TOWN OF HAMPTON

STANDARD SPECIFICATIONS

(FOR THE CONSTRUCTION OF STREETS, SANITARY SEWERS
AND STORM RUNOFF CONTROL SYSTEMS)

REVISED
2015

DIVISION ONE

GENERAL INFORMATION

Contents

GENERAL INFORMATION

1. Introduction

The Town of Hampton supports the need for sustainable municipal infrastructure and will require developers to incorporate innovation and best practices in the development of residential and commercial /industrial lands within the Town boundaries.

Many of these best practices have been included in the Standard Specifications but each new project will be reviewed by the Town, their Engineer, local Utilities and Committees of Council (Public Works, Leisure Services, Utilities Commission, Environment, etc.) 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.

Wherever possible, the subdivision should be designed to maximize tree and vegetative cover to increase capture of rain above ground and to increase evaporation; absorb rainfall back into the ground where it is filtered and returned slowly to the receiving waters by interflow in the soils; and store stormwater in shaded detention storage areas for later release, if required.

2. Definitions

Approved or Approval: means approval by the Town or their designate unless otherwise stated. The Engineer's decision will be final and binding.

Developer: means the owner of land proposed for development, or their designated representative.

Engineer: means the Town's Engineer or any Engineer who has been designated by the Town of Hampton to act on his/her behalf.

NBDELG: means the New Brunswick Department of Environment and Local Government.

NBDTI: means the New Brunswick Department of Transportation and Infrastructure.

The Town: means the Town of Hampton and includes the Town's personal representatives or successors.

3. 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 street lighting.
3. Construction.
4. All testing and certification.
5. Provision of "Record" 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.

The Town will participate in cost sharing of the subdivision only by prior written agreement.

4. 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	
2.	CANADIAN STANDARDS ASSOCIATION	C.S.A.
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.

5. By-Laws

The following Municipal By-Laws contain information pertinent to the development and subdivision of land in the Town:

Municipal Plan By-Law
Zoning By-Law
Subdivision By-Law
Highway By-Law
Sewage By-Law

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.

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 must receive such variances to permit the project to proceed.

6. Conflicts

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

7. Engineer

Engineer shall mean the Engineer employed by the Town of Hampton 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.

8. Inspection of the Work

The Town and the Town's Engineer and/or 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.

Examination of any questioned work may be ordered. If such work is found in accordance with the Agreement, the Town shall pay the cost of examination and replacement. If such work is found not in accordance with the Agreement, the Developer shall pay the cost of examination, repair and replacement.

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

The duties of the Developer's Engineer are to watch over and inspect the Work and to supervise the testing and examine all materials to be used or workmanship employed in connection with the Work. He shall have no authority to relieve the Developer of any of his 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 Works.

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

9. Approval Procedure

To initiate the approval process for a development proposal, the applicant must submit an application as shown in the Appendix, together with a tentative plan and the required application fee. The Tentative plan shall be at a scale of 1:1000 or larger.

The Tentative plan shall be marked “Tentative Plan” and shall contain the following information unless specifically exempted by the Development Officer:

1. Key Plan showing the location of the proposed subdivision relative to known landmarks
2. Plan scale
3. Geodetic datum and benchmark
4. Proposed subdivision name
5. Boundaries of the portion of the project for which approval is being sought
6. Location, width and name of proposed and abutting streets. Cul-de-sacs may include an island for trees and other plantings as a means of water retention and groundwater recharge, as well as for aesthetics.
7. Dimensions and layout of proposed blocks, lots, easements, land for public purposes and other parcels of land if applicable.
8. Existing natural and artificial features such as watercourses, ditches, swales, swamps, roads, tree lines, railways and buildings adjacent to and within the proposed subdivision
9. Contours and elevations necessary to determine the grade of the streets and drainage of the land
10. Location of adjacent Municipal services
11. Proposed landscaping and tree planting
12. Proposed location of all buildings
13. Any other information deemed necessary by the Development Officer to facilitate a comprehensive review of the proposed development
14. Land for public purposes, walkways and trails.

In addition to the information contained on the “Tentative Plan” the Developer shall, unless specifically exempted, provide the following documents at the time the “Tentative Plan” is submitted:

1. Water Supply Assessment Report prepared by a Registered Hydrogeologist in a format outlined in the Royal District Planning Commission Water Supply Assessment Guidelines.
2. Soils Report prepared by a Registered Engineer identifying the nature and porosity of the soil.
3. 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.

For the Developer's convenience a check list for tentative plan requirements is included with this specification.

The application shall be addressed to the Town, Attention: Development Officer. The Development Officer will assess the application and, if acceptable, route to municipal departments.

The applicant is encouraged to discuss the basic concept of his development proposal with the Development Officer prior to preparation of his tentative plan for small developments. Should approval be considered doubtful or uncertain by the Development Officer, he may suggest that the applicant apply for approval in principle based on general concept prior to submission of tentative plans.

Upon notification of an approved tentative plan, the applicant shall proceed with the preparation of a final subdivision plan. The final subdivision plan shall be prepared by a Licensed Legal Land Surveyor and shall contain all information included on the Tentative plan plus any additional information required as a result of the review process. A Final Subdivision Plan may be all or a portion of the tentative plan.

An application for approval of a subdivision plan must be submitted to the Town, Attention: Development Officer, together with a properly prepared final subdivision plan, engineering drawings of streets and services and such other documents required as a result of the review process.

A final subdivision plan must be submitted within six (6) months of the date of tentative approval, otherwise tentative approval is considered null and void.

Upon approval of a tentative subdivision plan the Town Clerk shall draft a Developer's Agreement for execution by the Town Clerk and the Developer after which the final subdivision plan will be approved.

Following the Developer's compliance with all subdivision approval procedures, including any additional conditions stipulated during the approval process, and the execution of the developer's agreement complete with the required performance guarantees the Development Officer will affix his seal to the plan for registration in the registry office.

If new streets are involved the Council shall pass a resolution approving the street layout and names prior to the Development Officer affixing his seal. Once such resolution is passed both the Development Officer and Town Clerk shall sign the plan for registration in the registry office.

Upon the filing of a subdivision plan in the local registry office, the Developer may sell building lots. However, building permits will not be issued for individual lots until the services have been properly installed and the street on which the lots front is constructed to sub-base (aggregate sub-base in place) for the lot in question.

The Developer may proceed to lay out the subdivision upon approval of a tentative plan. However, should the Developer proceed with actual construction prior to final subdivision plan approval, he shall uncover the Work, have the inspections satisfactorily completed at his own expense.

10. Easements

All easements for underground and above ground 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/swale.

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 his operations.

Before the Developer starts work he shall be responsible for locating all underground structures and contacting the Town and all utilities. Should any damage occur to property or utilities he shall make good such damage at his 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 written permission from the Council or designate and make all necessary arrangements.

In addition, any work affecting a provincially designated highway shall be approved in writing by the NBDTI prior to commencement.

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 his work to the period of 7 AM to 8 PM Monday to Saturday and shall not permit blasting to occur outside the period of 9 AM to 4 PM Monday to Saturday.

13. Schedule of Work

No work is permitted on existing municipal streets between November 1st and the lifting of Spring Weight Restrictions.

DIVISION TWO

STREET SYSTEM

Contents

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 development.

2. Reference Specifications

Construction of subdivision streets and upgrading of existing streets, if required, shall be in accordance with these specifications and any additional requirements stipulated by the Town at the time of approval of the development.

3. Approvals

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

a) New Brunswick Department of Environment and Local Government
b) N.B. Power
c) Bell Aliant
d) New Brunswick Department of Transportation and Infrastructure (NBDTI) - If the development impacts a provincial designated highway.
e) Canadian National Railroad - If the development impacts a railroad right-of-way.

4. Scope of Work

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

a) Construction of the street to lines and grades approved by the Town including; clearing, grubbing, excavation of insitu materials, construction of embankments, supplying and placing granular borrow, aggregate sub-base, and aggregate base and hot-mix asphalt concrete.
b) Construction of shoulders and ditches/swales.
c) Roadway culverts complete with end treatment
d) Driveway culverts.
e) Landscape the street right of way including placing topsoil and sod or hydroseed in ditches and swales or between the shoulder of the street and the edge of the right of way.
f) Street Lighting
g) Construction of concrete curb and gutter and/ or reinforced concrete sidewalk if requested by the Developer and or required by the Town.

5. Cul-de-Sacs

Residential Cul-de-Sacs

A dead end street shall be constructed as a cul-de-sac to a maximum length of 180 metres and the right of way at the cul-de-sac circle shall be 35 meter diameter. The paved turning circle shall be a minimum of 22 metres in diameter. Where provisions are made for future street extension in the subdivision, a temporary turn-around shall be constructed to the cul-de-sac dimensions. In general a crescent street layout is preferable over cul-de-sacs.

Commercial/Industrial

A dead end street shall be constructed as a cul-de-sac to a maximum length of 180 metres and the right of way at the cul-de-sac circle shall be 45 metre diameter. The paved turning circle shall be a minimum of 30 metres in diameter. "Where provision is made for future street extension in the subdivision, a temporary tum-around shall be constructed to the cul-de-sac dimensions. In general a crescent street layout is preferable over cul-de-sacs.

6. Standards

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

Residential

a) All street right-of-ways shall have a minimum width of 20 metres.
b) Streets shall be constructed with a paved width as noted on the typical street sections (1L, 9L, 10L, 11L, 12L, 13L).
c) Street grades shall not exceed 8%.
d) All intersections between streets shall be at right angles.
e) All ditches/ swales to be topsoiled and sodded or hydroseeded.

Commercial/Industrial

The minimum design standard for developers of commercial/industrial properties shall be the TAC standards for a TST design vehicle. If larger vehicles are to use the subdivision streets on a regular basis, a higher standard will be required.

a) All street right-of-ways shall have a minimum width of 20 metres.
b) Streets shall be constructed with a paved width as noted on the typical street sections (2L).
c) Street grades shall not exceed 8%.
d) All intersections between streets shall be at right angles.
e) All ditches/ swales to be topsoiled and sodded or hydroseeded.

7. **Record Drawings**

Upon completion of the street system, the Developer shall provide the Town with one digital copy and two copies of "RECORD" drawings. The "RECORD" drawings shall show the actual geodetic elevations, dimensions, grades and location of each street, right-of-way locations · and all other features such as roadway culverts, etc.

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 for Highway Construction. 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 the road bed to subgrade, aggregate sub-base, aggregate base, hot-mix asphalt concrete, 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 have the properties as specified by the NBDTI Standard Specifications, Item No. 602 Sediment Control Fence.

2.2 Erosion Control Structures

Shall have the properties as specified by the NBDTI Standard Specifications, Item No. 605 Erosion Control Structure.

2.3 Borrow Fill

This item refers to the supply of material from outside the work site required to complete the construction of the street to the top of subgrade.

Borrow shall have the properties as specified in the NBDTI Standard Specifications, Item No. 121 Borrow.

2.4 Aggregate Base

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

ASTM Sieve Size	Percent Passing	Percent Passing
	Gravel	Rock
37.5 mm	99	100
31.5 mm	95-100	95-100
25 mm	83-100	81-100
19 mm	70-90	66-90
12.5 mm	55-78	50-77
9.5 mm	45-72	41-70
4.75 mm	30-57	27-54
2.36 mm	20-46	17-43
1.18 mm	14-35	11-32
300 um	5-19	4-19
75 um	0-6	0-8

The material used for Aggregate Base shall have the properties as defined in the NBDTI Standard Specification, Item 201 Production of Highway Aggregates.

2.5 Aggregate Sub-base

Shall be pit run gravel in its natural, screened and/or crushed condition or crushed rock with the following gradation limits:

ASTM Sieve Size	Percent Passing	Percent Passing
	Gravel	Rock
100 mm	100	
90 mm	95-100	100
75 mm	80-100	95-100
63 mm		85-100
50 mm	60-87	73-95
37.5 mm	50-81	58-87
19 mm	34-68	35-69
9.5 mm	25-58	25-54
4.75 mm	17-48	17-43
2.36 mm	13-39	12-35
1.18 mm	9-30	8-28
300 um	4-17	4-16
75 um	0-7	0-9

The material used for Aggregate Sub-base shall have the properties as defined in the NBDTI Standard Specification, Item 201 Production of Highway Aggregates.

2.6 Screened Stone

This item is for the supply of screened stone from gravel or rock sources meeting the grading limits noted below.

ASTM Sieve Size	Percentage Passing
37.5	100
25	35 - 100
12.5	20- 60
4.75	0

This material is used as bedding and backfill for storm and sanitary sewer installations. The Micro-Deval (MTO LS-618) for this material shall material shall be less than 30% and the Freeze Thaw (MTO LS-614) shall be less than 20%.

2.7 Asphalt Concrete

Shall meet the properties as specified in the NBDTI Standard Specifications, Item No. 261 – Asphalt Concrete (end result specification). The Design Mix Formula shall be submitted to the Engineer prior to the pavement being placed. All Quality Control Test results shall be provided to the Town upon completion of the work.

2.8 Culvert Pipe Bedding Material

a) **Bedding Material For Concrete Pipe**
This shall be a granular material conforming to the properties for Screened Stone as outlined in Division 2 Section 2.6 Screen Stone or Aggregate Sub-base as defined in Division 2 section 2.5.

b) **Bedding Material for Ribbed Polyvinyl Chloride Pipe**
This shall be a granular material conforming to the properties limits for Screened Stone as outlined in Division 2 Section 2.6 Screen Stone or Aggregate Sub-base as defined in Division 2 section 2.5.

c) **Bedding Material for HDPE Pipe**
This shall be a granular material conforming to the properties limits for Screened Stone as outlined in Division 2 Section 2.6 Screen Stone or Aggregate Sub-base as defined in Division 2 section 2.5.

2.9 Random Riprap

The material used for Random Rip Rap shall have the properties as defined in the NBDTI Standard Specification, Item 608 Random Riprap. Typically R5 random riprap shall be used for culvert end treatments and R25 random riprap shall be used for slope protection unless otherwise determined by the Developer's Engineer.

2.10 Culvert Pipe

Shall be either reinforced concrete, HDPE or ribbed polyvinyl chloride pipe 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 with geotextile fabric meeting the requirements of Division 2 section 2.11.

b) **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. Joints shall be non-gasketed and shall be wrapped with geotextile fabric meeting the requirements of Division 2 section 2.11.

c) **HDPE Pipe and Fittings**
Shall be a straight rib design perpendicular to the axis of the pipe. Pipe

shall be certified CAN/CSA B182.8 Joints shall be non-gasketed and shall be wrapped with geotextile fabric meeting the requirements of Division 2 section 2.11.

