



C.C. Tatham & Associates Ltd.
Consulting Engineers

10 LOUISA STREET - THORNBURY
Town of The Blue Mountains

Functional Servicing Report

prepared by:

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prepared for

2521311 Ontario Inc.

January 2018

CCTA File 117258

TABLE OF CONTENTS

1	Introduction	1
1.1	Objectives	1
1.2	Site Description	1
1.3	Background and Guidelines	3
1.4	Proposed Land Use	3
2	Sanitary Servicing	4
3	Water Distribution	5
4	Stormwater Management	6
5	Roads	7
6	Utilities	8
7	Conclusions	9

APPENDICES

Appendix A: Sanitary Sewer Design Sheet

Appendix B: Water Distribution Calculations

LIST OF FIGURES

Figure 1: Site Location Plan	2
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LIST OF DRAWINGS

SG-1: Site Grading and Siltation Control Plan

PP-1: Plan & Profile Site Servicing Station 0+950 to 1+255

1 Introduction

1.1 Objectives

C.C. Tatham & Associates Ltd. (CCTA) has been retained by 2521311 Ontario Inc. to prepare a functional servicing report in support of a proposed townhouse condominium development in the community of Thornbury within the Town of The Blue Mountains. The primary objective of this report is to assess the feasibility of providing adequate servicing for the proposed development and provide recommendations for any improvements required to service the proposed development. This report will also demonstrate that the proposed servicing plan conforms to applicable Municipal and Provincial guidelines.

1.2 Site Description

The property is approximately 0.58 ha (1.43 ac) with the legal description being Town Plot Part of Lot 10 Louisa Registered Plan 16R1213, Part 4. The property is bounded by Louisa Street to the northeast, Beaver Street South to the southeast, Landsdowne Street South to the northwest, and two residential lots to the southwest. The location of the property is shown on Figure 1 provided overleaf.

The property generally slopes to the northeast with surface water runoff draining to the roadside ditches along the south side of Louisa Street and the west side of Beaver Street. The property is currently a vacant field within the primary settlement area of the Grey County Official Plan. According to the Town of the Blue Mountains official plan, the property is designated a Community Living Area which allows townhouse development on the property. The Zoning By-law designates the land as a Development (D) zone which requires a Zoning By-law amendment to be submitted to permit the proposed development.

A geotechnical investigation has been prepared by GeoPro Consulting Ltd., the soil stratigraphy underlying the site consists of topsoil ranging between 80 mm to 240 mm over fill material and clayey silt and silty clay. The groundwater levels as measured at the time the boreholes were drilled ranged from 1.1 m to 3.7 m below existing grade.



COUNTY ROAD 26 / ARTHUR STREET WEST

LOUISA STREET WEST

SITE

LANDSDOWNE STREET

BEAVER STREET SOUTH

VICTORIA STREET SOUTH

ALICE STREET WEST



C.C. Tatham & Associates Ltd.
Consulting Engineers

Collingwood Bracebridge Orillia Barrie Ottawa

**10 LOUISA STREET – THORNBURY
TOWN OF THE BLUE MOUNTAINS**

SITE LOCATION PLAN

SCALE: N.T.S.

DATE: DEC/17

DWG NO. FIG-1

1.3 Background and Guidelines

This report was prepared recognizing the pertinent background reports in support of the proposed development and Municipal and provincial guidelines on water resources and the environment including the following publications:

- *Stormwater Management Report*, Prepared by C.C. Tatham & Associates Ltd. January 2018;
- *Geotechnical Investigation*, Prepared by GeoPro Consulting Ltd. Dated December 4, 2017;
- *Low Impact Development Stormwater management Planning and Design Guide*. Toronto and Regional Conservation Authority, Credit Valley Conservation Authority (version 1.0, 2010);
- *Engineering Standards*. Town of The Blue Mountains (April 2009);
- *Design Guidelines for Drinking-Water Systems*. Ministry of the Environment (2008);
- *Design Guidelines for Sewage Works*. Ministry of the Environment (2008); and
- *Stormwater Management Practices Planning and Design Manual*. Ministry of the Environment (2003).

