffic and shall post flagpersons on each road entering the blasting area who shall stop all traffic and shall prevent such traffic from entering the area until the blast has taken place.

The Developer shall be responsible for any repair that is necessary to restore the municipal or private property to their original condition due to damage caused by blasting.

3.2 Pipe Installation

In soft subgrade conditions, the Engineer may order the Contractor to excavate to a depth of 300 millimetres below the bottom of the pipe and to place a layer of "Screened Stone" below the pipe zone material. This material will provide a 150 millimetre layer of sub-bedding as shown on the detail drawing "Typical Trench".

Pipe zone material, (including bedding, haunching and initial backfill), shall be as shown on the Detail Drawing "Typical Trench" and shall be from the bottom of the trench excavation to 300 millimetres above the top of the pipe. Pipe zone material for a single pipe or the lowest pipe in the case of a multiple pipe trench shall be "screened stone" unless otherwise ordered. Pipe zone material for second and successive pipes in a trench shall be "crushed gravel" unless otherwise ordered. Crushed gravel pipe zone material for second and successive pipes in the trench shall be compacted to ninety-five percent (95%) Standard Proctor Density using approved pneumatic tampers, vibratory compactors or other approved methods.

Pipe zone material may be machine placed and shall be uniformly compacted before the pipe is installed. Bell holes shall be provided at each bell joint to permit proper assembly while maintaining uniform pipe support. Bedding for structures shall be a minimum of three hundred (300) millimetres deep.

In trenches with more than one pipe installed, all material between the pipe zones shall be pit run gravel. Pit Run Gravel between pipe zones shall be compacted to a density of at least ninety-five percent (95%) Standard Proctor Density using approved pneumatic tampers, vibratory compactors or other approved methods.

The pipe shall be installed so that the pipe cross section deflection is less than 7.5%.

All pipe shall be laid and jointed in strict accordance with the manufacturer's instructions. Joints between dissimilar pipes shall be made in accordance with the recommendation of the manufacturer of one or the other of the pipes.

3.2 Pipe Installation (Continued)

The pipe, laid with bell-end upgrade, shall be installed so as not to unduly disturb the bedding during jointing. The bell and spigot shall be free of any foreign matter before jointing.

All pipes shall be laid and maintained to the required lines and grades as shown on the drawings or as directed. All pipe laid shall be laid with the use of a laser beam or other approved optical method for maintaining grade and alignment. Any pipe which is not in true alignment, or which shows any settlement after laying, shall be taken up and relaid by the Developer at their own expense.

Under no circumstances may pipe be jointed by pushing the pipe together with the backhoe.

Foundation backfill shall consist of backfilling trenches and foundations as shown on the detail drawings. Backfilling shall be placed in such a manner as will not unduly stress or damage the structures. If the material is to be placed otherwise than by hand the method must be approved. In general, the height of dump shall not exceed the depth of fill then over the structure. Excavated material when approved may be used as foundation backfill.

Foundation backfill placed under roadway, driveways, railroads, and when directed, shall be placed and uniformly compacted to ninety-five (95) percent Standard Proctor Density. Approved pneumatic tampers, vibrating compactors or other approved methods will be used to consolidate the material. Backfilling of all other areas must be made in an approved manner but will not require mechanical compaction. The Developer is reminded that they are responsible for all settlement which occurs until acceptance of the subdivision by the Town.

3.3 Sanitary Manholes

All manholes shall be constructed as shown on the detail drawings.

All manholes shall be located on the shoulder of the roadway off the pavement where and when possible.

All joints between sanitary manhole sections will be installed with a rubber gasket or an approved bituminous compound and must be water tight.

All manholes will be constructed to between one hundred and fifty (150) millimetres and three hundred (300) millimetres of the proposed finished grade by means of one thousand fifty (1050) millimetre diameter or one thousand two hundred (1200) millimetre sections. The cast iron frame and cover or grates will be set as shown on the drawings as ordered or flush with the finished grade using a grade ring and

six hundred (600) millimetre diameter sections. All non-tongue and groove joints shall have a cement mortar joint. One course only of concrete brick in a full mortar bed shall be permitted for height adjustments.

Connections between concrete structures and sewer pipe shall be the method recommended by the manufacturer. All sanitary manhole bases shall be prebenched by the supplier and be complete with water tight inserts or stubs for connections to main sewer pipe unless otherwise approved.

Upon completion, each structure shall be cleaned of silt, debris or other matter of any kind and shall be kept clean until final acceptance of the Work.

3.4 Leak Testing - Gravity Sewer Mains

a) General

One hundred (100%) percent of all sanitary sewers installed shall be tested for leakage using air testing.

All manholes shall be visually inspected for infiltration.

The Developer shall supply all approved materials necessary to complete the test, including approved specially fabricated air tight plugs and caps and air in sufficient quantities.

All tests, unless otherwise ordered, shall be:

- i) For exfiltration for sewers and for infiltration for manholes;
- ii) Carried out after backfilling;
- iii) Conducted on sections of pipe lines between adjacent manholes;
- iv) Carried out in the presence of the Developers' Engineer or his representative; and
- v) Carried out on all sanitary mains and manholes.

b) Testing Method

As soon as the Developer has notified his Engineer that they wish to test a section of the pipeline, the Developer shall check that all relevant open ends are blocked off with air tight plugs and caps; and that all elbows, bends, etc., are adequately blocked to safely withstand the pressure developed under the test.

An approved air tight plug shall be placed in the inlet and outlet of the downstream and upstream manholes respectively. In both cases, the plug shall be securely blocked to prevent movement.

b) Testing Method (Continued)

The test section is pressurized to 28 kPa (4 psig) using an approved air blower or similar pressure regulated apparatus. The fill valve is then closed and the injected air is permitted to stabilize for a period of not less than two minutes. Following this waiting period, the pressure is increased or decreased to 24 kPa (3.5 psig) and the time is measured for the pressure drop to 17 kPa (2.5 psig). The time required for this pressure drop shall not be less than indicated by Table I.

CAUTION: Compressed air can be potentially dangerous if plugs are not properly secured. **DO NOT EXCEED 28 kPa (4 PSIG.)**

Time required for pressure drop from 24 kPa (3.5 psig) to 17 kPa (2.5 psig) not to exceed values provided in Table I following:

TABLE I
TIME REQUIREMENTS FOR AIR TESTING

Pipe Diameter (mm)	Minimum Time (min:sec)	Length for Minimum Time (metres)	Time for Longer Length (sec)
100	1:53	182	.623 L
150	2:50	121	1.40 L
200	3:47	91	2.49 L
250	4:43	73	3.89 L
300	5:40	61	5.61 L
375	7:05	48	8.76 L
450	8:30	41	12.6 L
525	9:55	35	17.2 L
600	11:20	30	22.4 L

L = length of test section in metres

Test gauges shall be in 5 kPa (0.5 psig) maximum increments and have been recently calibrated.

Should the test disclose that the leakage is greater than the amount permissible, the Developer shall, at their own expense, locate and repair the defective pipe or joints. Tests shall be carried out, at the Developer's expense, to determine the success or otherwise of remedial measures applied to the pipe work. These tests shall be repeated, at the Developer's expense, until the results shown that the remedial measures have been successful.

3.5 Leak Testing - Manholes

Each manhole installed shall be visually inspected for infiltration by the Developers' Engineer or his representative.

Any manholes showing signs of infiltration before the end of the guarantee period shall be repaired by the Developer at his expense.

Manholes shall be repaired by pressure grouting from the inside or shall be excavated and repaired on the outside using an approved caulking compound.

Manholes which have been repaired shall be reinspected at the Developer's expense to determine the success of the remedial measures. These inspections shall be repeated, at the Developer's expense, until the results show that the remedial measures have been successful.

3.6 Pressure and Leakage Testing - Force Mains

PVC force mains shall be pressure and leakage tested in the presence of the Developers' Engineer in accordance with AWWA C-605.

3.7 Cleaning and Video Inspection

The interior of all sanitary sewers shall be cleaned with approved high pressure flushing equipment and shall be 100% video inspected.

The sewers shall be inspected using a closed circuit television camera. The maximum speed of the television camera through the pipe shall be 0.30 metres per second with a 5 second minimum stop at each defective location and a 15 second stop at each lateral showing a flow discharging into the pipe.

The inspection shall be recorded in the highest definition available. The audio part shall include the recording of distances at a maximum interval of three metres and a brief description of every defective location and of each service connection. A photograph shall be taken at each defective location and at each lateral location. The photograph and the distance the photograph was taken at shall be placed in a report to the Town.

In addition to the video recording, the Developer shall supply the Town with one edited copy showing all defects.

The complete record of the inspection, including video and audio recordings shall be the property of the Town.

3.8 Sanitary Service Pipes and Appurtenances

Excavation for service pipe shall be as outlined under Section 3.1 Excavation.