The town reserves the right to approve (specify) the type of pipe that is to be installed in a subdivision to ensure continuity with the surrounding infrastructure.

2.11 Pipe Joint Wrap

Shall meet the properties as specified in the NBDTI Standard Specifications, Item No. 601 – Geotextile.

2.12 Grassed Areas

a) **Sod**
Shall be #1 Canada Nursery Sod cut at the source with approved and appropriate equipment to ensure an even thickness of 25 mm to 38 mm. The cut edge shall be clean and vertical. Sod shall contain sufficient moisture to maintain its vitality during transportation and placement, and if left overnight shall be stacked to prevent drying. When sod is installed in ditches/ swales, the ditch/ swale beneath the sod shall be excavated so that the elevation of the finished sodded ditch/ swale is lower than the culverts and duly pinned.

b) **Hydroseed Mixture**
Shall meet the properties as specified in the NBDTI Standard Specification, – Item 614 Hydroseeding.

c) **Topsoil**
Shall meet the properties as specified in the NBDTI Standard Specification, Item 613 Topsoil.

2.13 Street Lights

In areas with overhead front lot servicing, the Town will supply street lighting on existing power poles. In areas with underground power and/or an absence of poles it will be the Developer's responsibility to provide street lighting to the satisfaction of the Town. The Developer shall submit for approval the proposed light hardware/configuration to the Town prior to the commencement of the work.

2.14 Concrete Curb and Gutter and Reinforced Concrete Sidewalk

Shall meet the properties as specified in the NBDTI Standard Specification, Item 416 Curb and Gutter, Item 419 Concrete Sidewalk.

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.

3.2. Clearing and Grubbing

Shall be carried out as specified in the NBDTI Standard Specification, Item 101 Clearing, Item 102 Grubbing.

Wherever possible, existing trees and other vegetation should be retained.

Disposal areas shall be located such as to not conflict with the construction of future driveway accesses or structures.

Upon completion of clearing and grubbing activities the Developer's Engineer shall provide a letter to the *Town* certifying that clearing and grubbing activities have been completed in accordance with the requirements of the Standard Specification.

3.3. Roadway Excavation

Shall be carried out as specified in the NBDTI Standard Specification, Item 106 Common Excavation, Item 107 Unclassified Excavation, Item 108 Solid Rock Excavation Grubbing.

All approved material shall be used in the formation of embankments. All material considered surplus or unsatisfactory shall be disposed of in an approved manner. Disposal areas shall be left with a neat and finished appearance. When practical, surplus and/or unsatisfactory material shall be utilized for grading slopes or other grading outside the street right of way, as directed by the Developer's Engineer within the project.

If, during the excavation, material is encountered that is suitable for use as described under any item of this agreement, the Developer will salvage and stockpile this material and use it as directed the Developer's Engineer.

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

Suitable excavated material or approved imported borrow shall be placed and compacted as per the NBDTI Standard Specification, Item 936 Compaction.

In un-grubbed areas such as swamps and rough terrain, the initial layer shall be placed as directed by the Developer's Engineer.

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.

Rock blasting shall be carried out under the supervision of qualified persons employed by the Developer.

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 radius of 100 meters 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 acceptable to the *Town*. A copy of the Insurance Certificate is to be filed with the *Town* prior to blasting.

Width and depth of roadway excavation will be sufficient to provide a final street cross section as per the approved plans and specifications. Embankment fills shall be shaped during construction so as to provide adequate drainage at all times.

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

Upon completion of the subgrade construction the Developers Engineering Consultant shall provide a letter to the *Town* certifying that subgrade has been completed in accordance with the requirements of the Standard Specification.

3.4. Aggregate Sub-Base

Upon completion of the roadway subgrade as per paragraph 3.3 a layer of aggregate sub-base having a minimum thickness of 450 mm shall be placed over the road bed. This work shall be carried out in accordance with NBDTI Standard Specification, Item 203 Aggregate Base/Sub-base.

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

Upon completion of placement of aggregate sub-base the Developers Engineering Consultant shall provide a letter to the *Town* certifying that aggregate sub-base has been completed in accordance with the requirements of the Standard Specification.

3.5. Aggregate Base

Upon completion of the aggregate sub-base as per paragraph 3.4 a layer of aggregate base having a minimum thickness of 150 mm shall be placed over the road bed. This work shall be carried out in accordance with NBDTI Standard Specification, Item 203 Aggregate Base/Sub-base.

Aggregate base shall be placed with a motor grader and compacted to a density of at least ninety-five percent (95%) Standard Proctor Density.

Aggregate base shall not be placed over rutted or potholed surfaces.

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

Upon completion of placement of aggregate base the Developers Engineering Consultant shall provide a letter to the *Town* certifying that aggregate base has been completed in accordance with the requirements of the Standard Specification.

3.6. Roadway Culverts

This work shall be carried out in accordance with NBDTI Standard Specification, Item 130 Metal Pipe, Item 131 Metal Pipe – Large, Item 140 Concrete Pipe and Item 141 Concrete Pipe Large, Item 161 Foundation Excavation, Item 166 Backfilling around Structures, Item 167 Backfill around structures and Item 936 Compaction.

All joints shall be wrapped with geotextile fabric.

Culvert invert elevations shall match bottom of ditch elevations. Roadway culverts shall have a minimum cover of 1 meter. Culverts shall be bedded with aggregate base material.

If culverts are installed after construction of roadway, backfill material shall correspond to in-situ roadway materials and the excavation limits shall be as shown on the approved drawings.

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

Upon completion of all drainage structures the Developers Engineering Consultant shall provide a letter to the *Town* certifying that all drainage structures have been completed in accordance with the requirements of the Standard Specification.

3.7. 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 his expense.

At least one driveway culvert shall be installed for each lot within the development. The finished surface shall not exceed 6.6 m in width. Driveway culverts may not be extended beyond a total length of 10 meters without prior approval from the *Town.*

Culvert invert elevations and alignment shall match that of finished ditch/ swale line. All joints shall be wrapped with geotextile fabric.

Culverts shall have a minimum cover of 300 mm.

Upon completion of all drainage structures the Developers Engineering Consultant shall provide a letter to the *Town* certifying that all drainage structures have been completed in accordance with the requirements of the Standard Specification.

3.8. Driveway Construction

Driveways shall be constructed by the Developer to the property line complete with a driveway culvert as described in Item 3.7.

Access to each lot shall be by a driveway having a minimum finished width of 6 meters. The top surface shall be graded with a layer of aggregate base having a minimum depth of 150 mm.

The slope from the driveway surface to the ditch at the culvert shall not be greater than 2:1.

The grade of the driveway shall match the cross slope of the road from the edge of pavement to the centerline of the driveway culvert. Driveways shall be graded such that runoff does not negatively impact the street or associated infrastructure.

3.9. Shoulders and Ditches/Swales

Shoulder width shall be as shown on the approved drawings. Following the 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. Ditches and swales shall be shaped and graded to the lines and grades as shown on the approved plans and finished with topsoil and sod or hydroseed. Fore slopes and ditch/ swale inverts shall be clear of excess material following final shoulder grading.

Ditch/ swale depth shall match adjacent driveway and roadway culvert invert elevations.

Ditch/swale sides shall have a maximum slope of 3:1.

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/ swale or total vertical height of back slope at property line
c) Water runoff volume and slope of ditch/ swale

All ditches/swales shall be sodded or hydroseeded from the edge of pavement or the edge of the granular shoulder material as indicated on the approved plans to the property line after installation of the asphalt base course and before installation of the asphalt surface course. Topsoil shall be carried out in accordance with NBDTI Standard Specification, Item 608 Topsoil

Hydroseed shall be carried out in accordance with Department of Transportation and Infrastructure Standard Specification, Item 614 Hydroseeding.

Where sod is *used*, it shall be placed so as to create a secure, uniform and smooth surface consistent with the lines and grades as shown on the plans.

The Developer shall be responsible to maintain and/or repair all areas that required topsoil and sod or hydroseed until the *Town* has accepted final completion of the works as defined within the developer's agreement. For example, all washouts and other disturbances shall be promptly repaired by the developer.

3.10. Asphalt Concrete

This work shall be carried out in accordance to the DTI Standard Specification, Item 261 Asphalt Concrete – End Result Specification (ERS)

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 within one year.

The Developer of a Commercial/Industrial Subdivision will be required to place a 75 mm compacted thickness asphalt base course in two lifts during the year of initial construction followed by a 37 mm compacted thickness asphalt surface course within one year.

Surface defects shall be removed and replaced or otherwise repaired to the satisfaction of the *Town*. All costs associated with removal and replacement or repair of surface defects shall be the Developers responsibility.

The Developer shall at his expense engage a qualified Materials Testing Firm to test the asphalt. The firm must be approved by the *Town* and shall perform the tests as noted in the DTI Standard Specification, Item 261 Asphalt Concrete – End Result Specification (ERS)

Upon completion of each asphalt paving course the Developers Engineering Consultant shall provide a letter to the Town certifying that the asphalt placed has been completed in accordance with the requirements of the Standard Specification. A copy of all the test results as identified in the DTI Standard Spec shall be provided to the Town.

3.11. Street Lights

All electrical work shall be in accordance with the Canadian Electric Code, latest edition and NBPC Installation Standards.

The Developer shall obtain and pay for all permits and certificates of inspection required to carry out the work.

3.12. Concrete Curb and Gutter and Reinforced Concrete Sidewalk

This work shall be carried out as specified in the Department of Transportation and Infrastructure Standard Specification, Item 416 Curb and Gutter, Item 419 Concrete Sidewalk.

DIVISION THREE

SANITARY SEWER SYSTEM

Contents

ITEM 1
SYSTEM INFORMATION

1. General

Where the proposed development 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. The Developer shall be responsible for any extensions to connect to the existing sanitary system even if this involves work outside the limits of the proposed development.

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 development.

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:

a) New Brunswick Department of Environment and Local Government
b) N.B. Power
c) Bell Aliant
d) New Brunswick Department of Transportation and Infrastructure (NBDTI). – If the development impacts a provincial designated highway.
e) Canadian National Railroad – If the development impacts a railroad right-of-way.

4. Scope of Work

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

a) Sanitary sewer mains complete with precast concrete structures.
b) Service lines from the sanitary sewer main to the property line at each lot.
c) High pressure cleaning and video inspection of all sewer mains.
d) Air testing of all sewer mains and visual inspection of all manholes.
e) Sanitary sewage lift stations if required including force mains, flap gate chambers and electric utility extensions.
f) Site restoration of existing lawns, asphaltic pavement, chipseal, easements, etc.

5. Sewage Lift Stations

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

6. Record Drawings

Upon completion of the sanitary sewer system, the Developer shall provide the Town with one digital copy and two copies of "RECORD" drawings which shall include the following:

a) Location, grade and geodetic elevation of all sewer mains and manholes.
b) The location of each service pipe at the sewer main.
c) 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 property pin.
d) Co-ordinates of manholes and other structures and co-ordinates of service pipes at property line.

ITEM 2
TECHNICALSPECIFICATIONS

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, materials shall meet the following specifications:

2.1 Gravity Sanitary Sewer - Pipe and Fittings

The minimum size of sanitary sewer mains shall be 200mm.

Sanitary sewer mains and fitting 375mm and smaller in diameter shall be polyvinyl chloride pipe, meeting the requirements of latest CAN/CSA standard B182.2 and ASTM D3034, DR35, color-coded green.

Sanitary sewer lateral tees shall be PVC pipe meeting the same requirements of the sanitary sewer mains.

Sanitary sewer mains larger than 375mm shall be reinforced concrete pipe and meeting the requirements of the latest CAN/CSA standard A257.2, Class 65D (ASTM Standard C76 Class III), Class 100D (ASTM C76 Class IV), Class 140D (ASTM Standard C76 Class V) or polyvinyl chloride sewer pipe and fittings meeting the requirements of the latest ASTM Standard D3034, SDR35 and CAN/CSA Standard B182.2 and color-coded green.

Joints for concrete pipe will be bell and spigot type with rubber gaskets. The bell will be an integral and homogeneous part of the pipe barrel. All rubber gaskets shall be supplied by the contractor and must meet the requirements of the latest CAN/CSA Standard A257.3.

All sanitary sewer pipe joints must be water tight within the limits specified by the New Brunswick Department of the Environment and Local Government.

2.2 Flexible Couplings

Shall be Fernco Couplings, certified to CAN/CSA B602.

2.3 Saddles

a) All saddles on concrete pipe shall be “fexible tap saddle” as manufactured by Fernco or approved equivalent 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. Saddles shall be PVC gasketed and strap on type, of the size as indicated on the approved drawings, meeting the same requirements as the sanitary sewer service pipe. Rubber “insta-tee” or “Quick seal” type connections with stainless steel bands and flexible sewer saddles as manufactured by Mission Rubber, or “flexible tap saddle” as manufactured by Fernco.

2.4 Precast Concrete Structures

Manhole base sections shall be of pre-cast concrete with reinforced concrete slabs within. Manhole bases will also have cast in rubber gaskets to suit the inlet and outlet pipes and factory benching. Any additional holes required in the field shall be core-drilled and a “Kor-n-seal” connector inserted.

Precast manhole sections shall meet the requirements of the latest CAN/CSA Standard A257.4 and ASTM Standard C478. Joints between sections shall be watertight by means of a rubber gasket or Ram-nek gaskets. Lifting holes in pre-cast sections shall be plugged with cement mortar for full depth and made watertight.

Precast riser sections shall be used if the adjustment made is to be greater than 300mm. Final adjustment of frame and cover to meet the roadway cross slope shall be done by using a concrete riser and a rubber riser rings, the maximum adjustment using riser rings shall be 150mm.

2.5 Cast Iron Frames and Covers

The cast iron frame and cover shall meet the requirements of the NBDTI Standard Specification, Item 407 Frame with Grate or Cover, see Drawing No. 407-2-Typical Frame with Cover Round for dimension details.

2.6 Screened Stone

Shall be specified in Division Two section 2.6 Screened Stone.

2.7 Aggregate Base

Shall be as specified in Division Two section 2.4 Aggregate base.

2.8 Aggregate Sub-base

Shall be as specified in Division Two section 2.5 Aggregate 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 to 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 equivalent. Joints shall be friction fit. Pipe shall be certified with CAN/CSA Standard B182.1. Pipe shall be marked to show the manufacturer, DR and CAN/CSA certification.