1.4 Proposed Land Use

The proposed site plan includes 23 townhouse units with common elements serviced with municipal sewage, water, and an onsite Stormwater Management (SWM) system. Access to the site will be provided off Landsdowne Street via a private dead end road. Utilities including hydro, gas, cable, and telephone, will be provided by the respective utility providers from their existing plant surrounding the site.

2 Sanitary Servicing

The nearest sanitary sewer main to the subject site is at the intersection of Victoria Street and Louisa Street; according to as-built information (drawing # 7302-M9) provided by the Town, there is an existing 200 mm stub at the maintenance hole with an invert elevation of 186.93 m (as surveyed). The sewer will be extended west on Louisa Street to Beaver Street where the sewer will be directed 54 m south west on Beaver Street. An inspection maintenance hole will be located just inside the property line and the sewer extended 95 m to the northwest with individual services to each townhouse. All main line pipes extending to the site will be 200 mm in diameter including within the development.

A preliminary sanitary design sheet is included in Appendix A which confirms the proposed sewer main has adequate capacity to convey the peak sanitary flows from the proposed development.

The layout of the proposed sanitary sewer is included on Drawing PP-1 located at the back of this report.

3 Water Distribution

Water service will be supplied from the Town of The Blue Mountains' municipal distribution system. The nearest watermain is currently at the intersection of Louisa Street and Victoria Street, east of the site. An existing 150 mm stub at the intersection will be extended west along Louisa Street to Beaver Street and follow the same route as the sanitary sewer, with 2.5 m horizontal separation. The layout of the proposed watermain is included on Drawing PP-1 located at the back of this report. The proposed watermain will be sized to provide fire suppression flows as per the Fire Underwriters Survey (FUS) specifications. Water demand calculations can be seen attached in Appendix B and are summarized below.

- Design Population (Residential) 53 people
- Average Day Demand (ADD) 23.9 m³/d (0.3 L/s)
- Maximum Day Demand (MDD) 47.8 m³/d (0.6 L/s)
- Peak Hour Demand (PHD) 121.0 m³/d (1.4 L/s)
- Maximum day plus fire flow 68.1 L/s (0.6 L/s + 66.7 L/s) for 2 hours

Prior to completing the detailed design, a fire flow test at the intersection of Louisa Street and Victoria Street will be carried out to establish the static pressure and available fire flow from the Town of The Blue Mountain's water distribution system. A head loss calculation using the Hazen Williams friction loss formula will confirm adequate pressures and fire flows for the proposed watermain within the development are in accordance with Town Standards.

4 Stormwater Management

A stormwater management report (SWMR) has been prepared by CCTA under separate cover and should be read in conjunction with this report. The SWMR outlines how development of this site will satisfy the requirements of the Town and Grey Sauble Conservation Authority (GSCA). In summary, the SWM system will utilize a combination of infiltration trenches and an oil grit separator to achieve the required water quality objectives and underground storage for water quantity objectives. Post development peak flow rates will match pre-development rates for the 2 through 100 year storm event. Water quality will meet the enhanced target of the MOECC achieving 80% TSS removal.

5 Roads

The proposed development will be serviced by one access point off Landsdowne Street. The entrance will be constructed in accordance with the Ontario Building Code (OBC) to provide a fire access route to each townhouse and include an off skew "T" intersection for fire truck turn around. The private dead end internal access road will be 6.0 m wide with concrete curb and constructed as recommended in the geotechnical investigation with the following road structure:

- 300 mm Granular 'B';
- 150 mm Granular 'A';
- 50 mm HL-8 base course asphalt; and
- 40 mm HL-3 top course asphalt.

6 Utilities

It is the intention to service the development with gas, cable, telephone, and hydro. The applicable service suppliers have been contacted and have confirmed their intention to service the development pending review of capacity of their applicable plant. Final designs will be provided at the detailed design stage.

7 Conclusions

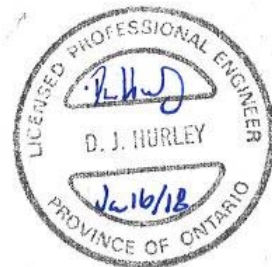
Based on the preceding analyses, the proposed development can be appropriately serviced. Specifically, the proposed strategy for servicing includes:

- Extending the existing 200 mm diameter sanitary sewer main from the intersection of Victoria Street and Louisa Street west along Louisa Street and southwest along Beaver Street to the site.
- The existing 150 mm watermain stub at the intersection of Victoria Street and Louisa Street will be extended west along Louisa Street and southwest along Beaver Street to the site.
- Stormwater runoff will be treated on site for quality and quantity control and outlet to the existing roadside ditch on Louisa Street.
- Hydro, gas, cable, and Bell have confirmed they have infrastructure in the surrounding area and will confirm capacity to service the site at the detailed design stage.