Service pipe installation shall be as outlined under Section 3.2 Pipe Installation.

Provision for service connections shall be made at the time the main line pipe is installed using Tees. Saddles will only be permitted to be used if the Developer is directed to install a service after the main line has been installed.

Wherever provision is made for future connections either to mains or building services, the ends of the installed lengths of the pipe or the opening in the fittings shall be plugged with a water tight plug adequately blocked to safely withstand the pressure developed during leakage tests. All laterals shall end with a bell end.

Each plugged end shall be marked by a 50 mm x 100 mm timber extending from the plugged end of the pipe to a minimum of six hundred (600) millimetres above the ground surface so that the property owner can easily locate the end of the installed service.

DIVISION FOUR

STORM RUNOFF CONTROL SYSTEM

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Contents

ITEM 1	SYSTEM INFORMATION
	1. General
	2. Reference Specifications
	3. Approvals
	4. Scope of Work
ITEM 2	TECHNICAL SPECIFICATIONS
	1. Description
	2. Materials
	3. Construction Methods

Detail Drawings

Detail	9L	Typical Trench
Detail	13L	Storm Manhole (Precast)
Detail	14L	Storm Manhole (Cast In Place)
Detail	15L	Catch Basin (Precast)

ITEM 1 SYSTEM INFORMATION

1. General

Storm water management, to reduce pollution in the receiving waters and control runoff volumes, will be required in all new developments. Requirements can range from erosion and sediment control to zero increase in discharge from some sites. Each project will be considered individually.

The proposed subdivision is required to have an adequate storm runoff control system satisfactory to the Town. This may be an open channel flow system such as a ditch and culvert system or it may be a closed storm drainage system such as a storm sewer and catch basin system if requested by the Developer or required by the guidelines or a combination of both systems. The Town may at its discretion, require the Developer to provide a drainage/grade control plan prepared by a Registered Professional Engineer prior to approving the storm runoff control system. In any case, the Developer shall install the complete runoff control system including any extensions outside the subdivision that may be required to complete the system.

Open Channel Flow System shall consist of swales, open channel ditches with culverts under all driveways, intersections or any other location deemed necessary to ensure adequate control of stormwater discharge.

Closed Storm Drainage Systems shall consist of swales, subsurface interceptor drains, manholes and/or catch basins in pre-cast concrete, storm sewer piping, service connection laterals, and any other element deemed necessary to ensure adequate control of stormwater discharge.

2. Reference Specifications

All work on the storm runoff control system shall be in accordance with these specifications, additional requirements stipulated by the New Brunswick Department of the Environment and Local Government and any additional requirements stipulated by the Town at the time of approval of the subdivision.

3. Approvals

The Developer shall be responsible for obtaining all necessary approvals required for construction of the storm runoff control system. This shall include but not be limited to:

- a) New Brunswick Department of Environment and Local Government - If required a Watercourse Alteration Permit.

- b) Bell, Rogers, and NB Power - If required for trenching across underground utilities.
- c) N.B.D.T.I. - If sewers are installed across or along a provincial designated highway.
- d) NB Southern - If sewers are installed on a railroad right-of-way.

4. Scope of Work

A storm sewer system will be required in areas where curb and gutter is to be installed. At other locations, the Developer may use a ditch and culvert system on the roadways if the driveway culverts do not exceed 450 mm in diameter when designed for a 5 year storm return period and as shown on the detail drawings. If 600 mm diameter culverts are required they may be accepted if approved by the Town. Any flow greater than this along the roadway must be storm sewered. Any location where ditch grades will be less than 2% must be storm sewered.

The Developer will be required to install a storm sewer if requested by the Town because the area is low or any other special circumstance.

In all cases the Developer will be required to define and maintain all natural drainage sources including any work that may be required to bring them up to Town standards.

The crown of the street must be carried 2.5 metres beyond edge of pavement before any grade change. (see Street Detail)

If the existing storm drainage control system requires extension beyond the subdivision boundaries to service the proposed subdivision, the Developer shall complete the extension.

It is the responsibility of the Developer to ensure that the proposed development does not create downstream flooding problems, or aggravate an existing downstream flooding problem.

It is the responsibility of the Developer to use innovative solutions to ensure the adequacy of downstream capacity and to ensure stormwater runoff is collected and conveyed throughout the subdivision area without risk to public safety, that structures are protected, and adjacent property being damaged, with consideration for the surrounding development pattern and aesthetic context.

5. Analysis of Existing Storm Drainage Systems

The Town may require analysis of the capacity of existing storm drainage systems, including storm sewer systems as part of a subdivision application. This may be required if the proposed subdivision is suspected to increase stormwater runoff to an existing system. This will ensure the proposed development will not exacerbate existing downstream issues and that additional flows can be

controlled and conveyed without issue. Should the Town request this type of analysis, the following shall be included:

- Hydrologic Analysis
- Hydraulic Analysis
- Ditches, Channels, and Watercourses
- Culverts

6. Storm Drainage Report

A storm drainage report shall be prepared and included as part of the submission for any subdivision to examine the effect of the development on the receiving watercourses and downstream drainage system.

ITEM 2 TECHNICAL SPECIFICATIONS

1. Description

All work on the storm runoff control system shall be in accordance with the following technical specifications and shall meet all requirements of the New Brunswick Department of the Environment and Local Government and the Town.

Storm Frequency Design Requirements

- i. Open Channel Flow System – 50 year storm frequency; check impacts for 100 year storm;
- ii. Closed Storm Drain System – 10 year storm frequency; check impacts at sag points for a 50 year storm.

The storm drainage systems shall be design based on sound and proven engineering, with preference being given to principles of the "Rational Method". The designing engineer shall inform the Town Engineer of the principle method to be used prior to design of the system.

Commented [BJ5]: I'm not sure where this should fall in the document. Confirm.

2. Materials

Unless otherwise approved materials shall meet the following specifications:

2.1 Ribbed Polyvinyl Chloride Pipe and Fittings

Shall be a straight rib design perpendicular to the axis of the pipe. Pipe shall be certified by CSA to B182.4.

The pipe shall be perforated at the factory at the third points along a section of pipe by drilling two (2) 12 mm diameter holes, one located at 5 o'clock and the other at 7 o'clock.

Joints shall be non-gasketed. Joints and perforations shall be wrapped with Terrafix 200R or approved equal.

Ribbed PVC pipe will not be permitted to be used as culvert pipe.

2.2 Reinforced Concrete Pipe

Shall be reinforced concrete pipe conforming to ASTM C-76.

Joints for reinforced concrete storm sewer pipe shall be non-gasket and not subject to a leakage test. Joints for reinforced concrete storm sewer pipe shall be wrapped with Terrafix 200R or approved equal.

NOTE: All catch basin leads shall be 200 mm diameter Ribbed Polyvinyl Chloride Pipe or 300 mm diameter reinforced concrete pipe, whichever the Developer prefers.

All main line storm sewer pipe 450 mm in diameter or less, may be either Ribbed Polyvinyl Chloride OR reinforced concrete, whichever the Developer prefers.

All mainline pipe greater than 450 mm in diameter shall be reinforced concrete.

2.3 Precast Concrete Structures

ASTM Standard C-478 for concrete manhole sections.

2.4 Cast Iron Frames and Covers

N.B.D.T.I. Standard Specifications Standard Drawing No. 407-1 - Typical Frame And Grates Square.

2.5 Screened Stone

Shall be as specified in Division Three.

2.6 Crushed Gravel

Shall be as specified in Division Two for Crushed Gravel Base.

2.7 Pit Run Gravel

Shall be as specified in Division Two for Gravel Sub-base.

3. Construction Methods

3.1 Excavation

Excavation shall be as specified in Division Three for Excavation for the Sanitary Sewer System.

3.2 Pipe Zone Material, Foundation Backfill and Compaction

Pipe Zone Material, Foundation Backfill and Compaction for storm sewer pipe shall be as specified in Division Three for the Sanitary Sewer System.

3.3 Pipe Installation

All pipe shall be laid and jointed in strict accordance with the manufacturer's instructions. Joints between dissimilar pipes shall be made in accordance with the recommendation of the manufacturer of one or the other of the pipes.

The pipe, laid with bell-end upgrade, shall be installed so as not to unduly disturb the bedding during jointing. The bell and spigot shall be free of any foreign matter before jointing. Joints and perforations shall be wrapped with Terrafix 200R in accordance with the manufacturer's instructions.

Pipe shall be installed such that a pipe joint occurs within one metre of any precast concrete structure.

3.3 Pipe Installation

All pipes shall be laid and maintained to the required lines and grades as shown on the drawings or as directed. All pipe shall be laid with the use of a laser beam for maintaining grade and alignment. Any pipe which is not in true alignment or which shows any settlement after laying, shall be taken up and relaid without extra compensation.