2.12 Inspection Chambers

Shall be 100 mm x 100 mm IC unplug complete with flap, riser and IC collar as manufactured by Fabtech - Fabricated Technologies Inc or equivalent as approved by the Town.

3. Construction Methods

3.1 Excavation

The excavation of the trench for the sanitary sewer shall be as per the "Typical Trench – Single Pipe" drawing as well as meeting the requirements of the current version of Regulation 91-191 under the New Brunswick Occupational Health and Safety Act.

Trenches shall be widened where required for the installation of manholes or other appurtenances. In locations where the trench must be excavated across or along an existing paved surface, the developer shall cut the asphalt and remove the asphalt as part of the trench excavation to the appropriate width in accordance with this specification. It will be the developer's responsibility to reinstate the road surface to a condition as good as or better than prior to the work being carried out.

Rock-blasting shall be carried out under the supervision of qualified persons, certified as per regulation 97-125 of the Apprenticeship and Occupational

Certification Act, employed by the Developer.

Prior to undertaking any blasting, the Developer shall arrange to have done and pay all costs associated with a PRE BLAST SURVEY. The survey shall be completed by a Registered or Licensed Professional Engineer qualified and experienced in the area of Pre blast Surveys. The survey shall examine and report on the pre blast conditions of all structures, wells, etc., within a minimum radius of 100 m or greater, as determined by the Engineer conducting the survey. A copy of the pre blast survey shall be submitted to the Town prior to the commencement of the work.

The Developer is advised that he must have in place insurance coverage for drilling and blasting. A copy of the Insurance Certificate is to be submitted to the Town prior to the commencement of work.

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) meters of any installed pipe.

Excavated material when approved shall be used to backfill excavations.

The installation of multiple pipes in a single trench is subject to the review and approval of the Town.

3.2 Pipe Zone Material, Foundation Backfill and Compaction

The trench shall be excavated to the depth required for placing of the pipe bedding material. Where the bottom of the trench at subgrade is found to be unstable or unsatisfactory, the developer shall excavate and remove such unsuitable material to the width and depth as directed by the Town. The trench shall be dewatered prior to placing the bedding material and the pipe. The subgrade shall be restored by backfilling with pipe bedding material in 150 mm layers compacted to 95% of maximum dry density as determined by ASTM D698.

Pipe bedding material shall be aggregate base meeting the requirements of Division 2 paragraph 2.4 or screened stone meeting the requirements of Division 2 paragraph 2.6. It is unacceptable to use screened stone as backfill material above the ¾ height of the pipe; aggregate base material shall be used from the ¾ height of the pipe to the top of the pipe zone material as per the "Typical Trench – Single Pipe" drawing. It is acceptable to use aggregate base material for 100% of the pipe zone material. Aggregate base shall be compacted to 95% of maximum dry density as determined by ASTM D698.

Pipe zone material for sanitary sewer laterals shall be sand (<8% passing the 75µm sieve), screen stone or aggregate base.

3.3 Sanitary Sewer Pipe Installation

All pipes shall be laid and maintained to the required lines and grades as shown on the approved drawings. Any pipe which is not in true alignment, or which shows any settlement after laying, shall be taken up and re-laid by the Developer at his own expense.

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.

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.
Pipe shall be installed such that a pipe joint does not occur within one meter of any precast concrete structure.

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

3.4 Sanitary Manholes

Typically, manholes will be either one thousand fifty (1050) millimeter diameter or twelve hundred (1200) millimeter diameter. All manholes will be constructed to between one hundred and fifty (150) millimetres and three hundred (300) millimetres of the proposed finished grade. The cast iron frame and cover 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.

Manholes should not be located in the wheel paths of the roadway.

Manhole base sections shall be set on a 150 mm layer of aggregate base meeting the requirements of Division 2 section 2.4 or screened stone meeting the requirements of Division 2 section 2.6. Manholes shall be constructed plumb.

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.

3.5 Leak Testing- Gravity Sewer Mains

a) General

All sanitary sewers installed shall be tested for leakage using air testing.
All manholes shall be visually inspected for infiltration.
The Developer is responsible to carry out the pressure test.

All tests, unless otherwise ordered, shall be:

i) For exfiltration for sanitary sewer mains and for infiltration for manholes;
ii) Carried out after backfilling;
iii) Conducted on sections of pipe lines between adjacent manholes; and
iv) Carried out in the presence of the Developer’s Engineer or his/her representative

b) Testing Method

As soon as the Developer has notified his Engineer that he wishes to test a· section of the sanitary sewer main, 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.

The test section is pressurized to 28 kPa (4 psi) 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

Leak Testing - Gravity Sewer Mains (continued)

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 meters

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 his 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.

3.6 Leak Testing- Manholes

Each manhole installed shall be visually inspected for infiltration by the Developer's 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 re-inspected 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.

3.7 Pressure and Leakage Testing- Force Mains

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

3.8 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 meters 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 onto a digital file. The audio part shall include the recording of distances at a maximum interval of three meters 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 original digital video file, the Developer shall supply the *Town* a second digital video file showing the completed repairs.

The complete record of the inspection, original digital video file and the digital video file showing the repairs shall be the property of the Town.

3.9 Sanitary Sewer Lateral Pipes and Appurtenances

Excavation for sanitary sewer lateral pipes shall be as outlined under Section 3.1 Excavation. Sanitary Sewer lateral installation shall be as outlined under Section 3.2 Pipe Installation.

~~Each sanitary sewer lateral shall be complete with an inspection chamber installed on the roadway right of way (as per the manufacturer’s instructions, on the road right of way at the property boundary).~~

Provision for sanitary sewer laterals 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 sanitary sewer lateral 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 sanitary sewer 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 sanitary sewer lateral.

A completed "Service Connection Report", a sample of which is included in the Appendix, shall be filed with the *Town* for each sanitary sewer lateral pipe installed. The completed report shall include the depth of all service pipes at the property line and three separate measurements between the end of the sanitary sewer lateral pipe and permanent structures such as a lot pin or utility pole.

3.10 Inspection Certificates and Reports

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

DIVISION FOUR

STORM RUNOFF CONTROL SYSTEM

Contents

ITEM 1
SYSTEM INFORMATION

1. General

A Stormwater Management Plan is a requirement of all new developments. The purpose of stormwater management plan is to minimize pollution in the receiving waters, control runoff volumes and to ensure that the development is constructed in an environmentally responsible manner. The stormwater management plan for the proposed development shall be consistent with the Town's Stormwater Management Guidelines.

The proposed development is required to have an adequate stormwater control system as identified in the stormwater management plan and meeting the requirements of the Town and consistent with the Town's Stormwater Management Guidelines. The stormwater management plan is to be prepared by a Registered Professional Engineer and shall include all drainage structures, retention areas, sediment control or any other feature necessary to address the requirements of the Town's Stormwater Management Guidelines.

2. Definitions

Ditch: an artificial open channel or waterway constructed through earth or rock to convey water. A ditch is grassed, rip rapped or paved.

Insitu Soil: soil which is in its natural or undisturbed position.

Sustainable Development: a holistic concept and strategy that requires the integration of economic growth, social equity and environmental management. It provides a framework under which communities can use resources efficiently, create efficient infrastructures and protect and enhance their quality of life.

Swale: a wide, shallow (< 300mm) ditch, usually grassed or paved.

3. Reference Specifications

All work on the stormwater 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 development.

4. Approvals

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

a) New Brunswick Department of Environment and Local Government

b) N.B. Power
c) Bell Aliant
d) New Brunswick Department of Transportation and Infrastructure (NBDTI) - If the development impacts a provincial designated highway.
e) Canadian National Railroad - If the development impacts a railroad right-of-way.

5. Scope of Work

Ditch & Culverts - 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 approved plans. If 600 mm diameter culverts are required they may be accepted if approved in advance by the Town. Any flow greater than this along the roadway must have storm sewer. Any location where ditch grades will be less than 2% must have a storm sewer.

In all cases the Developer will be required to define and protect all natural drainage courses. The crown of the street must be carried to the center of the driveway culvert before any grade change. Please refer to Standard Details 1L, 2L, 9L, 10L, 11L, 12L and 13L.

In areas where storm sewer is installed, topsoil and sodded swales with a grade of not less than 2% shall be constructed to direct flow to the catch basins.

6. Record Drawings

The Developer shall provide the Town with one digital copy and two copies of Record drawings which shall include the location (coordinates), grade and geodetic elevation of all driveway culverts, storm sewers, catch basins and manholes.

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.

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 CAN/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 and shall be wrapped with geotextile fabric. Geotextile fabric shall meet the properties as specified in the NBDTI Standard Specifications, Item No. 601 – Geotextile.

2.2 HDPE Pipe and Fittings

Shall be a straight rib design perpendicular to the axis of the pipe. Pipe shall be certified CAN/CSA B182.8

Joints shall be non-gasketed and wrapped with geotextile fabric. Geotextile fabric shall meet the properties as specified in the NBDTI Standard Specifications, Item No. 601 – Geotextile.

2.3 Reinforced Concrete Pipe

Reinforced concrete pipe shall meet the requirements of the latest CAN/CSA standard A257.2, Class 65D (ASTM Standard C76 Class III), Class 100D (ASTM C76 Class IV), Class 140D (ASTM Standard C76 Class V)

Joints for reinforced concrete storm sewer pipe shall be non-gasket and not subject to a leakage test. Joints shall be wrapped with geotextile fabric. Geotextile fabric shall meet the properties as specified in the NBDTI Standard Specifications, Item No. 601 – Geotextile.

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

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

2.4 Precast Concrete Structures

Precast manhole/catchbasin sections shall be precast concrete sections meeting the requirements of the latest CAN/CSA Standard A257.4 and ASTM Standard C478.

Manhole/catchbasin base sections shall be of pre-cast concrete with reinforced concrete slabs within. Holes shall be made at the time of manufacturing of the precast sections; holes shall not be more than 25mm larger than the outside diameter of the connecting pipe. All joints shall be made watertight by using rubber rings, bituminous compound, epoxy resin cement or cement mortar.

Precast riser sections shall be used if the adjustment made is to be greater than 300mm. Final adjustment of frame and cover to meet the roadway cross slope shall be done by using a concrete riser and a rubber riser rings, the maximum adjustment using riser rings shall be 150mm.

The Developer may request to substitute HDPE manholes/catchbasin for precast concrete structures; this proposed substitution would be subject to the review and approval of the Town.

2.5 Cast Iron Frames and Grate Covers

The cast iron frame and grate cover shall meet the requirements of the NBDTI Standard Specification, Item 407 Frame with Grate or Cover, see Drawing No. 407-1 -Typical Frame with Grate Square for dimension details.

2.6 Screened Stone

Shall be as specified in Division Two section 2.6 Screened Stone.

2.7 Aggregate Base

Shall be as specified in Division Two section 2.4 Aggregate Sub-base.

2.8 Aggregate Sub-base

Shall be as specified in Division Two section 2.5 Aggregate Sub-base.

3. Construction Methods

3.1 Excavation

The excavation of the trench for the storm sewer shall be as per the "Typical Trench – Single Pipe" drawing (the drawing should be updated to reflect realistic sizes of storm pipe) as well as meeting the requirements of the current version of Regulation 91-191 under the New Brunswick Occupational Health and Safety Act.

Trenches shall be widened where required for the installation of manholes/catchbasins or other appurtenances. In locations where the trench must be excavated across or along an existing paved surface, the developer shall cut the asphalt and remove the asphalt as part of the trench excavation to the appropriate width in accordance with this specification. It will be the developer's responsibility to reinstate the road surface to a condition as good as or better than prior to the work being carried out.

Rock-blasting shall be carried out under the supervision of qualified persons, certified as per regulation 97-125 of the Apprenticeship and Occupational

Certification Act, employed by the Developer.

Prior to undertaking any blasting, the Developer shall arrange to have done and pay all costs associated with a PRE BLAST SURVEY. The survey shall be completed by a Registered or Licensed Professional Engineer qualified and experienced in the area of Pre blast Surveys. The survey shall examine and report on the pre blast conditions of all structures, wells, etc., within a minimum radius of 100 m or greater, as determined by the Engineer conducting the survey. A copy of the pre blast survey shall be submitted to the Town prior to the commencement of the work.

The Developer is advised that he must have in place insurance coverage for drilling and blasting. A copy of the Insurance Certificate is to be submitted to the Town prior to the commencement of work.

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) meters of any installed pipe.

Excavated material when approved Developer's Engineer shall be used to backfill excavations.

3.2 Pipe Zone Material, Foundation Backfill and Compaction

The trench shall be excavated to the depth required for placing of the pipe bedding material. Where the bottom of the trench at subgrade is found to be unstable or unsatisfactory, the developer shall excavate and remove such unsuitable material to the width and depth as directed by the developer’s engineer or by the Town. The trench shall be dewatered prior to placing the bedding material and the pipe. The subgrade shall be restored by backfilling with pipe bedding material in 150 mm layers compacted to 95% of maximum dry density as determined by ASTM D698.

Pipe bedding material shall be aggregate base meeting the requirements of Division 2 paragraph 2.4 or screened stone meeting the requirements of Division 2 paragraph 2.6. It is unacceptable to use screened stone as backfill material above the ¾ height of the pipe; aggregate base material shall be used from the ¾ height of the pipe to the top of the pipe zone material as per the “Typical Trench – Single Pipe” drawing. It is acceptable to use aggregate base material for 100% of the pipe zone material. Aggregate base shall be compacted to 95% of maximum dry density as determined by ASTM D698.

3.3 Pipe Installation

All pipes shall be laid and maintained to the required lines and grades as shown on the approved drawings. Any pipe which is not in true alignment, or which shows any settlement after laying, shall be taken up and re-laid by the Developer at his own expense.

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 geotextile fabric in accordance with the manufacturer's instructions. Geotextile fabric shall meet the properties as specified in the NBDTI Standard Specifications, Item No. 601 – Geotextile.

Pipe shall be installed such that a pipe joint does not occur within one meter of any precast concrete structure.

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

3.4 Connections to Precast Structures

All holes for connecting pipes shall be formed in the manhole/catchbasin during manufacture.

When using ribbed polyvinyl chloride pipe, the precast concrete structure shall be manufactured with the gasket to accept the pipe at the locations as determined on the approved plans.

Where concrete pipes are installed in precut 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 approved drawings.

All joints shall be made watertight by using rubber rings, bituminous compound, epoxy resin cement or cement mortar.

All manholes will be constructed to within one hundred and fifty (150) 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. All non-tongue and groove joints shall have a cement mortar joint. Bricks are not an acceptable material for grade adjustment of the manhole/catchbasin frame and grate or cover.