Additional details with respect to the various servicing components will be provided at the final design stage.



Authored by: Andrew Overholt, B.E.Sc, EIT
Intern Engineer



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Vice President,
Manager – Water Resources Engineering

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**APPENDIX A:
SANITARY SEWER DESIGN SHEET**

SANITARY SEWER DESIGN SHEET

Approved:



C.C. Tatham & Associates Ltd.
Consulting Engineers

Collingwood Bracebridge Orillia Barrie Ottawa

Flow Criteria

Average Flow Rate: 450 l/cap/d
 Infiltration Rate: 0.23 l/s/ha
 Population (Note 2): 2.30 cap/unit
 Peaking Factor: Harmon

Project Name: 10 Louisa Street
 Project Number: 117258
 Municipality: Town of The Blue Mountains
 Designed By: AO
 Date: January 5, 2018
 Checked By: MAB
 Date: January 12, 2018
 Revision Number: 0

STREET NAME	AREA LABEL	UPSTREAM MAINTENANCE HOLE MH No.	DOWNSTREAM MAINTENANCE HOLE MH No.	UNITS	POPULATION	ACCUMULATED POPULATION	PEAKING FACTOR	AREA ha	ACCUMULATED AREA ha	AVERAGE FLOW			PEAK FLOW			PROPOSED SEWER					
										RESIDENTIAL l/s	INFILTRATION l/s	TOTAL l/s	RESIDENTIAL l/s	INFILTRATION l/s	TOTAL l/s	LENGTH OF PIPE m	PIPE DIAMETER mm	GRADE %	FULL FLOW CAPACITY l/s	FULL FLOW VELOCITY m/s	ACTUAL FLOW VELOCITY m/s
Internal Street		5	4	23	52.9	52.9	4.31	0.58	0.58	0.28	0.13	0.41	1.19	0.13	1.32	96.4	200	2.9%	55.85	1.78	0.74
Internal Street		4	3	-	-	52.9	4.31	-	0.58	0.28	0.13	0.41	1.19	0.13	1.32	12.5	200	7.0%	86.77	2.76	1.03
Beaver Street		3	2	-	-	52.9	4.31	-	0.58	0.28	0.13	0.41	1.19	0.13	1.32	54.9	200	0.5%	23.19	0.74	0.39
Louisa Street		2	1	-	-	52.9	4.31	-	0.58	0.28	0.13	0.41	1.19	0.13	1.32	56.1	200	0.5%	23.19	0.74	0.39

Notes:

1. This is a preliminary design sheet to show approximate sewer sizes to be confirmed at the detailed design stage
2. Flow Criteria is based on The Blue Mountains Engineering Standards, April 2009.

**APPENDIX B:
WATER DISTRIBUTION CALCULATIONS**



C.C. Tatham & Associates Ltd.
Consulting Engineers
Collingwood Bracebridge Orillia Barrie

Project: 10 Louisa Street

Date: Dec. 21, 2017

File No.: 117258

Designed: AO

Subject: Water Supply Calculations

Checked: MAB

DEMAND CRITERIA

Average Daily Demand: 450 L/capita/day
Capita per Unit: 2.3 capita/unit
Maximum Daily Demand Factor: 2.0
Peak Hourly Demand Factor: 4.5
Number of Units: 23 units
Design Population 53