Under no circumstances may pipe be jointed by pushing the pipe together with the backhoe.

3.4 Connections To Precast Structures

When using ribbed polyvinyl chloride pipe, connections to precast concrete structures shall be made using prefabricated adaptors supplied by the manufacturer of the pipe.

Where concrete pipes are installed in precast holes, the gap between the pipe and structure shall be closed with non-shrink grout and made water tight.

3.5 Storm Manholes and Catch Basins

All storm manholes and catch basins shall be constructed as shown on the detail drawings.

All joints between storm manhole or catch basin sections will be an approved bituminous compound and rubber gasket and must be water tight.

All manholes will be constructed to between one hundred and fifty (150) millimetres and three hundred (300) millimetres of the proposed finished grade by means of full sections. The cast iron frame and cover or grates will be set as shown on the drawings flush with the finished grade using a grade ring and six hundred (600) millimetre diameter sections. All non-tongue and groove joints shall have a cement mortar joint. One course only of concrete brick in a full mortar bed shall be permitted for height adjustments.

Connections between manholes or catch basins and sewer pipe shall be the method recommended by the manufacturer.

Upon completion, each storm manhole and catch basin shall be cleaned of silt, debris or other matter of any kind and shall be kept clean until final acceptance of the Work.

3.6 Video Inspection

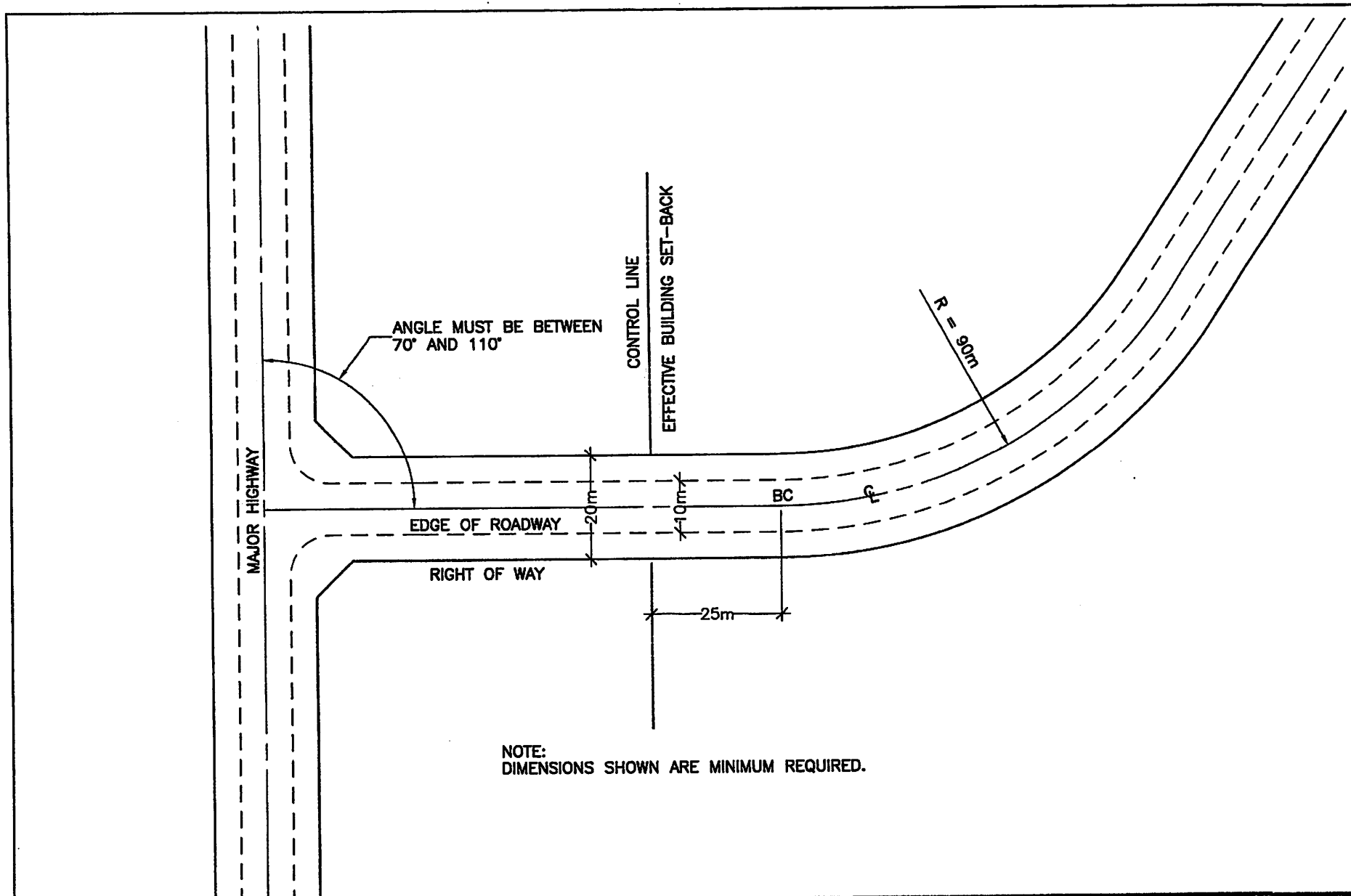
The interior of all storm sewers shall be 100 % video inspected.

The sewers shall be inspected using a closed circuit television camera. The maximum speed of the television camera through the pipe shall be 0.30 metres per second with a 5 second minimum stop at each defective locations and a 15 second stop at each drain connection or catch basin lead.

The inspection shall be recorded in the highest definition available. The audio part shall include the recording of distances at a maximum interval of three metres and a brief description of every defective location and of each service connection. A photograph shall be taken at each defective location and at each lateral location. The photograph and the distance the photograph was taken at shall be placed in a report to the Town.

In addition to the video recording, the Developer shall supply the Town with one edited copy showing all defects.

The complete record of the inspection, including video and audio recordings shall be the property of the Town.



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NEW BRUNSWICK

SCHEDULE A

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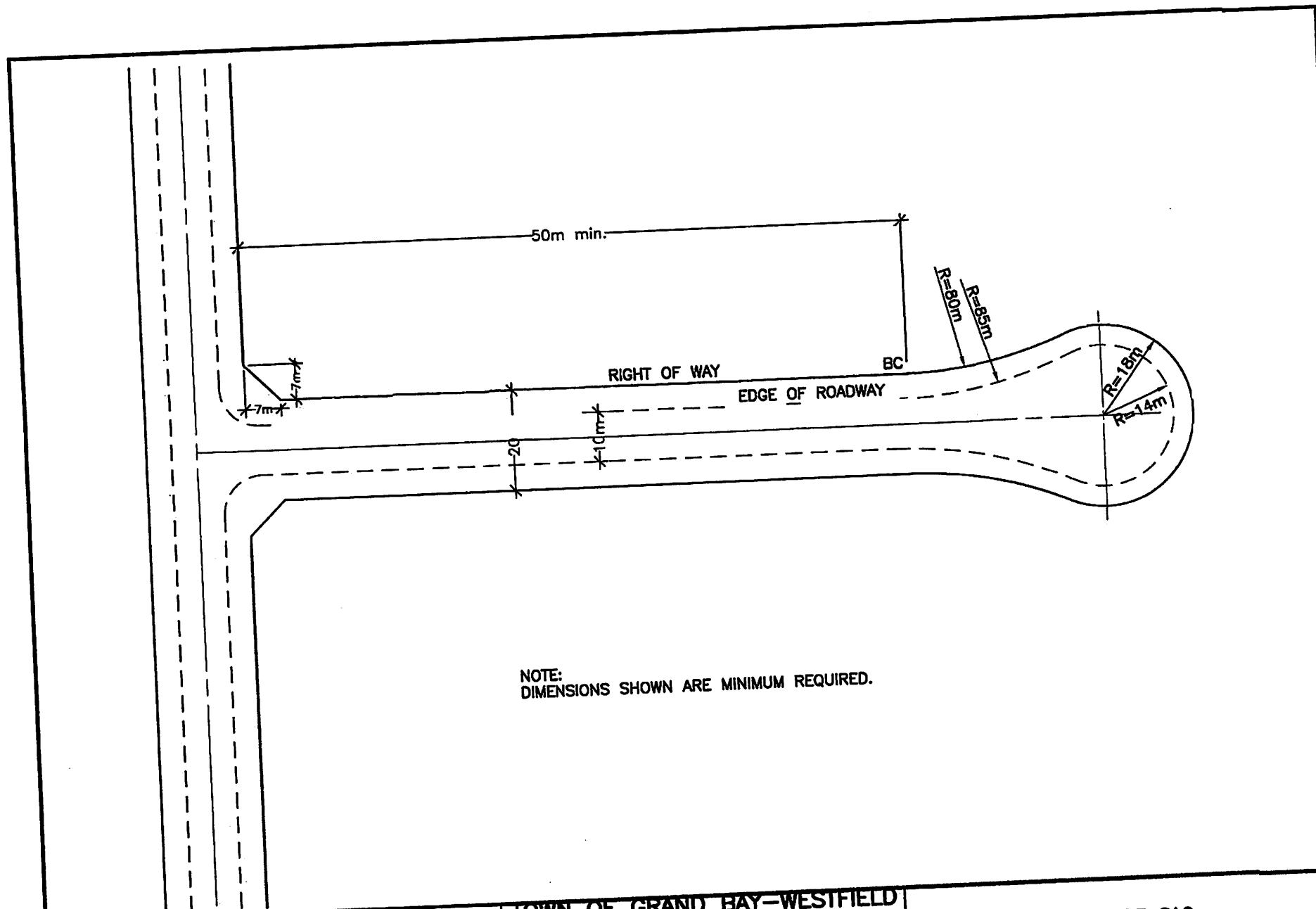
ALIGNMENT CONSTRAINTS –
INTERSECTION WITH MAJOR HIGHWAY

JUNE 2009

SCALE N.T.S.