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

Upon completion, each storm manhole/catch basin shall be cleaned of silt and debris and shall be kept clean until final acceptance of the Work.

3.6 Video Inspection

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

The storm sewers shall be inspected using a closed circuit television camera. The maximum speed of the television camera through the pipe shall be 0.30 meters per second with a 5 second minimum stop at each defective location.

The inspection shall be recorded onto a digital file. The audio part shall include the recording of distances at a maximum interval of three meters and a brief description of every defective location. 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 original digital video file, the Developer shall supply Public to the Town a second digital video file showing the completed repairs.

The complete record of the inspection, original digital video file and the digital video file showing the repairs shall be the property of the Town.

3.7 Inspection Certificates and Reports

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

DIVISION FIVE

CONCRETE CURB AND GUTTER AND REINFORCED CONCRETE SIDEWALK

Contents

ITEM 1
SYSTEM INFORMATION

1. General

When required by the Town or requested by the Developer, the Developer shall construct concrete curb and gutter and/ or reinforced concrete sidewalk. The inclusion of concrete curb and gutter and/ or reinforced concrete sidewalk in a proposed development shall be agreed upon by the Town and Developer prior to the signing of the Developer's Agreement.

All concrete curb and gutter and/ or reinforced concrete sidewalk including base and sub- base preparation shall be constructed by the Developer.

2. Reference Specifications

Construction of concrete curb and gutter and/or reinforced concrete sidewalk shall be in accordance with these specifications.

3. Approvals

The Town shall approve the "Typical Street" configuration proposed for use in the development. Detail Drawings 9L, 10L, 11L, 12L and 13L show various street configurations which will be considered for approval by the Town.

4. Scope of Work

The concrete curb and gutter and /or reinforced concrete sidewalk shall be completed by the Developer and shall include the following work:

a) Excavation.
b) Supply, placement and compaction of aggregate sub-base and aggregate base.
c) Construction of the concrete curb and gutter and/ or reinforced concrete sidewalk.
d) Materials testing.

ITEM 2
TECHNICAL SPECIFICATIONS

1. Description

The Developer is required to construct the concrete curb and gutter and/or reinforced concrete sidewalk in accordance with these specifications. The Developer must also comply with any additional or unique requirements contained in the Developer's Agreement.

Generally, the work covered by this section includes excavation, construction of the aggregate sub-base and aggregate base, construction of the concrete curb and gutter and/or sidewalk and materials testing.

2. Materials

Construction of concrete curb and gutter and/or reinforced concrete sidewalk shall be in accordance with these specifications.

2.1 Aggregate Base

Shall be as specified in Division Two section 2.4 Aggregate base.

2.2 Aggregate Sub-base

Shall be as specified in Division Two section 2.5 Aggregate Sub-base.

2.3 Concrete

Concrete used in the construction of concrete curb and gutter and concrete sidewalks shall meet the requirements of the NBDTI Standard Specifications, Item No. 301 – Portland Cement Concrete. The minimum compressive strength of the Portland cement concrete shall be 35-MPa at twenty-eight (28) days. Coarse aggregate shall have a maximum size 20mm aggregate and entrained air in the concrete shall be between five percent (5%) and eight percent (8%).

2.4 Reinforcing Wire Mesh

Welded Wire Mesh shall meet the requirements of CSA G30.5, latest revision.

2.5 Joint Filler

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

3. Construction Methods

3.1 Aggregate Base

Aggregate base shall be placed to the lines and grades as shown on the approved plans; the thickness of the aggregate base shall be a minimum of 150mm and placed as shown on the detail drawings (17 L).

Aggregate base material shall be uniformly compacted to a density of at least ninety-five percent (95%) Standard Proctor Density using approved compaction methods.

3.2 Concrete Curb and Gutter

Unless otherwise specified, concrete curb and gutter shall be installed in strict compliance with the NBDTI Standard Specifications for Highway Construction, Item No. 416 Curb and Gutter.

3.3 Concrete Sidewalk

Unless otherwise specified, concrete sidewalk shall be installed in strict compliance with the NBDTI Standard Specifications for Highway Construction, Item No. 419 Concrete Sidewalk.

3.4 Material Testing

The Developer shall at his expense engage a qualified Materials Testing Firm to test each load of concrete. The quality testing shall be carried out as per the NBDTI Standard Specifications for Highway Construction, Item 302 – Concrete in Structures, paragraph 302.4.12

The Developer’s Engineer shall provide to the Town a copy of all the concrete pour reports as well as all the quality control test results. In addition, the Developer’s Engineer shall provide in writing, to the Town, certification that all work carried out meets the requirements as described in this agreement.

DIVISION SIX

APPENDIX

Contents

TOWN OF HAMPTON
APPLICATION FOR SUBDIVISION APPROVAL

Name of Land Owner (s) **:**			
Mailing Address of Land Owner (s) :			
Phone No.:	Fax No.:	Email :	
If Agent Different From Land Owner			
Name of Agent:			
Mailing Address of Agent:			
Phone No.:	Fax No.:	Email :	
Engineering Consultant			
Name of Firm:			
Mailing Address of Firm:			
Phone No.:	Fax No.:	Email :	
Contact Name :			
Subdivision Information			
Subdivision Name:			
Location	Street:	PID #	
Existing Land Use:	Proposed Land Use:		
Type of Approval Requested	❒ Tentative	❒ Final	
Type of Subdivision Proposed	❒ Create new lot(s)	# of	
	❒ Boundary Adjustment		
	❒ Consolidation		
	❒ Other		
Fee Received:	Payment Method:		
Applicants Signature	*Date*		
Application Received By	*Date*		

CHECKLIST FOR TENTATIVE PLAN

Does your tentative plan include and/or address the following:

- ☐ Key Plan
- ☐ Plan scale
- ☐ Geodetic datum and benchmark
- ☐ Proposed subdivision name
- ☐ Boundaries of the portion of the project for which approval is being sought
- ☐ Location, width and name of proposed and abutting streets. Cul-de-sacs may include an island for trees and other plantings as a means of water retention and groundwater recharge, as well as for aesthetics.
- ☐ Dimensions and layout of proposed blocks, lots, easements, land for public purposes and other parcels of land if applicable.
- ☐ Existing natural and artificial features such as watercourses, ditches, swales, swamps, roads, tree lines, railways and buildings adjacent to and within the proposed subdivision
- ☐ Contours and elevations necessary to determine the grade of the streets and drainage of the land
- ☐ Location of adjacent Municipal services
- ☐ Proposed landscaping and tree planting
- ☐ Proposed location of all buildings
- ☐ Any other information deemed necessary by the Development Officer to facilitate a comprehensive review of the proposed development
- ☐ Land for public purposes, walkways and trails

If required, have you also included:

- ☐ Water Supply Assessment Report prepared by a Registered Hydrogeologist in a format outlined in the Royal District Planning Commission Water Supply Assessment Guidelines.
- ☐ Soils Report prepared by a Registered Engineer identifying the nature and porosity of the soil.
- ☐ Drainage/grade control plan prepared by a Registered Professional Engineer.

SERVICE CONNECTION REPORT
(LOCATION OF SANITARY SEWER SERVICE PIPE & LAND TILE OUTFALL)

Project:	Date:
Property Owner:	Inspector:
Street & No:	Contractor:
Refer Dwg.:	

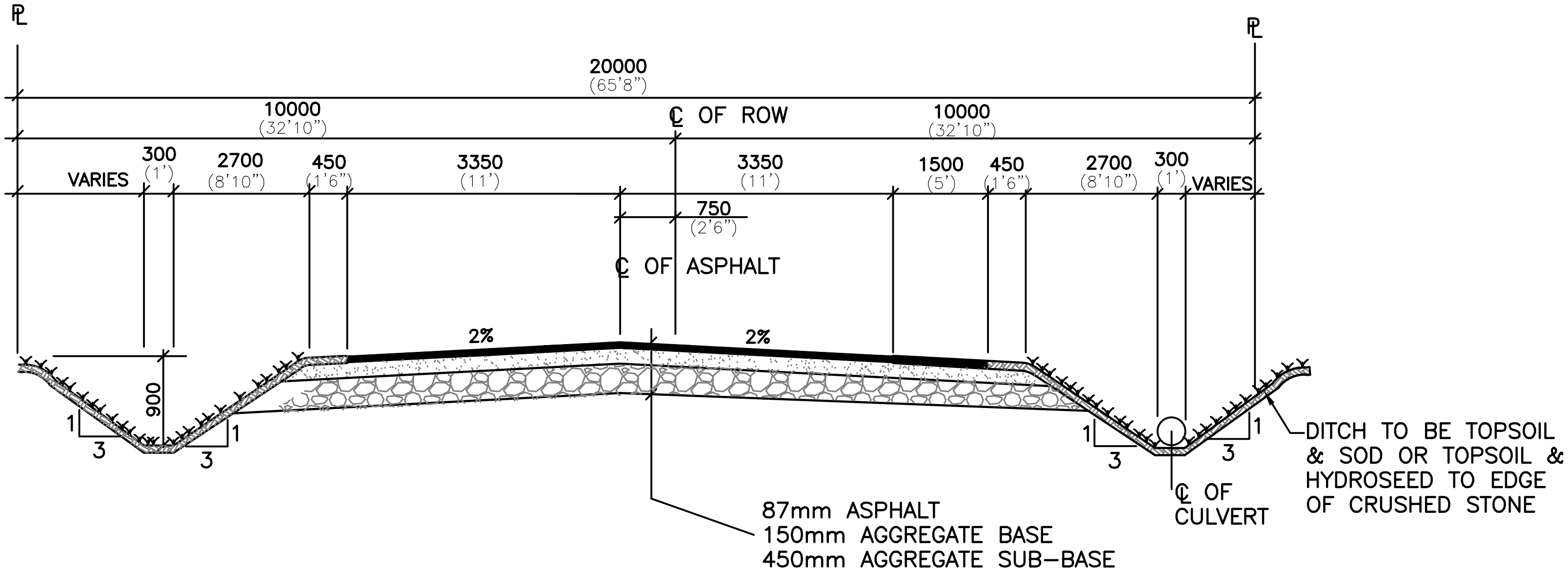
Sketch of Building, Street, Property, North Point, Well, Lateral and Landtile Location

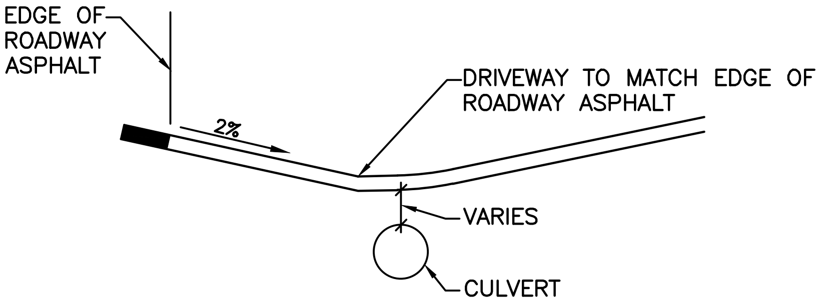
I hereby certify that the location of the sanitary sewer service pipe and land tile outfall for this building are as shown on the above sketch.

Signature of Property Owner
(Only if property occupied)

Date

Signature of Inspector





DRIVEWAY CULVERT

NOTES

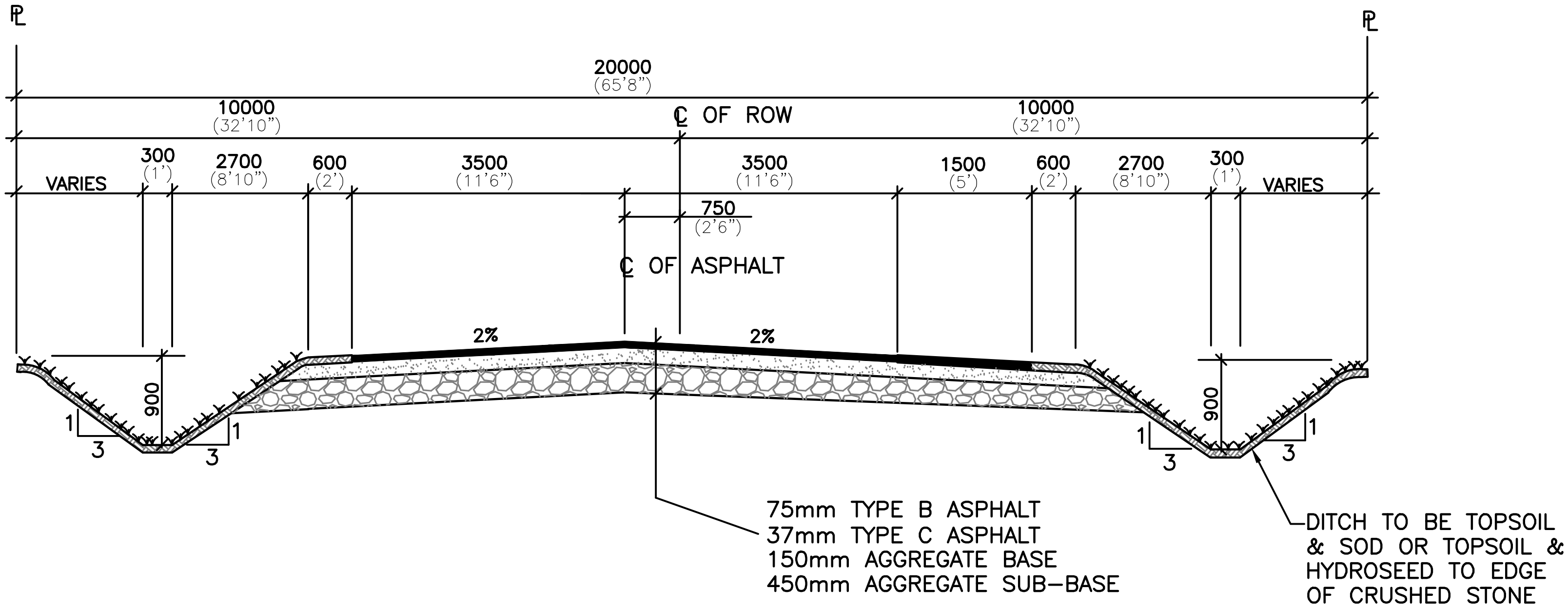
1. DITCHES WITH LESS THAN 2% GRADE WILL REQUIRE STORM SEWER
2. DRIVEWAY CULVERTS TO BE INSTALLED BY THE TOWN
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.