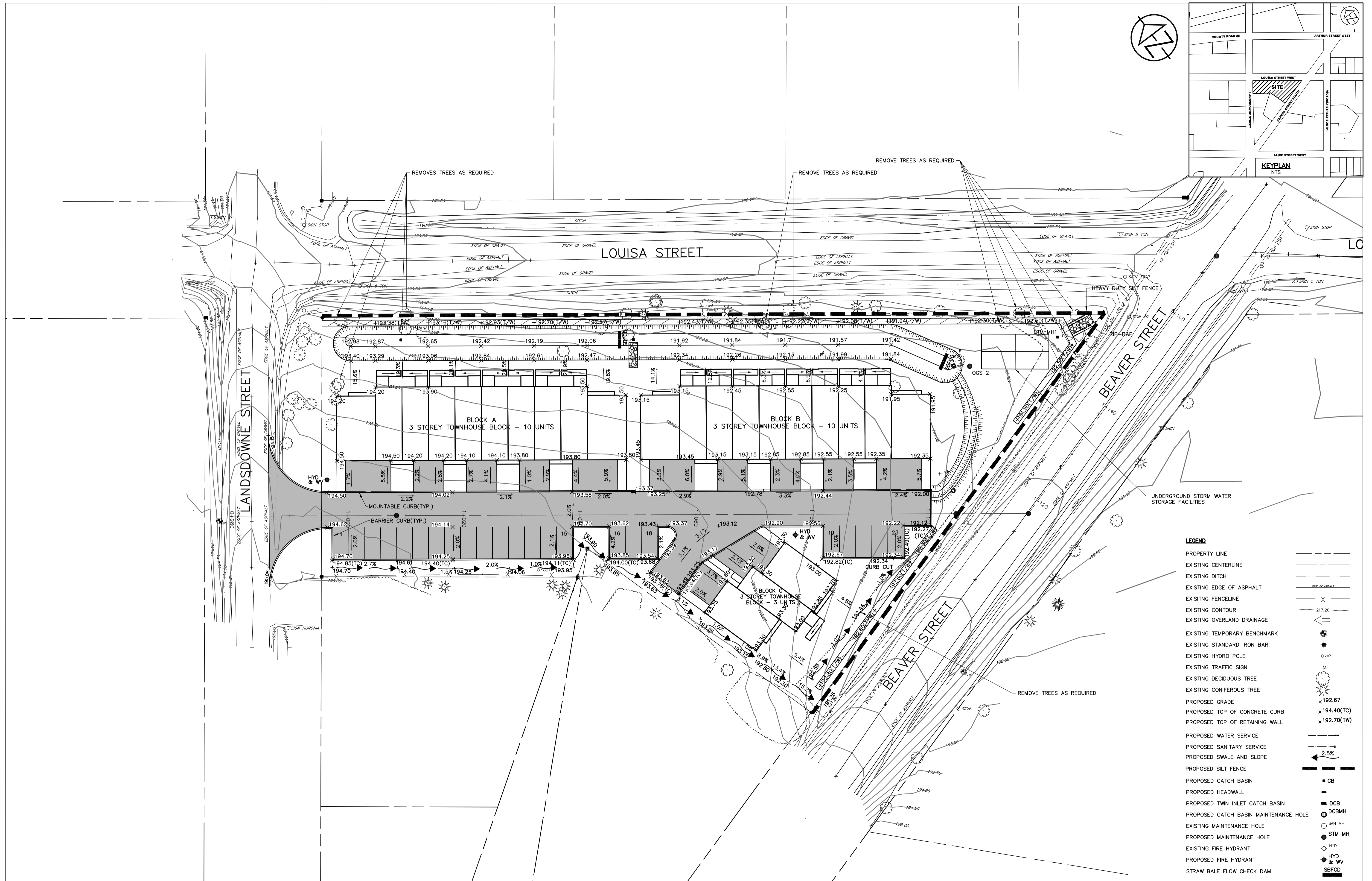
DESIGN FLOWS

Average Daily Flow: 23,850 L/day
0.30 L/s

Maximum Day Demand: 0.60 L/s
Peak Hour Demand: 1.40 L/s

Fire Suppression: 4000 L/min (FUS - Part II, Note J, 3 to 10 m Exposure Distance)
66.7 L/s