DRAWING

1L



NOTE:
DIMENSIONS SHOWN ARE MINIMUM REQUIRED.

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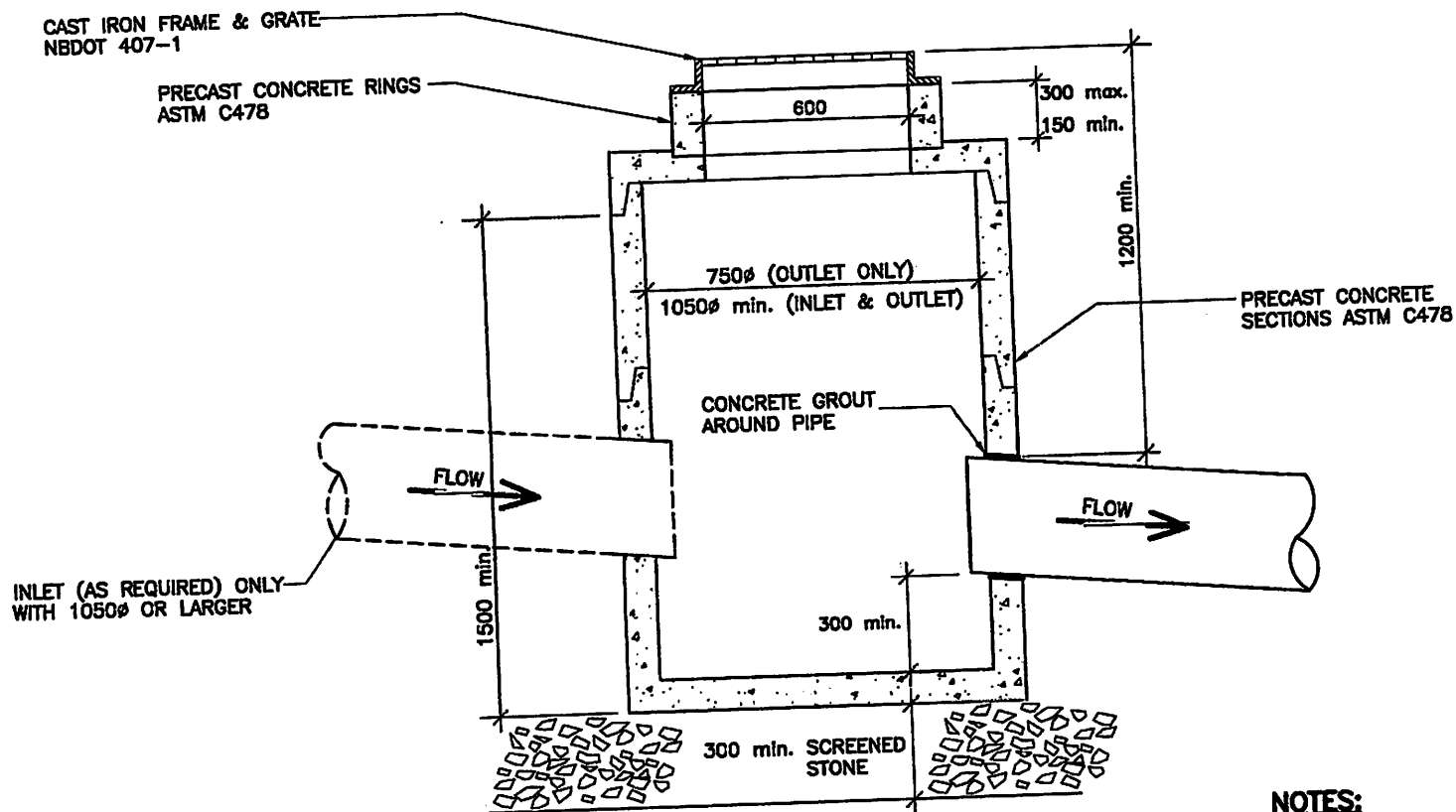
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JUNE 2009

SCALE N.T.S.

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NOTES:

1. AT LEAST ONE GRADE RING IS
REQUIRED UNDER CAST IRON
FRAME AND COVER

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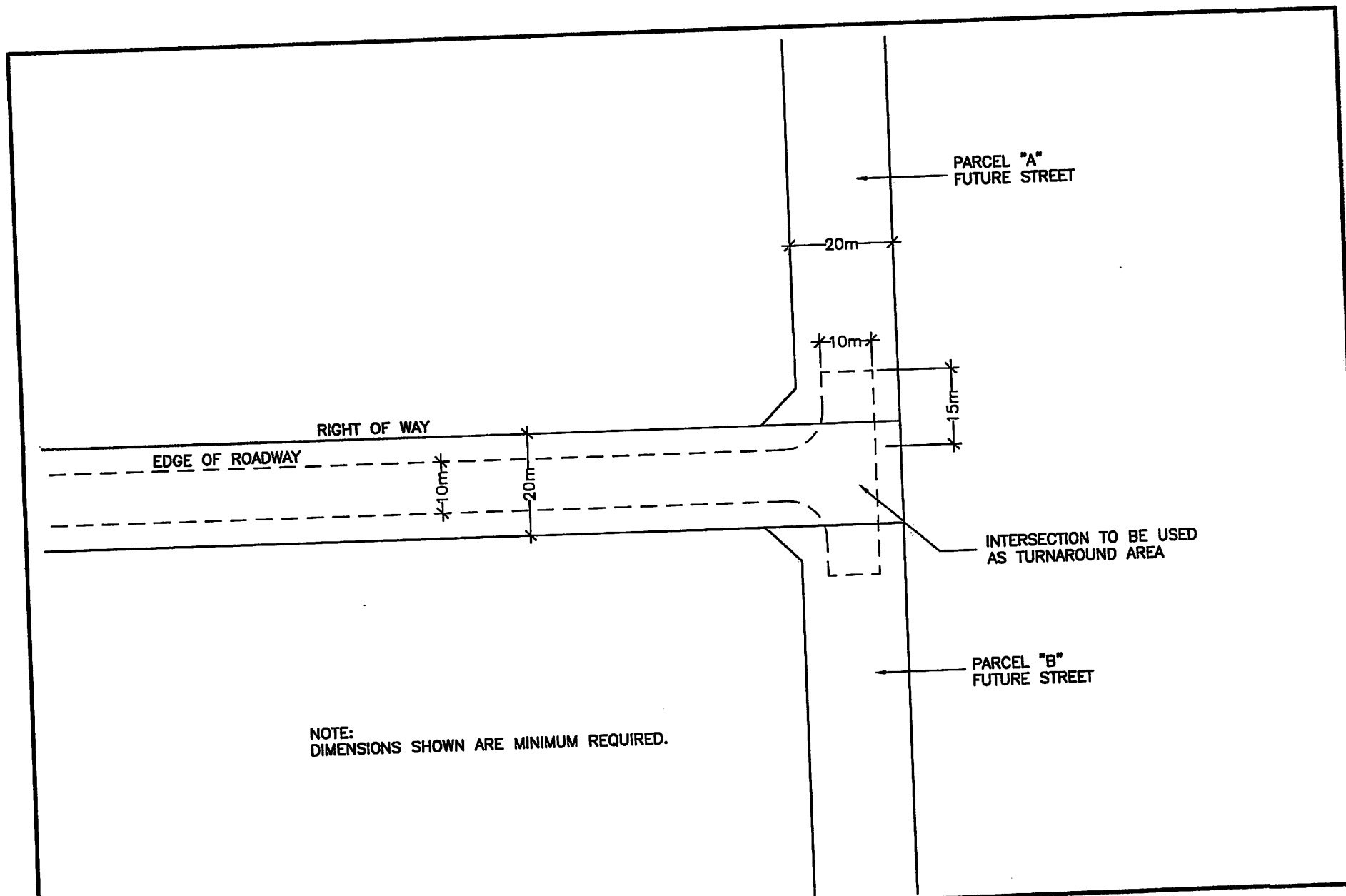
**CATCH BASIN
(PRECAST)**

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SCALE N.T.S.