DILLON
CONSULTING

TOWN OF HAMPTON
NEW BRUNSWICK

TYPICAL RESIDENTIAL STREET

REVISIONS			
SCALE NTS	PROJ. NO.	DRAWN KMJ/JSA	
DATE JULY 2015	DRAWING 1L		



NOTES

1. DITCHES WITH LESS THAN 2% GRADE WILL REQUIRE STORM SEWER
2. DRIVEWAY CULVERTS TO BE INSTALLED BY THE TOWN
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.

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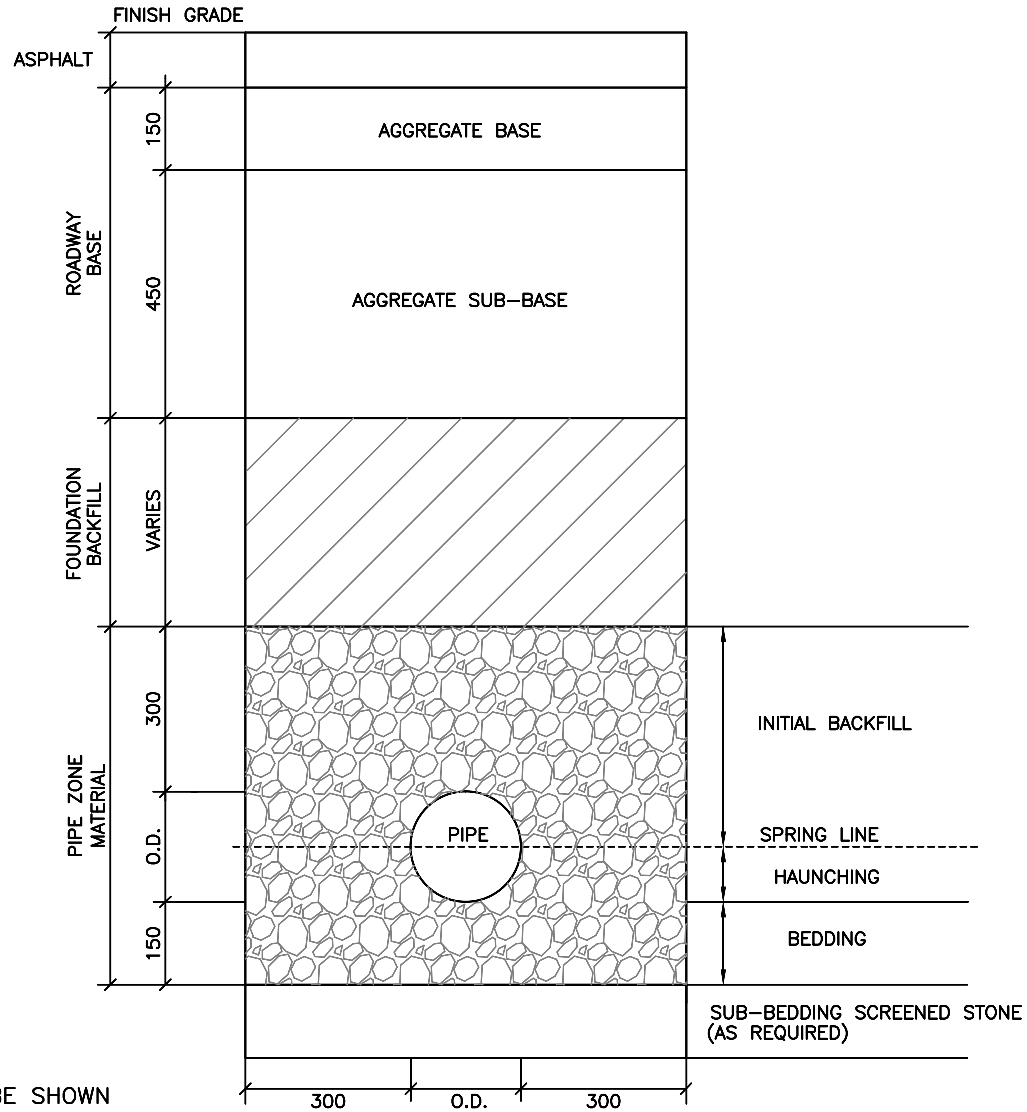
TOWN OF HAMPTON
NEW BRUNSWICK

TYPICAL COMMERCIAL INDUSTRIAL STREET

REVISIONS			
SCALE NTS	PROJ. NO.	DRAWN KMJ/JSA	
DATE JULY 2015		DRAWING 2L	



NOTES:

1. ACTUAL ELEVATION OF ALL PIPES TO BE SHOWN ON PROFILES.
2. ACTUAL CONSTRUCTION WIDTHS SHALL BE IN ACCORDANCE WITH OCCUPATIONAL HEALTH AND SAFETY ACT OF THE PROVINCE OF NEW BRUNSWICK.

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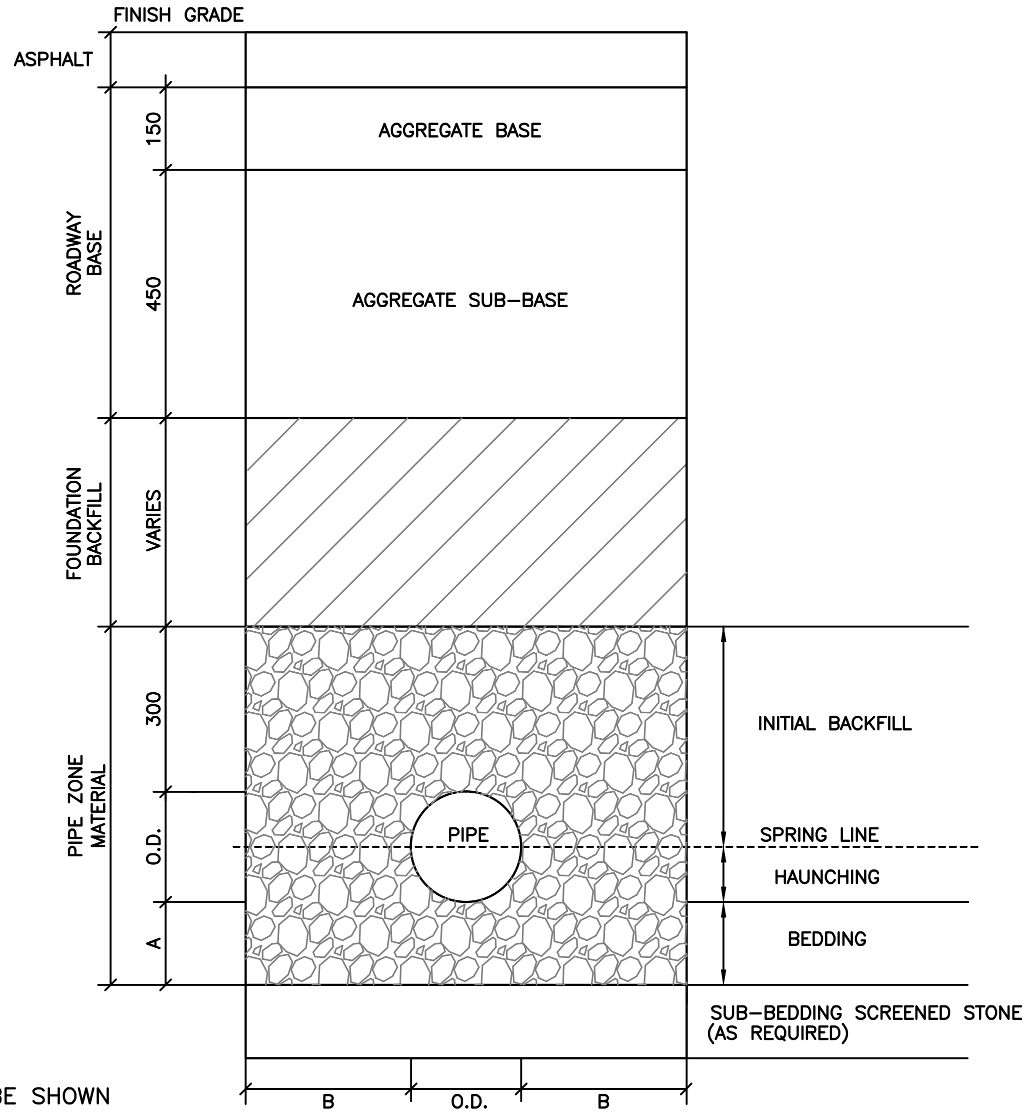
TOWN OF HAMPTON
NEW BRUNSWICK

TYPICAL SANITARY TRENCH SINGLE PIPE

REVISIONS			
SCALE NTS	PROJ. NO.	DRAWN KMJ/JSA	
DATE JULY 2015		DRAWING 3L-1	



NOTES:

1. ACTUAL ELEVATION OF ALL PIPES TO BE SHOWN ON PROFILES.
2. ACTUAL CONSTRUCTION WIDTHS SHALL BE IN ACCORDANCE WITH OCCUPATIONAL HEALTH AND SAFETY ACT OF THE PROVINCE OF NEW BRUNSWICK.

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

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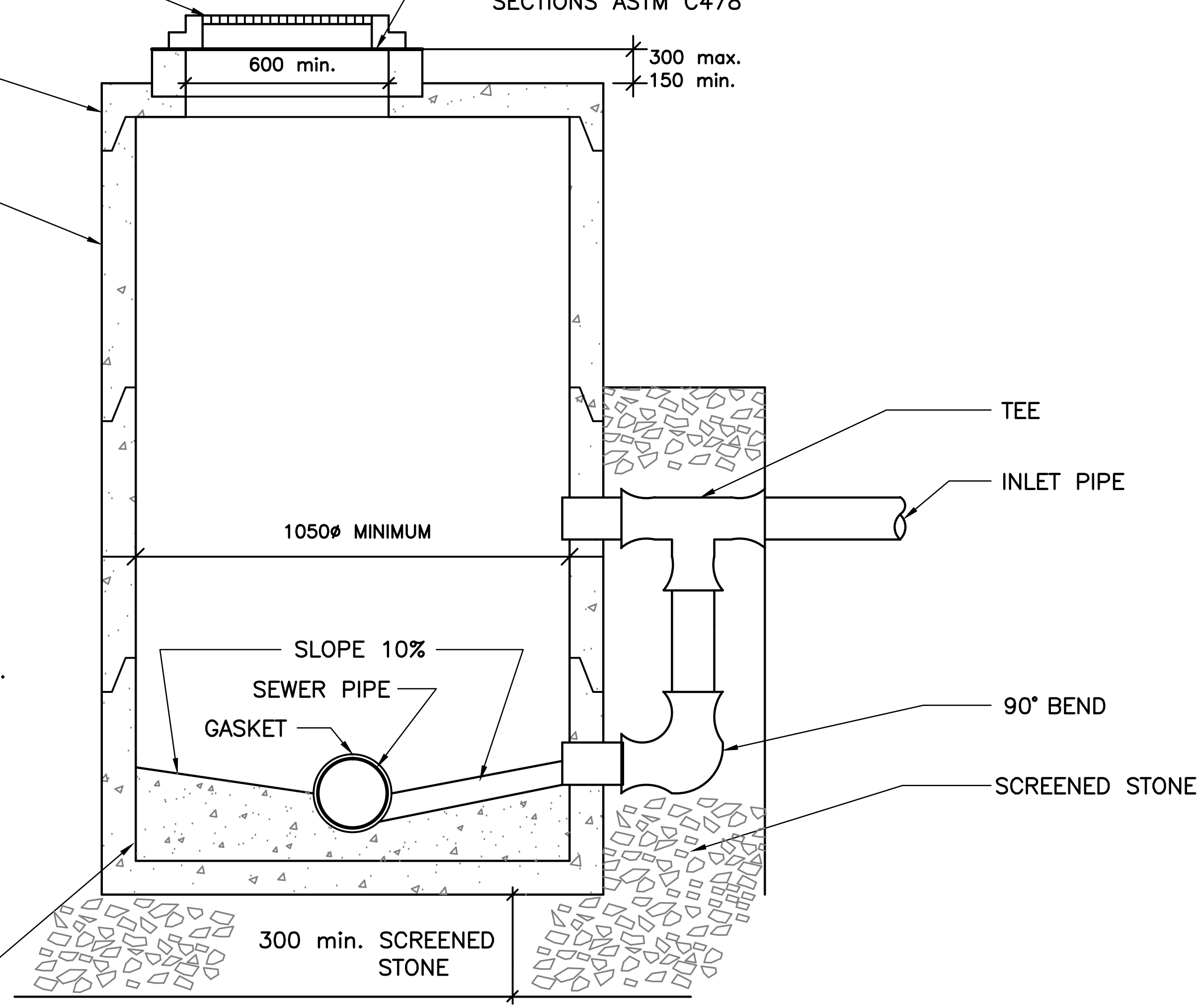
TOWN OF HAMPTON
NEW BRUNSWICK

TYPICAL STORM TRENCH
SINGLE PIPE

REVISIONS

SCALE NTS	PROJ. NO.	DRAWN KMJ/JSA	
DATE JULY 2015		DRAWING 3L-2	



NOTES:

1. AT LEAST ONE GRADE RING IS REQUIRED UNDER CAST IRON FRAME AND COVER. MINIMUM 1". MAXIMUM 3".
2. ALL JOINTS TO BE WATERTIGHT