Design Flow: 68.1 L/s



LEGEND

PROPERTY LINE	---
EXISTING CENTERLINE	---
EXISTING DITCH	---
EXISTING EDGE OF ASPHALT	---
EXISTING FENCELINE	X
EXISTING CONTOUR	---
EXISTING OVERLAND DRAINAGE	←
EXISTING TEMPORARY BENCHMARK	+
EXISTING STANDARD IRON BAR	+
EXISTING HYDRO POLE	○
EXISTING TRAFFIC SIGN	□
EXISTING DECIDUOUS TREE	○
EXISTING CONIFEROUS TREE	△
PROPOSED GRADE	x192.67
PROPOSED TOP OF CONCRETE CURB	x194.40(TC)
PROPOSED TOP OF RETAINING WALL	x192.70(TW)
PROPOSED WATER SERVICE	---
PROPOSED SANITARY SERVICE	---
PROPOSED SWALE AND SLOPE	← 2.5%
PROPOSED SILT FENCE	---
PROPOSED CATCH BASIN	■ CB
PROPOSED HEADWALL	---
PROPOSED TWIN INLET CATCH BASIN	■ DCB
PROPOSED CATCH BASIN MAINTENANCE HOLE	○ DCBMH
EXISTING MAINTENANCE HOLE	○ SAN MH
PROPOSED MAINTENANCE HOLE	○ STM MH
EXISTING FIRE HYDRANT	○ HYD
PROPOSED FIRE HYDRANT	○ HYD & WW
STRAW BALE FLOW CHECK DAM	■ SBFCDD

CONTRACT DRAWINGS
 CONTRACTOR MUST VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER BEFORE COMMENCING WORK. DRAWINGS ARE NOT TO BE SCALED.

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TBM 2 ELEV. 191.89
 REFERRED TO AS A BOLT IN A HYDRO POLE LOCATED ON THE SIDE SLOPE OF BEAVER STREET, APPROXIMATELY 85m SOUTHWEST OF THE INTERSECTION OF LOUISA STREET AND BEAVER STREET