DRAWING **15L**



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TEMPORARY TURNAROUND

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JUNE 2009

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DRAWING

3L

SIGHT DISTANCES

TABLE 1

<u>SPEED LIMIT</u> (km/h)	<u>MINIMUM SIGHT</u> <u>DISTANCE</u> (m)
50	65
60	85
70	110
80	140
90	170
100	200
EYE HEIGHT = 1.05m OBJECT HEIGHT = 0.38m	

TABLE 1 APPLIES TO:

ALL ACCESSES INCLUDING COMMERCIAL,
INDUSTRIAL, INSTITUTIONAL AND PROPOSED
SUBDIVISION STREET ACCESS.

TABLE 2

<u>SPEED LIMIT</u> (km/h)	<u>MINIMUM SIGHT</u> <u>DISTANCE</u> (m)
50	115
60	135
70	160
80	180
90	200
100	215
EYE HEIGHT = 1.05m OBJECT HEIGHT = 1.30m	

TABLE 2 APPLIES TO:

COMMERCIAL, INDUSTRIAL AND
INSTITUTIONAL DRIVEWAY ACCESSES ON
LOCAL OR COLLECTOR HIGHWAYS.

RESIDENTIAL DRIVEWAY ACCESS ON
ARTERIAL HIGHWAYS.

PROPOSED SUBDIVISION STREET
ACCESS ON LOCAL OR COLLECTOR
HIGHWAYS.

TABLE 3

<u>SPEED LIMIT</u> (km/h)	<u>MINIMUM SIGHT</u> <u>DISTANCE</u> (m)
50	120
60	165
70	215
80	265
90	320
100	380
EYE HEIGHT = 1.05m OBJECT HEIGHT = 1.30m	

TABLE 3 APPLIES TO:

COMMERCIAL, INDUSTRIAL AND
INSTITUTIONAL DRIVEWAY ACCESSES ON
ARTERIAL HIGHWAYS.

PROPOSED SUBDIVISION STREET ON
AN ARTERIAL HIGHWAY.

NOTE: TABLE 1 IS TO BE USED FIRST IN ALL CASES AND IF MINIMUM
SIGHT DISTANCE IS MET REFER TO TABLE 2 OR TABLE 3 IF APPLICABLE.

IN CASES WHERE THE PREVAILING SPEEDS VARY CONSIDERABLY FROM
THE POSTED SPEED LIMIT, THE HIGHER OF THE TWO MAY BE USED.

Prepared in accordance with NBDOT "Guide
to the Minimum Standards for the
Construction of Subdivision Roads & Streets"

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TOWN OF GRAND BAY-WESTFIELD

NEW BRUNSWICK

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SUBDIVISION BY-LAW No. 124

MINIMUM SIGHT DISTANCE

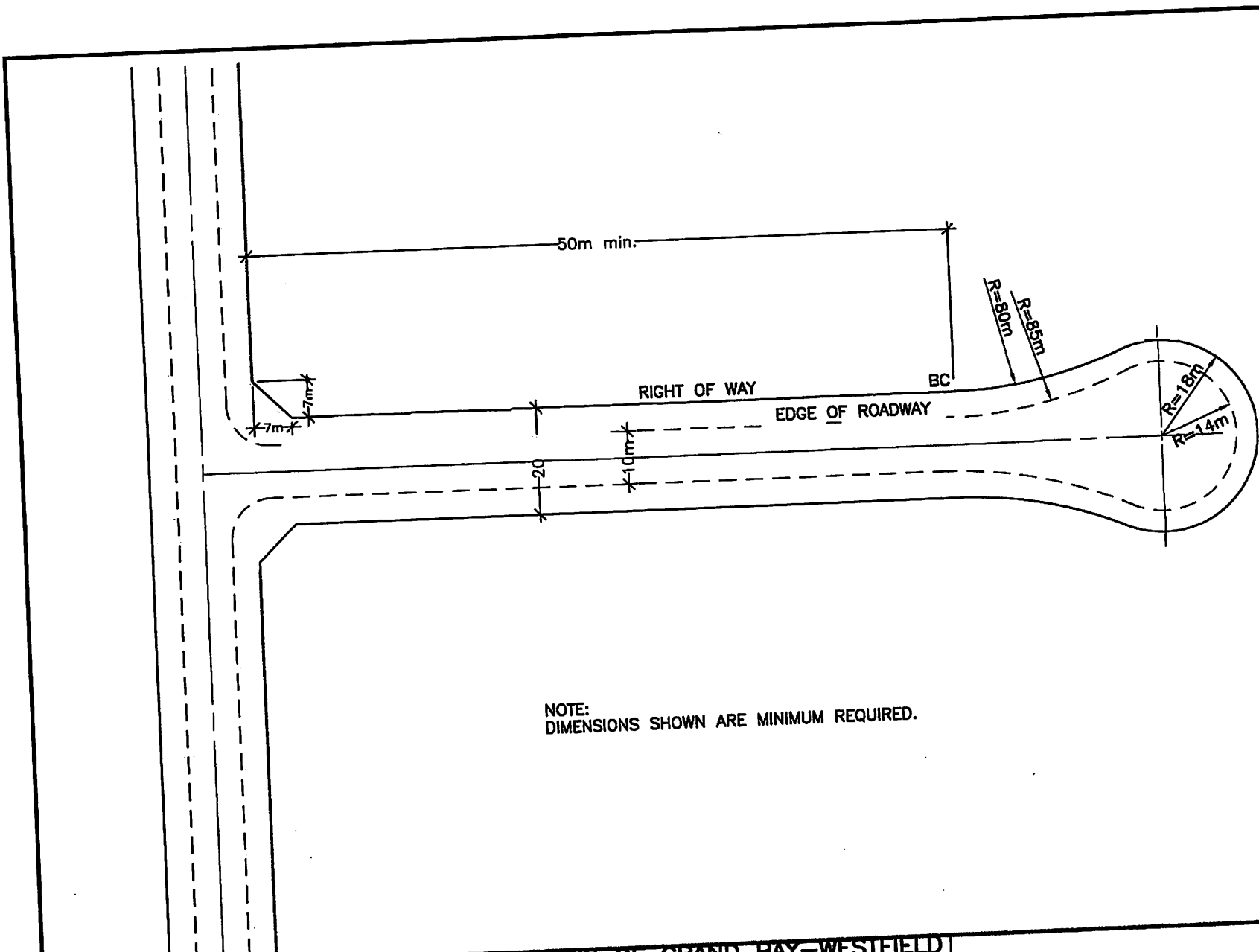
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DRAWING

4L



NOTE:
DIMENSIONS SHOWN ARE MINIMUM REQUIRED.

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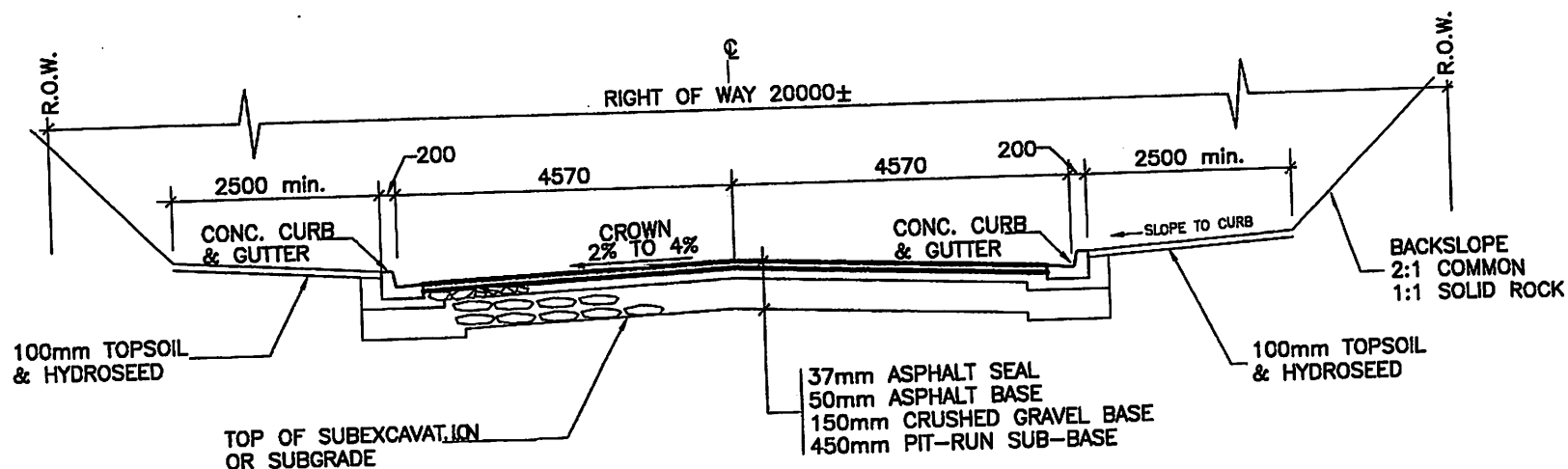
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5L