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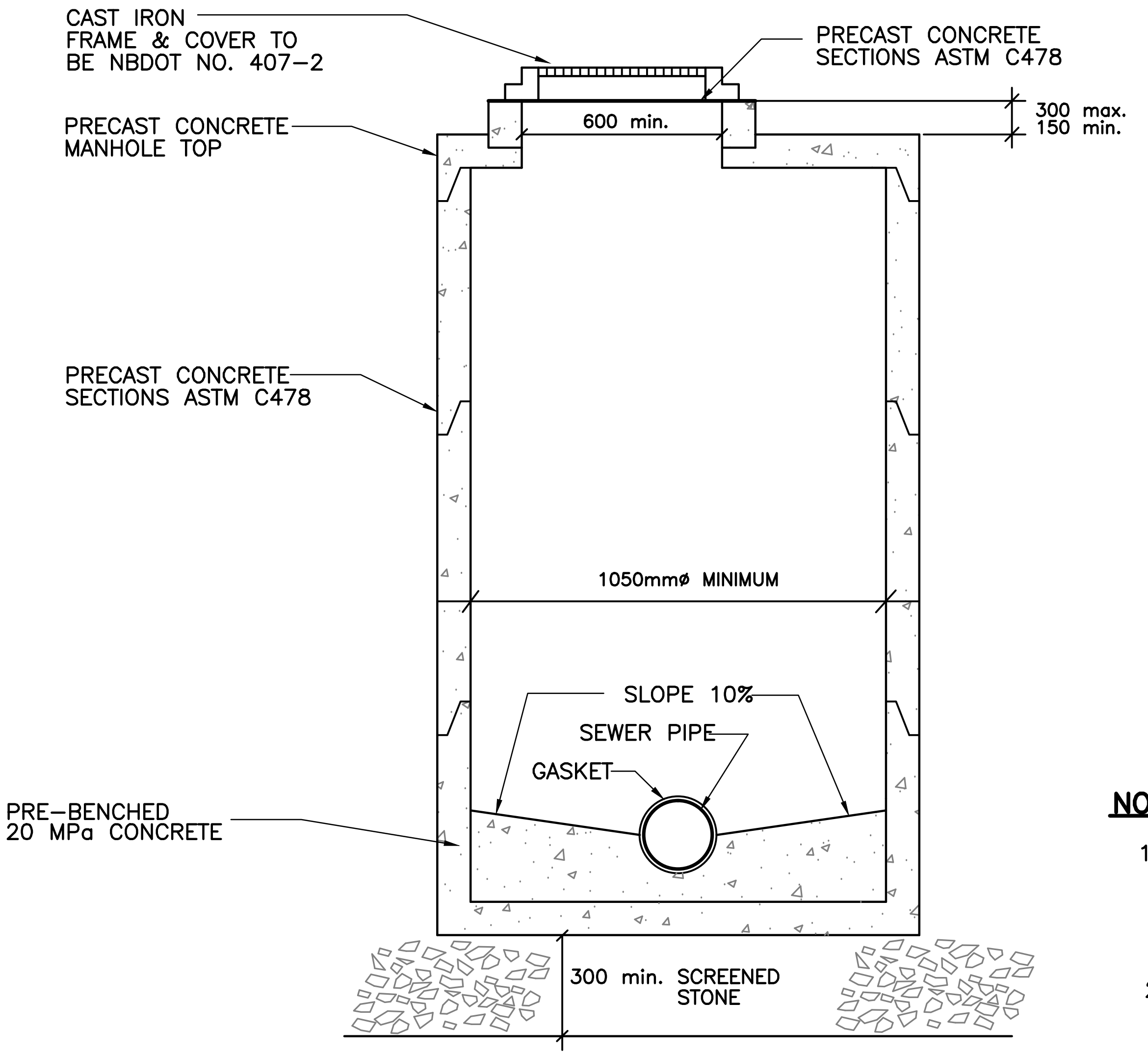
TOWN OF HAMPTON
NEW BRUNSWICK

SANITARY DROP MANHOLE

REVISIONS			
SCALE: NTS	PROJ. NO.	DRAWN: KMJ/JSA	
DATE: JULY 2015		DRAWING: 4L	



NOTES:

1. AT LEAST ONE GRADE RING IS REQUIRED UNDER CAST IRON FRAME AND COVER. MINIMUM 1". MAXIMUM 3".
2. ALL JOINTS TO BE WATERTIGHT

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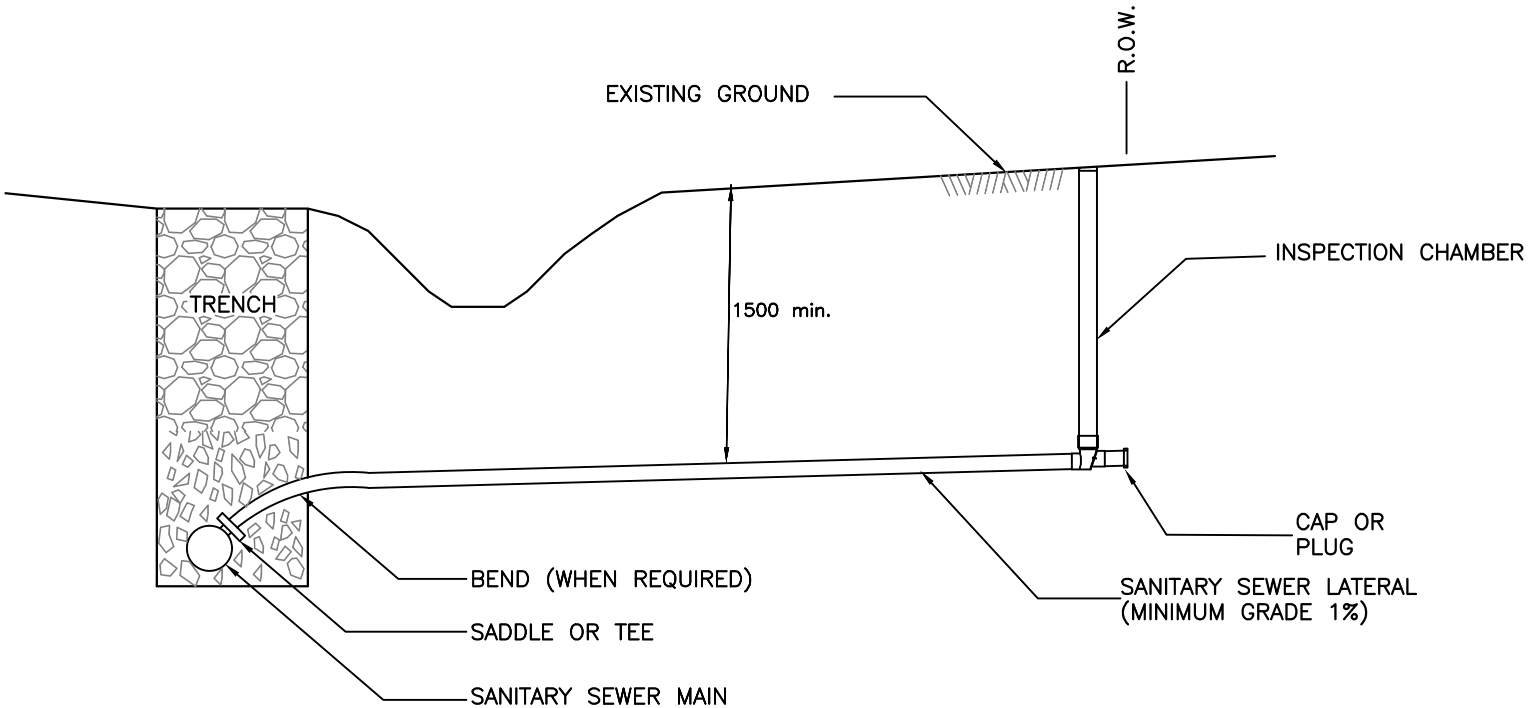
TOWN OF HAMPTON
NEW BRUNSWICK
SANITARY MANHOLE

REVISIONS			
SCALE NTS	PROJ. NO.	DRAWN KMJ/JSA	
DATE JULY 2015		DRAWING 5L	



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

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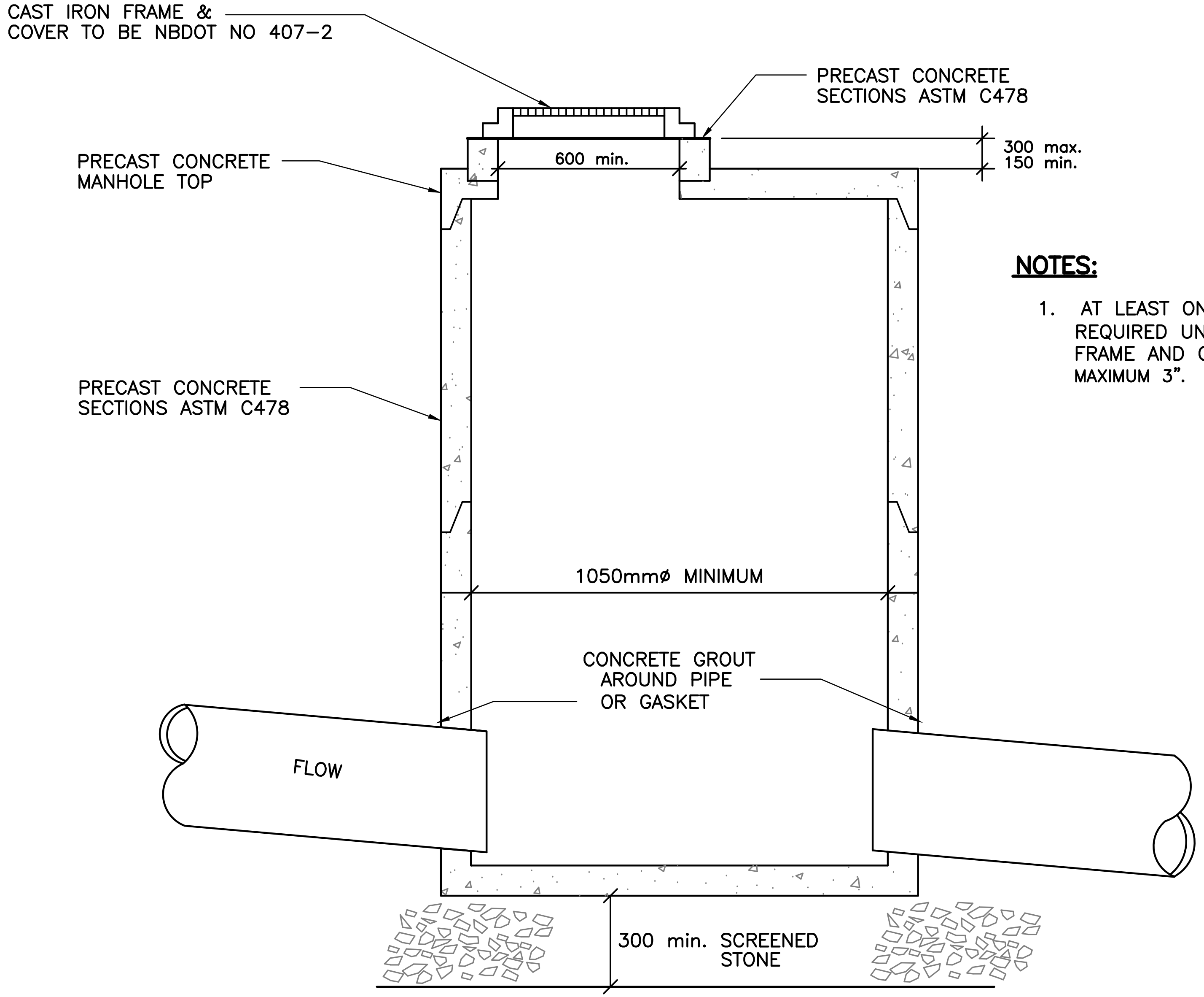
TOWN OF HAMPTON
NEW BRUNSWICK

SANITARY SEWER SERVICE CONNECTION

REVISIONS			
SCALE: NTS	PROJ. NO.	DRAWN: KMJ/JSA	
DATE: JULY 2015	DRAWING: 6L		



NOTES:

1. AT LEAST ONE GRADE RING IS REQUIRED UNDER CAST IRON FRAME AND COVER. MIMIMUM 1". MAXIMUM 3".

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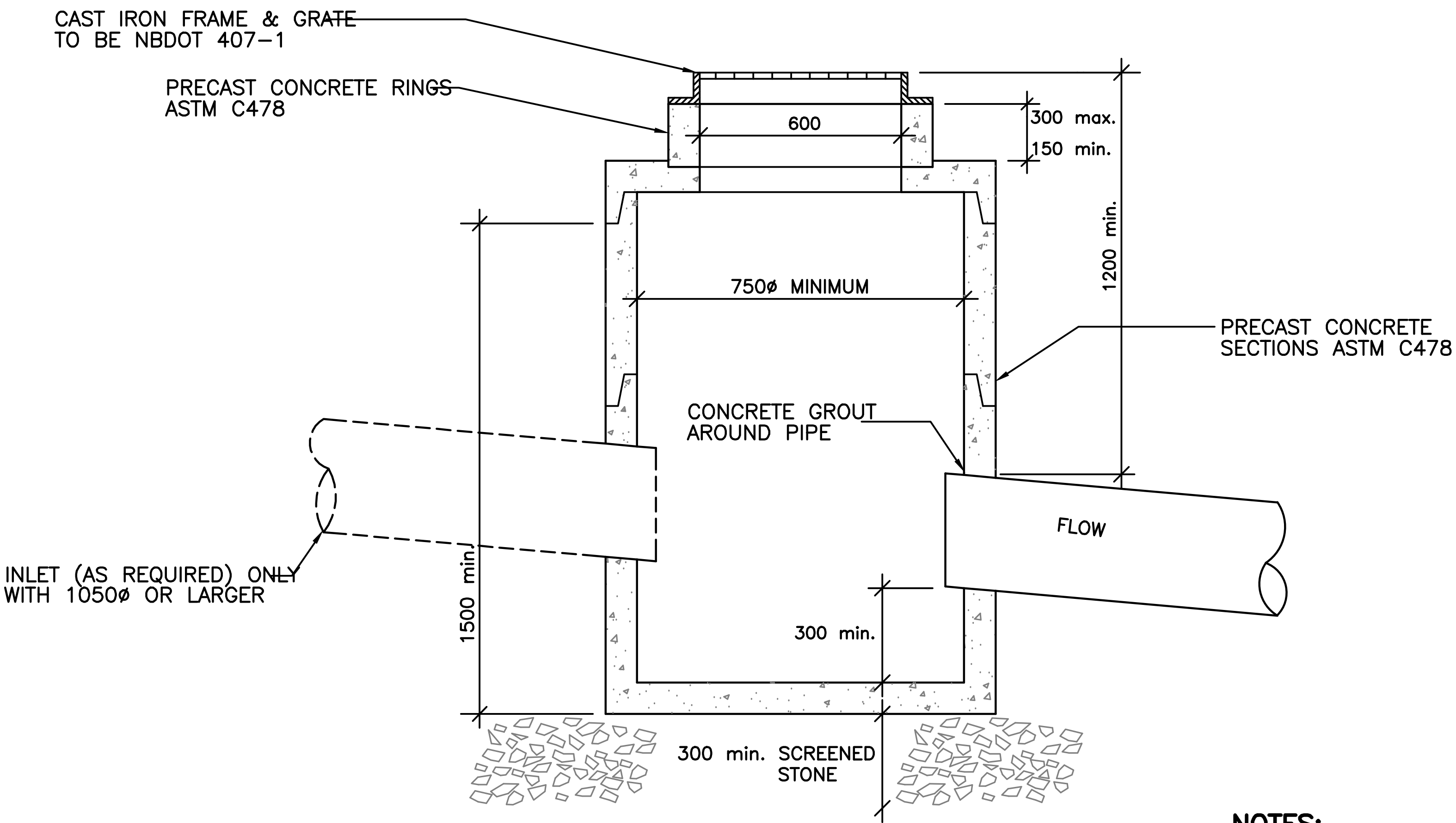
TOWN OF HAMPTON
NEW BRUNSWICK
STORM MANHOLE

REVISIONS			
SCALE NTS	PROJ. NO.	DRAWN KMJ/JSA	
DATE JULY 2015		DRAWING 7L	



NOTES:

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

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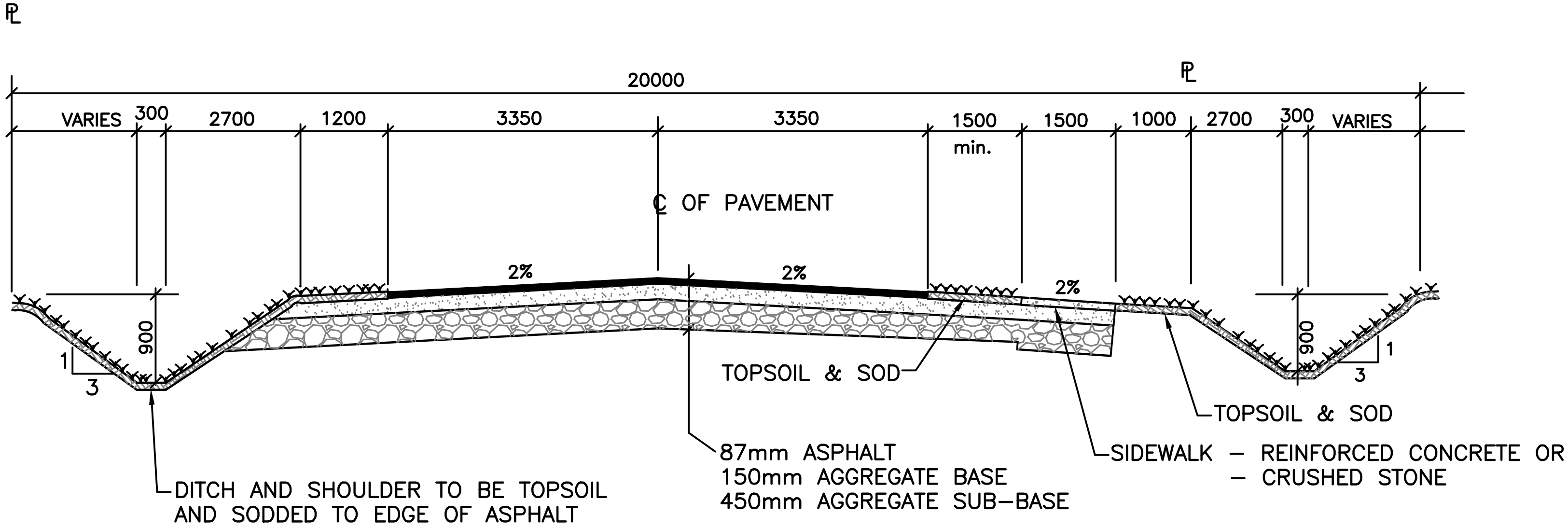
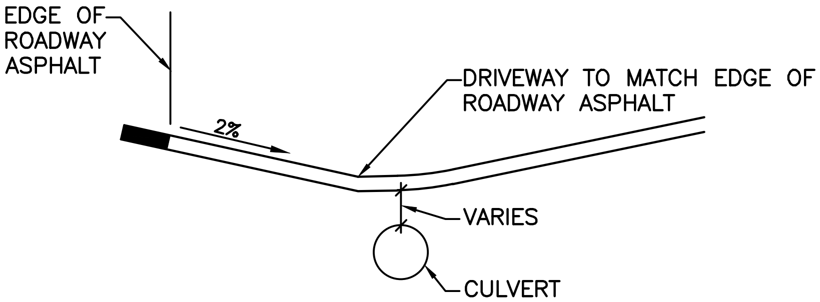
TOWN OF HAMPTON
NEW BRUNSWICK
CATCH BASIN

REVISIONS			
SCALE NTS	PROJ. NO.	DRAWN KMJ/JSA	
DATE JULY 2015	DRAWING 8L		



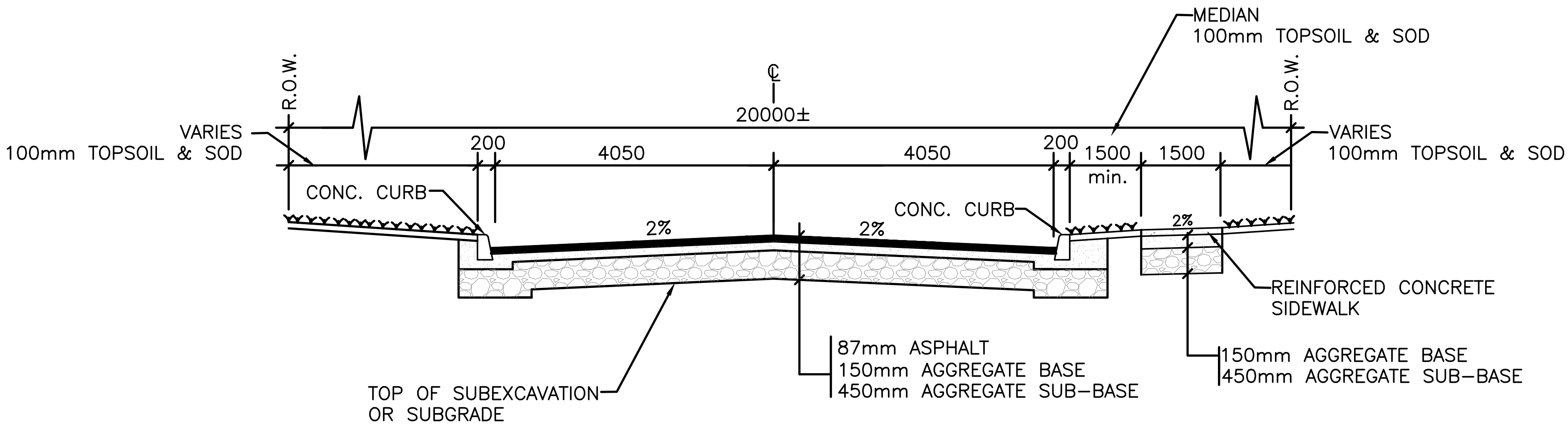


DRIVEWAY CULVERT

NOTES

1. DITCHES WITH LESS THAN 2% GRADE WILL REQUIRE STORM SEWER
2. DRIVEWAY CULVERTS TO BE INSTALLED BY THE TOWN

DILLON CONSULTING	TOWN OF HAMPTON NEW BRUNSWICK TYPICAL RESIDENTIAL STREET Sidewalk (with Median)	REVISIONS			
		SCALE NTS	PROJ. NO.	DRAWN KMJ/JSA	
		DATE JULY 2015		DRAWING 9L	



NOTE: STREET WILL REQUIRE STORM SEWER

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TOWN OF HAMPTON
NEW BRUNSWICK

TYPICAL RESIDENTIAL STREET

Curb (2 Sides) and Reinforced Sidewalk (with Median)

REVISIONS			
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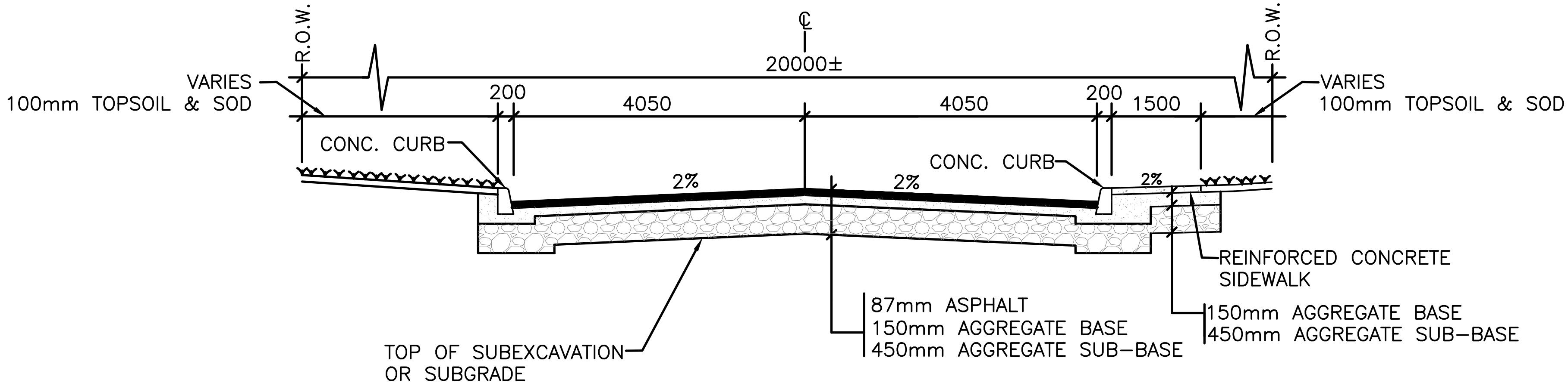
DATE SEPTEMBER 2024		DRAWING 10L	



NOTE: STREET WILL REQUIRE STORM SEWER

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TOWN OF HAMPTON
NEW BRUNSWICK

TYPICAL RESIDENTIAL STREET

Curb (2 Sides) and Reinforced Sidewalk (No Median)

REVISIONS			
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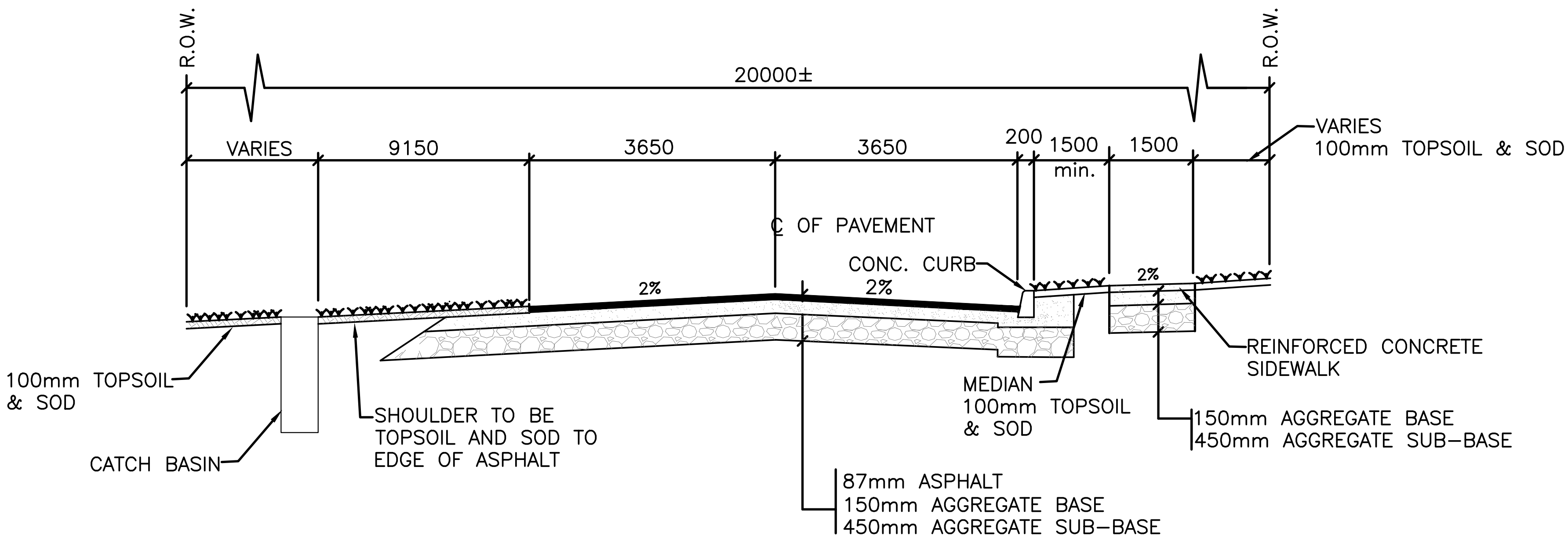
DATE SEPTEMBER 2024		DRAWING 11L	



NOTE: STREET WILL REQUIRE STORM SEWER

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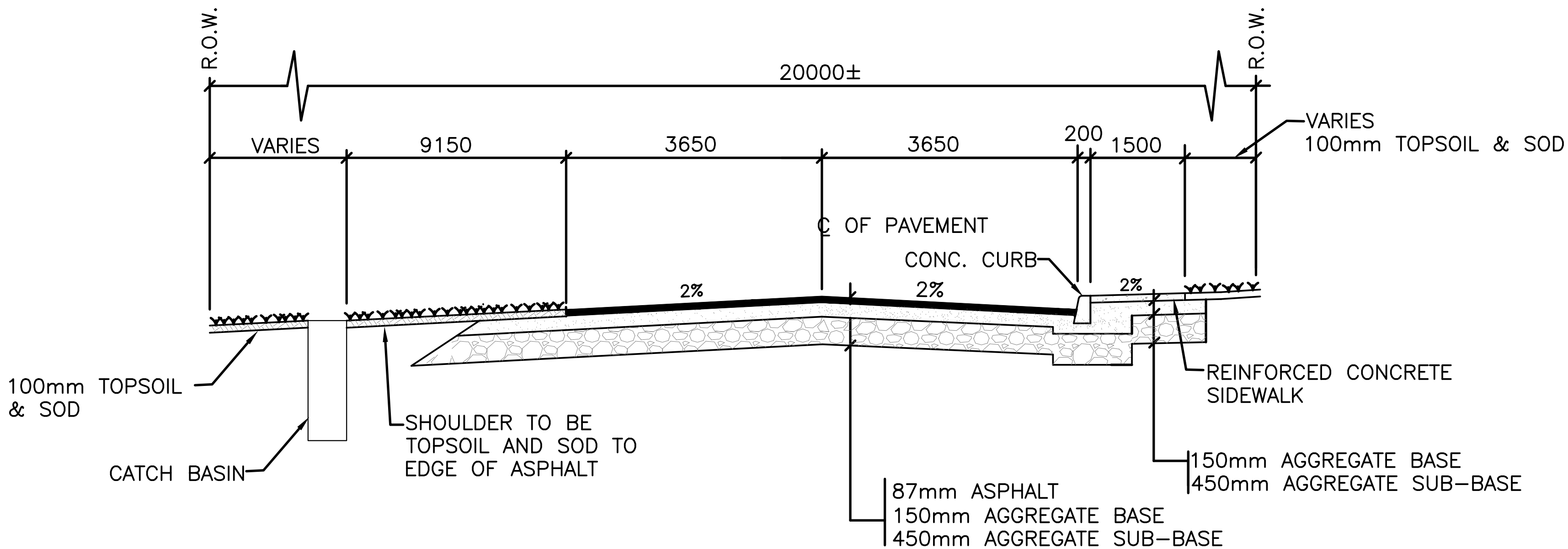
TOWN OF HAMPTON
NEW BRUNSWICK