NOTES

1. LANE WIDTH TO BE INCREASED TO 5000 FOR COLLECTOR STREETS

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**TYPICAL RESIDENTIAL STREET
CONCRETE CURB & GUTTER**

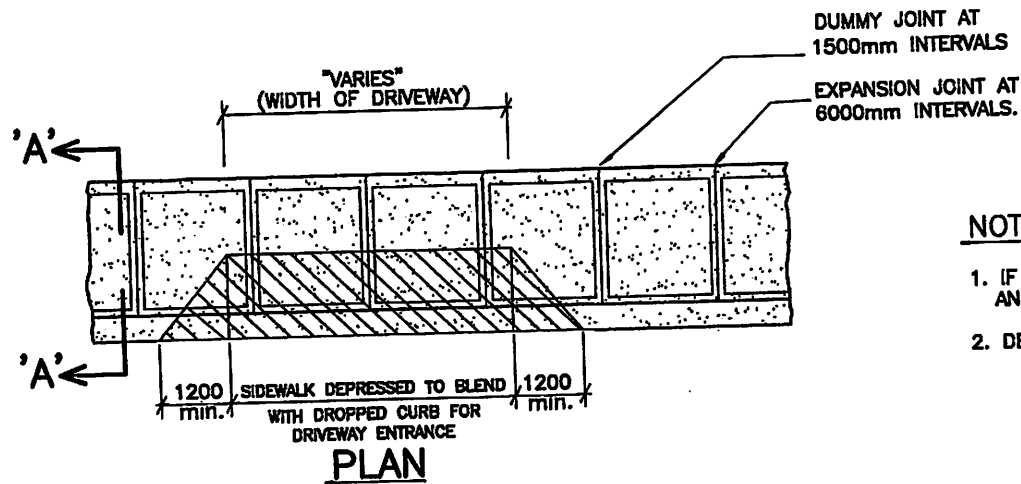
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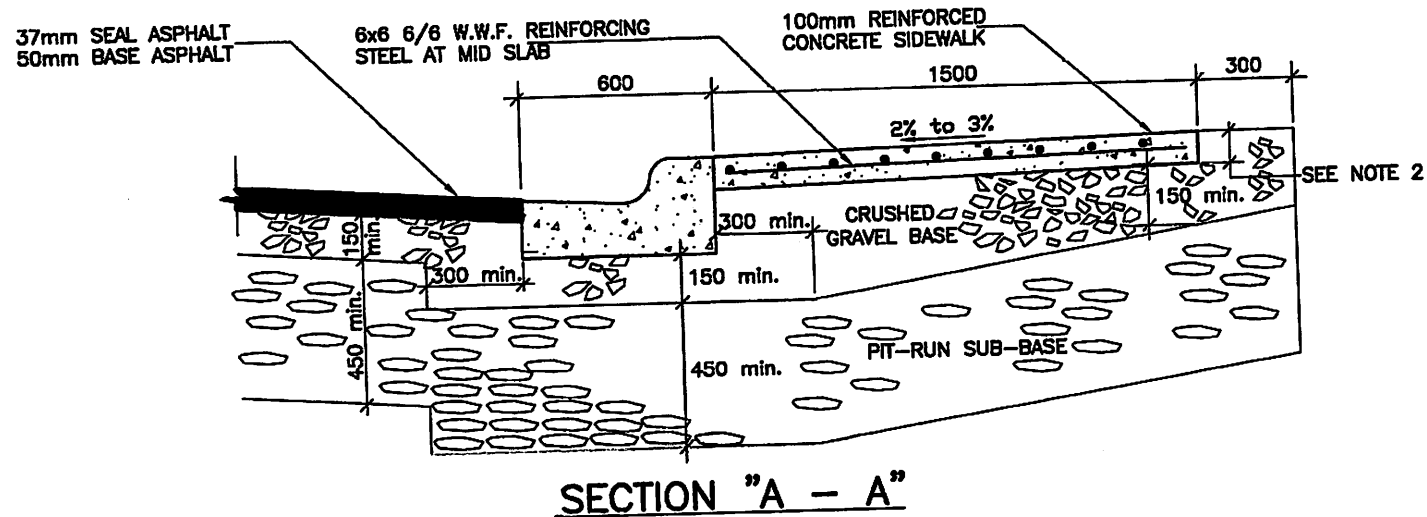
DRAWING

6L

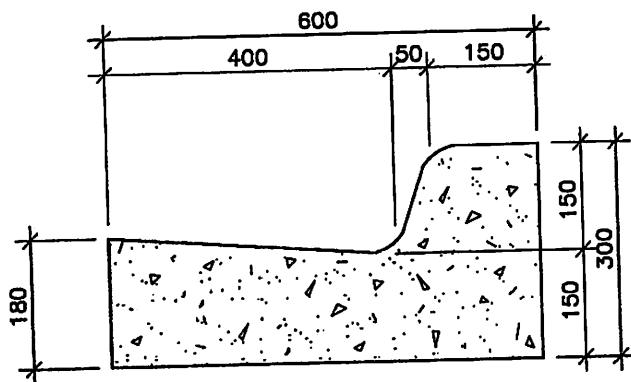


NOTES:

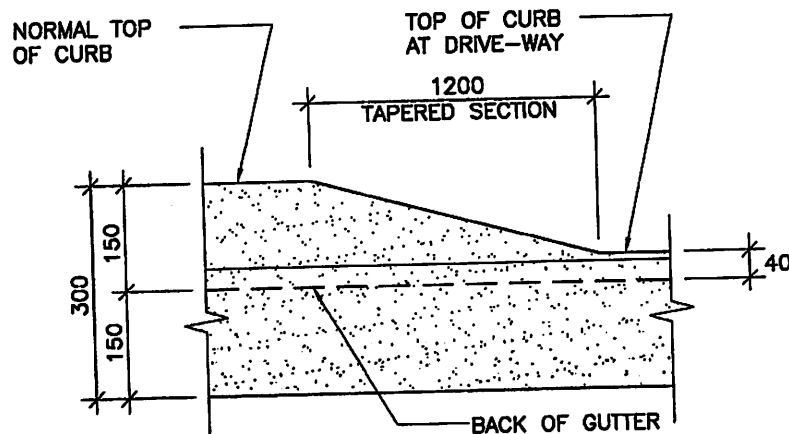
1. IF DEPRESSED LENGTH IS GREATER THAN 6000mm THEN AN ADDITIONAL EXPANSION JOINT IS REQUIRED AT THE MID-POINT.
2. DEPTH OF CONCRETE SIDEWALK
 150mm min. FOR RESIDENTIAL DRIVEWAY CROSSINGS
 200mm min. FOR COMMERCIAL & INDUSTRIAL DRIVEWAY CROSSINGS



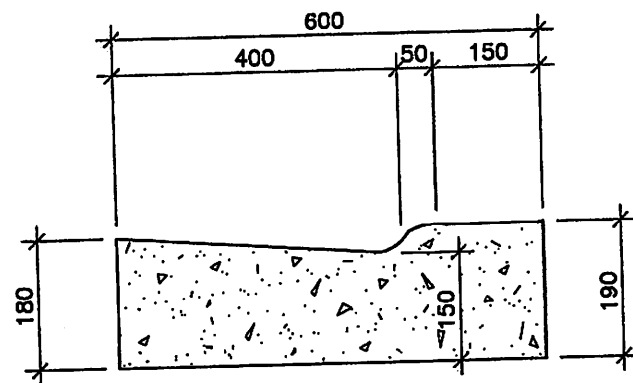
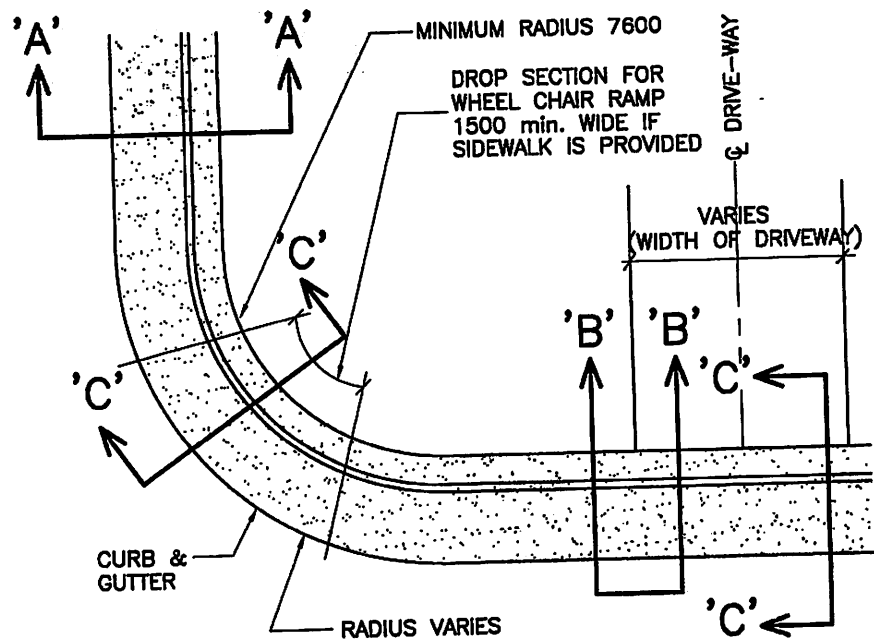
REVISIONS PREPARED BY GODFREY ASSOCIATES LTD.	 Grand Bay-Westfield HIGHWAYS BY NATURE	TOWN OF GRAND BAY-WESTFIELD NEW BRUNSWICK SCHEDULE A SUBDIVISION BY-LAW No. 124	CONCRETE CURB & GUTTER AND REINFORCED CONCRETE SIDEWALK		
			JUNE 2009	SCALE N.T.S.	DRAWING 7L