TYPICAL RESIDENTIAL STREET

Concrete Curb (1 Side) and Reinforced Sidewalk
(with Median)

REVISIONS			
SCALE NTS	PROJ. NO.		DRAWN GRF
DATE SEPTEMBER 2024		DRAWING 12L	



NOTE: STREET WILL REQUIRE STORM SEWER

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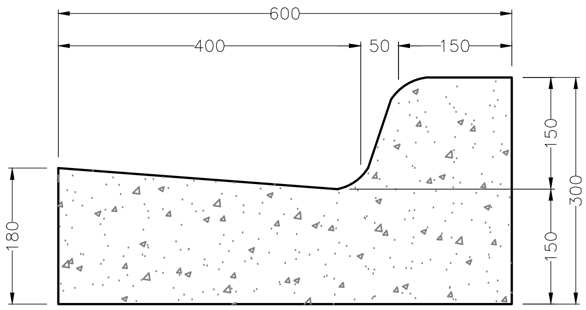
TOWN OF HAMPTON
NEW BRUNSWICK

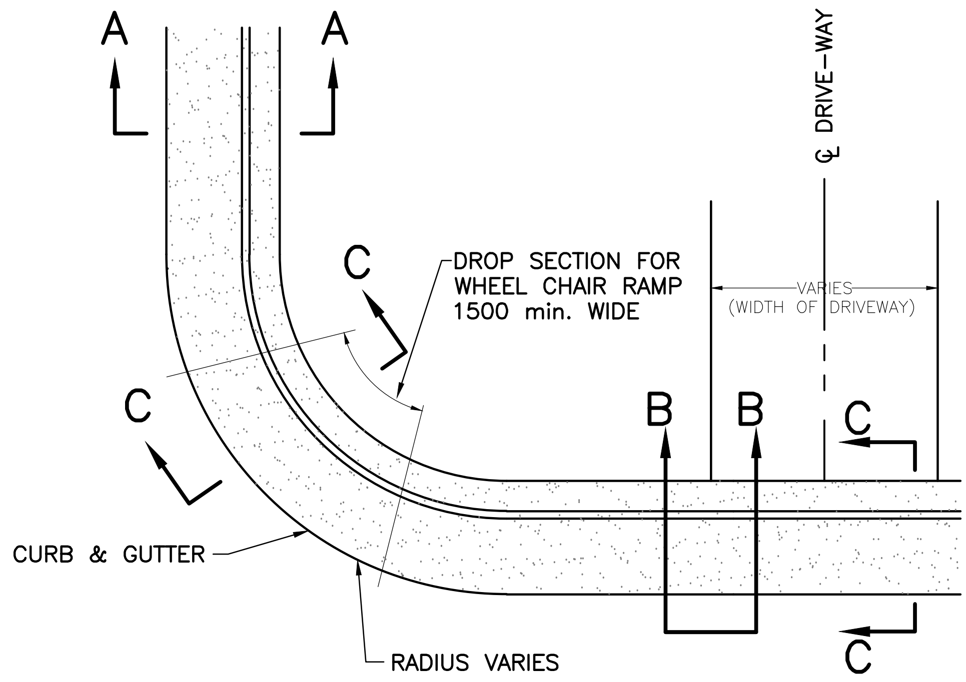
TYPICAL RESIDENTIAL STREET

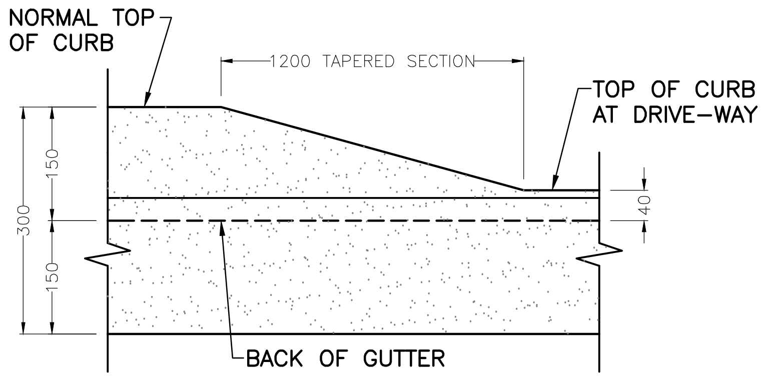
Concrete Curb (1 Side) and Reinforced Sidewalk (No Median)

REVISIONS			
SCALE NTS	PROJ. NO.		DRAWN GRF
DATE SEPTEMBER 2024		DRAWING 13L	

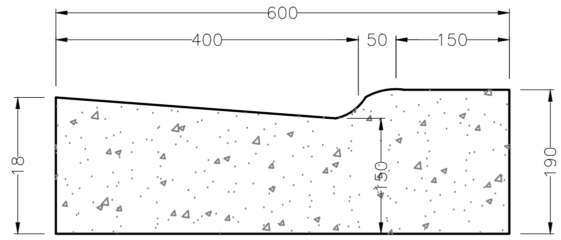


SECTION A–A





SECTION B–B



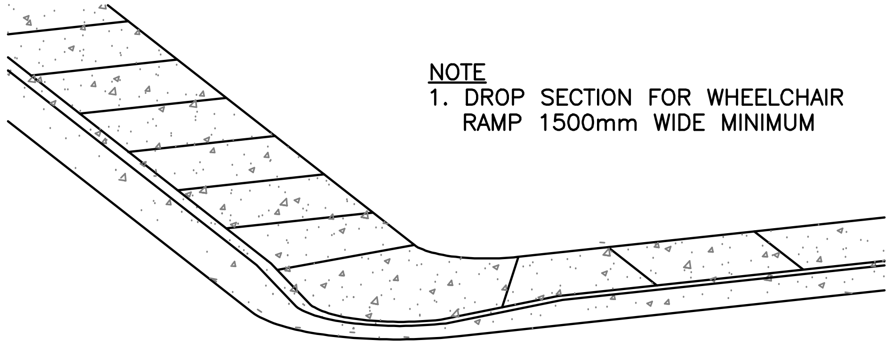
SECTION C–C

DILLON CONSULTING

TOWN OF HAMPTON
NEW BRUNSWICK

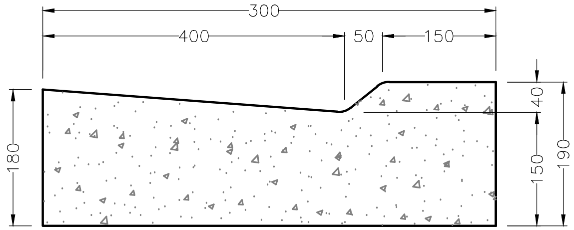
CONCRETE CURB & GUTTER

REVISIONS			
SCALE NTS	PROJ. NO.		DRAWN KMJ/JSA
DATE JULY 2015		DRAWING 14L	

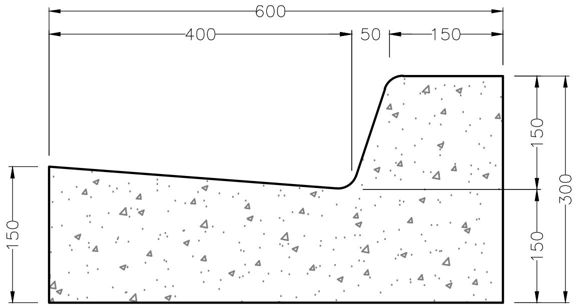


NOTE
1. DROP SECTION FOR WHEELCHAIR RAMP 1500mm WIDE MINIMUM

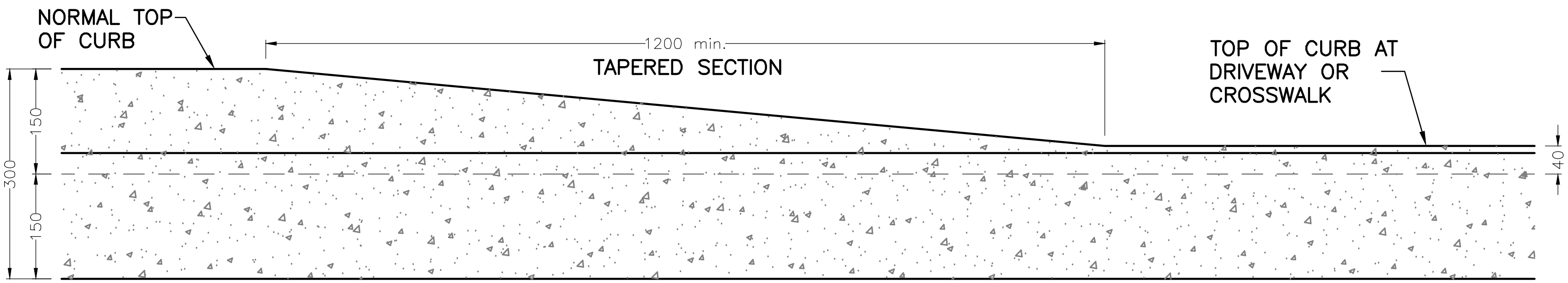
ISOMETRIC VIEW



DROP SECTION (DRIVEWAY / CROSSWALK)



CURB & GUTTER



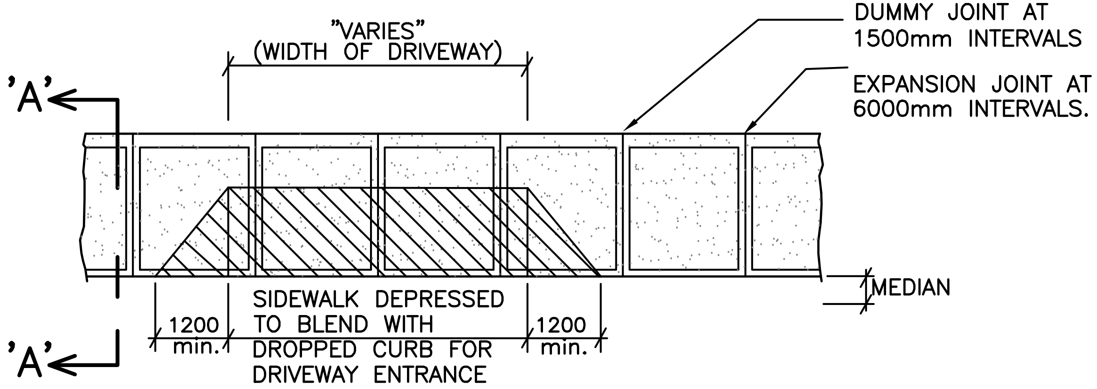
TRANSITION FOR DROP SECTION

DILLON CONSULTING

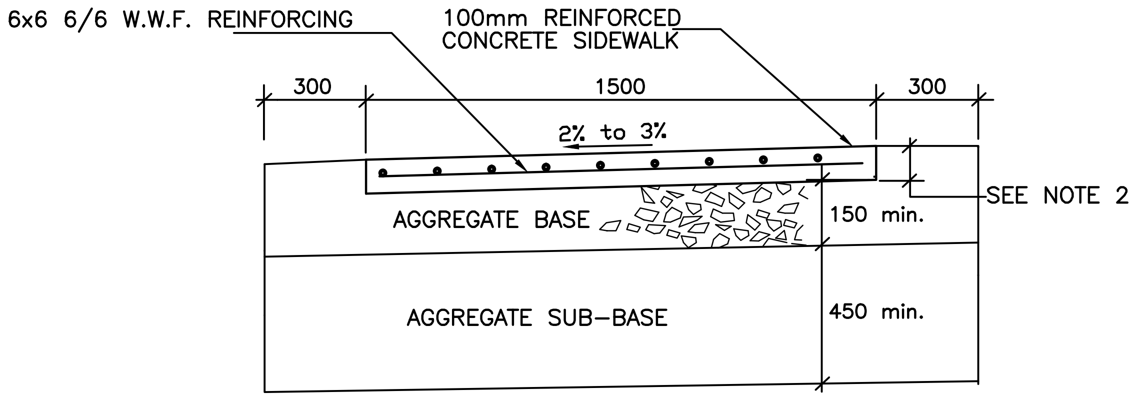
TOWN OF HAMPTON
NEW BRUNSWICK

CONCRETE CURB & GUTTER

REVISIONS			
SCALE NTS	PROJ. NO.	DRAWN KMJ/JSA	
DATE JULY 2015		DRAWING 15L	



PLAN



SECTION "A – A"

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

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CONSULTING

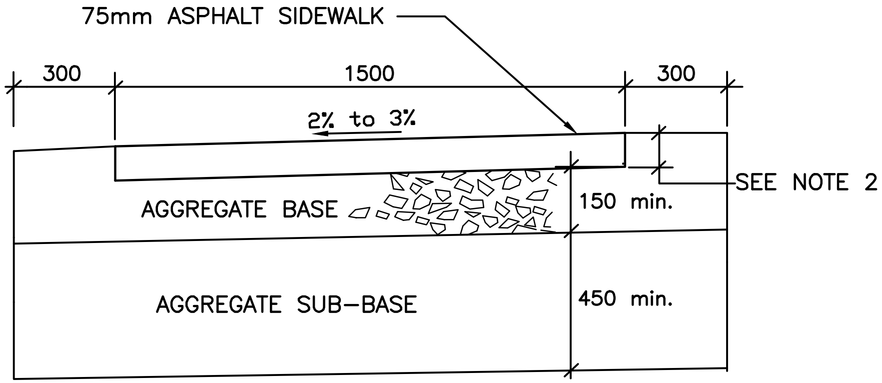
TOWN OF HAMPTON
NEW BRUNSWICK

REINFORCED CONCRETE SIDEWALK

REVISIONS

SCALE NTS | PROJ. NO. | DRAWN KMJ/JSA

DATE JULY 2015 | DRAWING 16L



SECTION "A – A"

DILLON CONSULTING

TOWN OF HAMPTON
NEW BRUNSWICK

ASPHALT SIDEWALK

REVISIONS			
SCALE NTS	PROJ. NO.	DRAWN KMJ/JSA	
DATE JULY 2015		DRAWING 17L	