SECTION "A-A"



SECTION "B-B"



SECTION "C-C"

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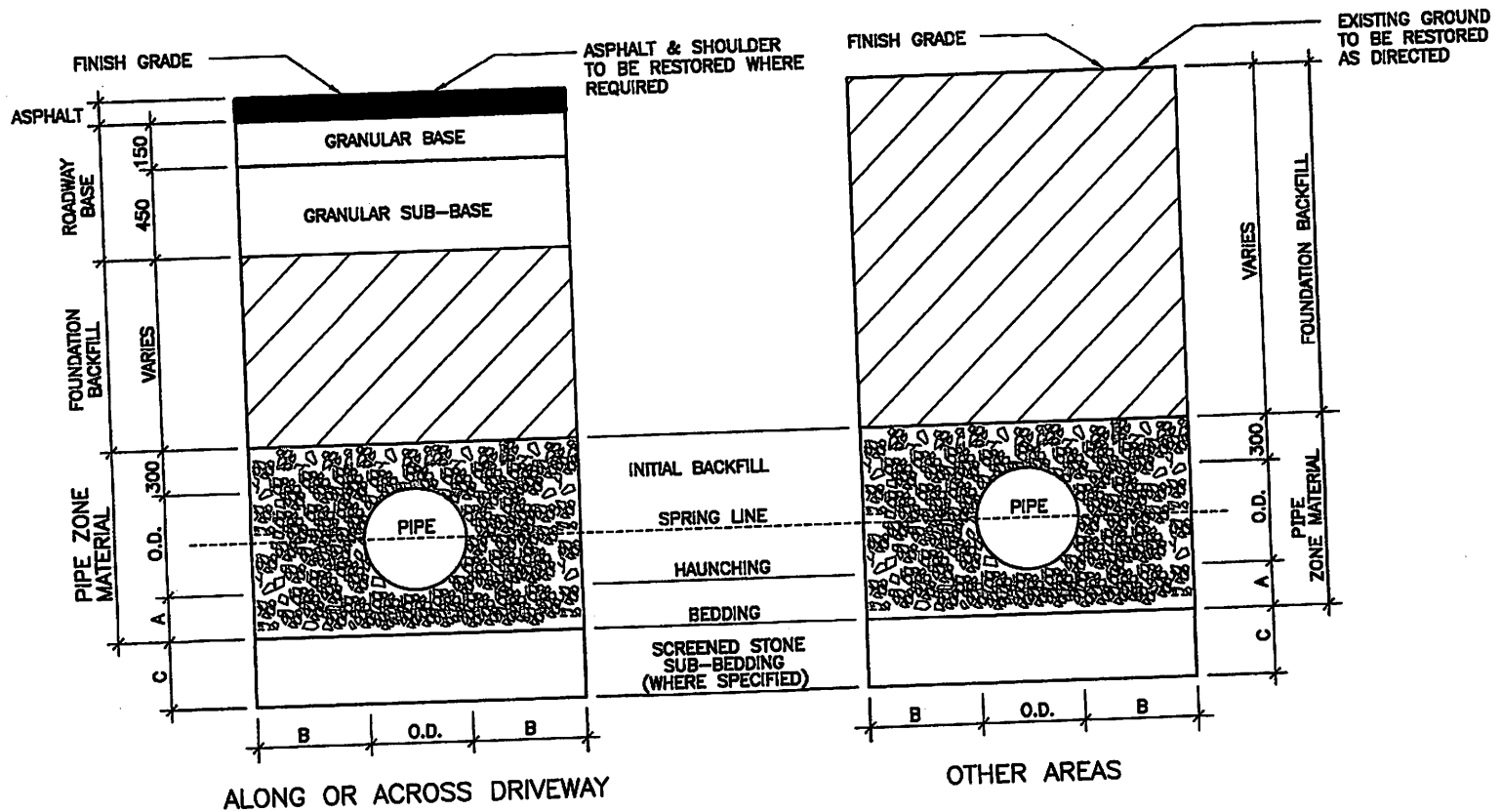
CONCRETE CURB AND GUTTER

JUNE 2009

SCALE N.T.S.

DRAWING

8L



NOTES:

1. ACTUAL ELEVATION OF ALL PIPES TO BE SHOWN ON PROFILES
2. ACTUAL CONSTRUCTION WIDTHS SHALL BE IN ACCORDANCE WITH N.B. INDUSTRIAL SAFETY ACT.

**TYPICAL TRENCH
SINGLE PIPE**

N.T.S.

PIPE SIZE O.D.	DIMENSIONS		
	A	B	C
UP TO 800	150	300	150
801 TO 1200	200	400	150
OVER 1200	300	600	150

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SCHEDULE A
SUBDIVISION BY-LAW No. 124

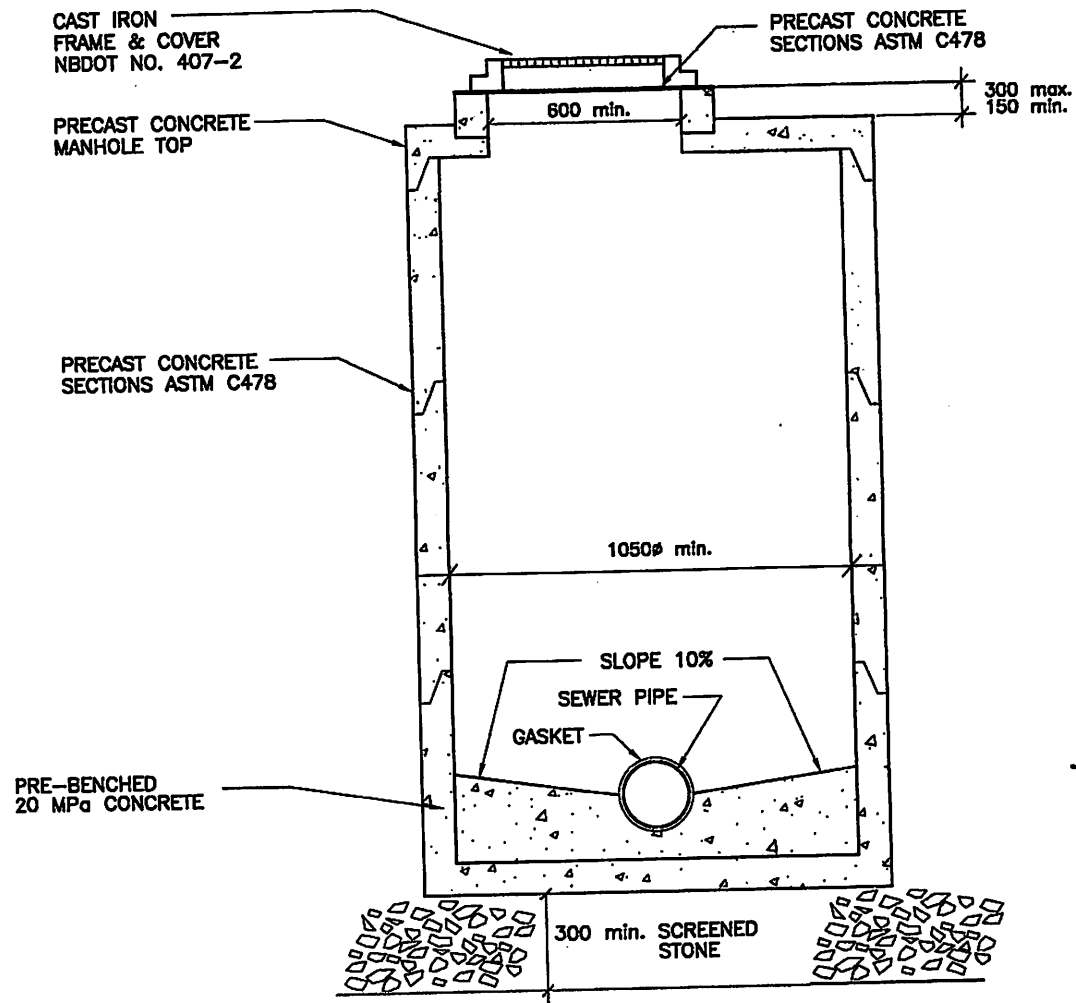
TYPICAL TRENCH

PREPARED BY GODFREY ASSOCIATES LTD.

JUNE 2009

SCALE N.T.S.

DRAWING 9L



NOTES:

1. AT LEAST ONE GRADE RING IS REQUIRED UNDER CAST IRON FRAME AND COVER
2. ALL JOINTS TO BE WATERTIGHT

REVISIONS

PREPARED BY GODFREY ASSOCIATES LTD.



TOWN OF GRAND BAY-WESTFIELD

NEW BRUNSWICK

SCHEDULE A

SUBDIVISION BY-LAW No. 124

**SANITARY MANHOLE
(PRECAST)**

JUNE 2009

SCALE N.T.S.

DRAWING

10L

CAST IRON FRAME
& COVER
NBDOT NO. 407-2

PRECAST CONCRETE
MANHOLE TOP

PRECAST CONCRETE
SECTIONS ASTM C478

PRECAST CONCRETE
SECTIONS ASTM C478

600 min.

300 max.
150 min.

1050Ø min. (SEE NOTE 3)

SLOPE 10%

SEWER PIPE

GASKET

TEE

INLET PIPE

90° BEND

SCREENED STONE

300 min. SCREENED
STONE

PRE-BENCHED
35 MPa CONCRETE

NOTES:

1. AT LEAST ONE GRADE RING IS
REQUIRED UNDER CAST IRON
FRAME AND COVER.
2. ALL JOINTS TO BE WATERTIGHT
3. INTERNAL DROPS REQUIRE APPROVAL
AND MINIMUM 1200Ø MANHOLE

REVISIONS

PREPARED BY GODFREY ASSOCIATES LTD.



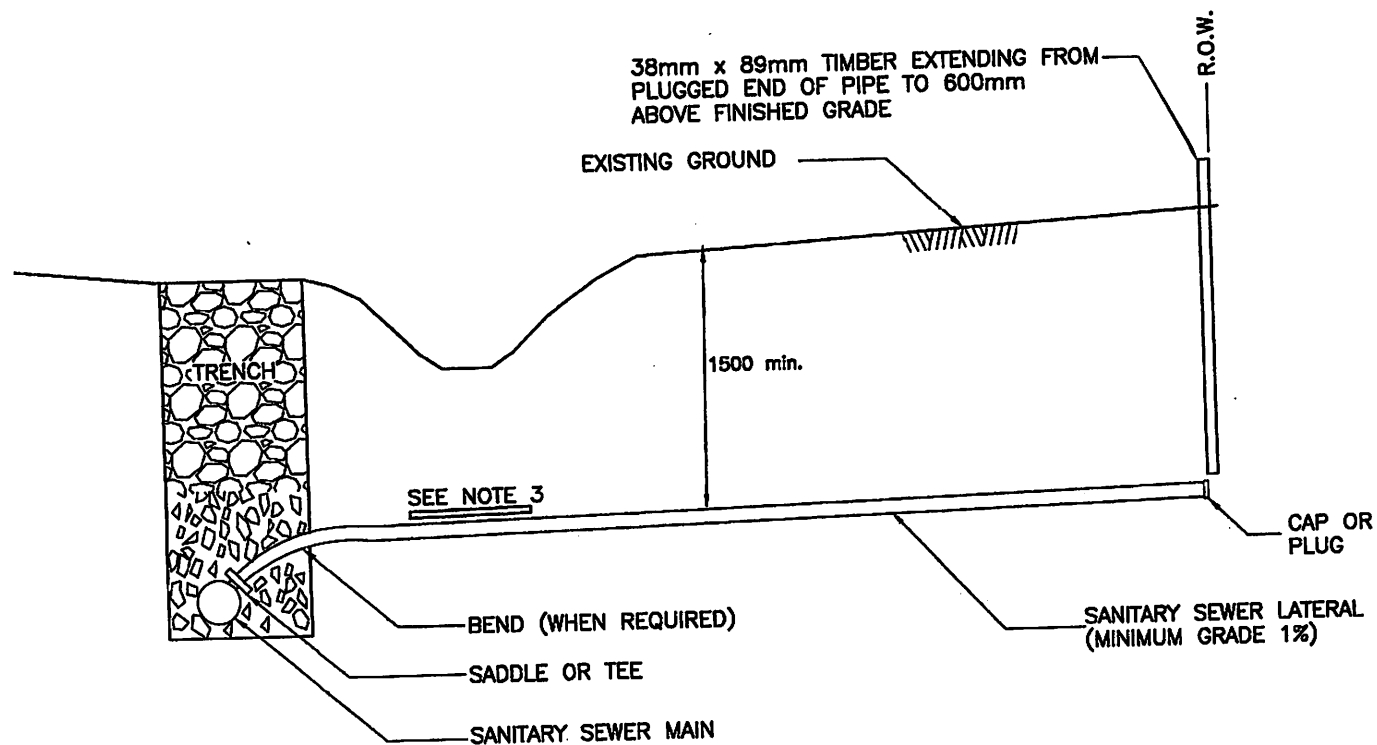
TOWN OF GRAND BAY-WESTFIELD
NEW BRUNSWICK
SCHEDULE A
SUBDIVISION BY-LAW No. 124

SANITARY DROP MANHOLE

JUNE 2009

SCALE N.T.S.

DRAWING 11L



NOTES:

1. SEWER SERVICE TO BE 100Ø MINIMUM FOR RESIDENTIAL, 150mm FOR COMMERCIAL/ INDUSTRIAL
2. DEPTH OF COVER OVER THE SERVICE PIPE TO BE ADEQUATE TO PREVENT FROST FROM REACHING THE PIPE
3. INSULATE BELOW DITCHES WHERE DEPTH IS LESS THAN 1500mm.

REVISIONS

PREPARED BY GODFREY ASSOCIATES LTD.



TOWN OF GRAND BAY-WESTFIELD
NEW BRUNSWICK
SCHEDULE A
SUBDIVISION BY-LAW No. 124

**SANITARY SEWER
SERVICE CONNECTION**

JUNE 2009

SCALE N.T.S.

DRAWING 12L

CAST IRON FRAME
& COVER
NBDOT NO 407-2

PRECAST CONCRETE
MANHOLE TOP

PRECAST CONCRETE
SECTIONS ASTM C478

PRECAST CONCRETE
SECTIONS ASTM C478

600 min.

300 max.
150 min.

1050Ø min.

CONCRETE GROUT
AROUND PIPE
OR GASKET

FLOW

300 min. SCREENED
STONE

NOTES:

1. AT LEAST ONE GRADE RING IS
REQUIRED UNDER CAST IRON
FRAME AND COVER

REVISIONS

PREPARED BY GODFREY ASSOCIATES LTD.



TOWN OF GRAND BAY-WESTFIELD
NEW BRUNSWICK

SCHEDULE A
SUBDIVISION BY-LAW No. 124

STORM MANHOLE
(PRECAST)

JUNE 2009

SCALE N.T.S.

DRAWING 13L



1. 4-10M BARS AROUND ALL CIRCULAR OPENINGS, EACH FACE(WALLS & ROOF).
2. ALL BARS TO BE LAPPED 300mm.

REVISIONS		TOWN OF GRAND BAY—WESTFIELD NEW BRUNSWICK SCHEDULE A	STORM MANHOLE (CAST IN PLACE)		
PREPARED BY GODFREY ASSOCIATES LTD.		SUBDIVISION BY—LAW No. 124	JUNE 2009	SCALE N.T.S.	DRAWING 14L

By-law No. 124: Subdivision By-law Schedule B

The following schedule describes the fees associated with subdivision in the Town of Grand Bay-Westfield

1 DEFINITIONS

In this schedule:

“Tier 1 Subdivision” means a subdivision of land not creating or extending a street.

“Tier 2 Subdivision” means a subdivision of land which creates or extends a street.

2 FEES

2.1 Type 1 Subdivision

Fees for a Type 1 subdivision are \$200 plus \$25 for each lot in the subdivision

2.2 Type 2 Subdivision

Fees for a type 2 subdivision are \$500 plus \$50 for each lot in the subdivision