NO.	REVISIONS	DATE	INITIAL
1.	SITE PLAN APPROVAL	JAN/18	MAB

APPROVED

PRELIMINARY

**10 LOUISA STREET
 THE TOWN OF BLUE MOUNTAINS**

**SITE GRADING AND
 SILTATION CONTROL PLAN**

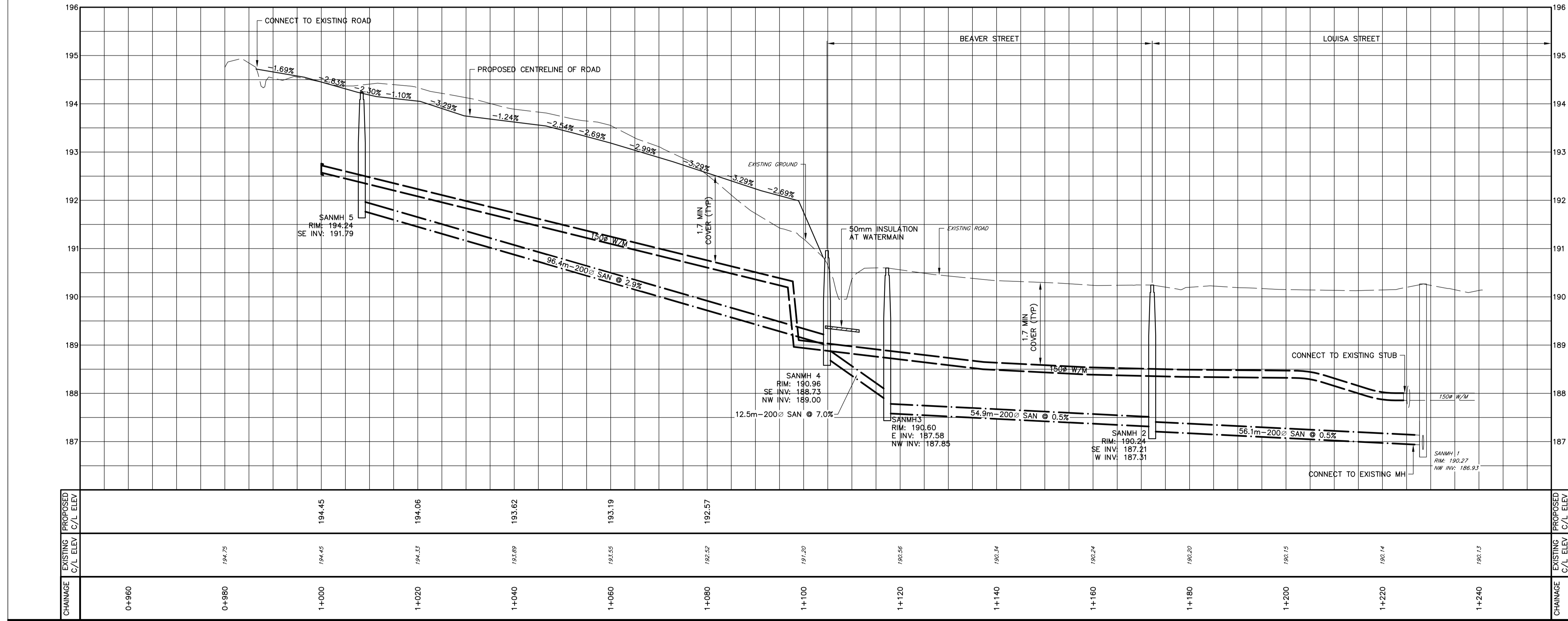
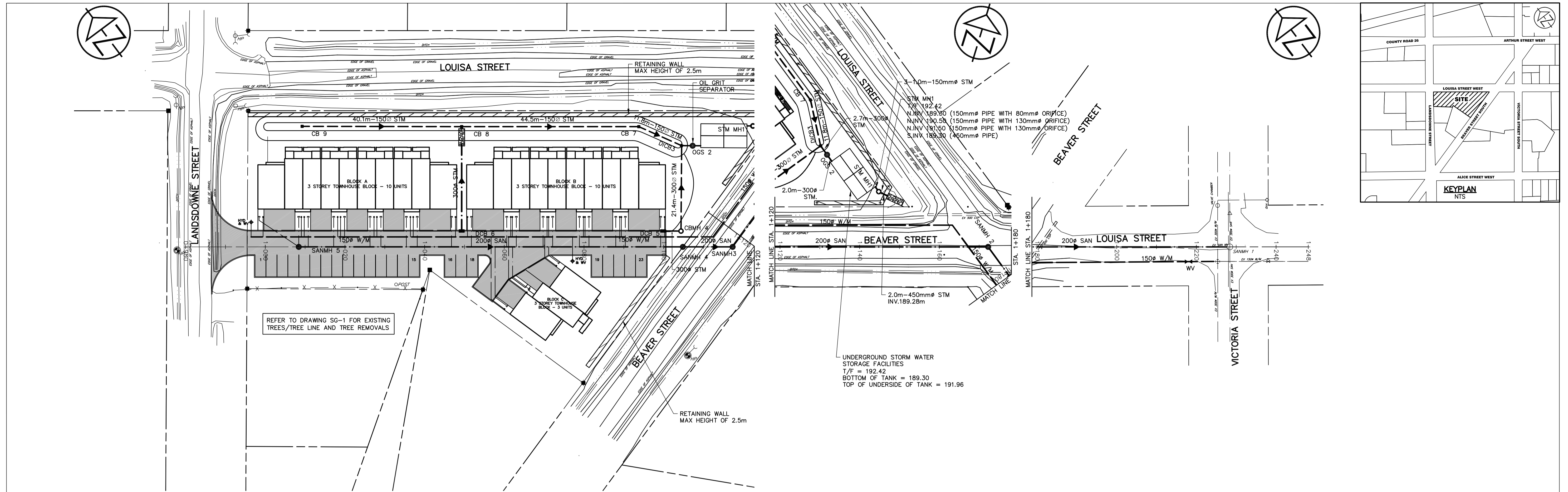
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Collingwood Bracebridge Orillia Barrie Ottawa

SCALE: 1 : 300
 DESIGN: AO/MAB
 DRAWN: DFM

CHECKED: MAB
 DATE: DEC 2017

JOB NO. 117258
 DWG. **SG-1**



LEGEND

- PROPERTY LINE
- EXISTING CENTERLINE
- EXISTING DITCH
- EXISTING EDGE OF ASPHALT
- EXISTING FENCELINE
- EXISTING CONTOUR
- EXISTING TEMPORARY BENCHMARK
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- SAN MH
- STM MH
- HYD
- HYD & WW

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PRELIMINARY

10 LOUISA STREET
THE TOWN OF BLUE MOUNTAINS
 PLAN AND PROFILE
 SITE SERVICING
 STA 0+950 TO 1+255

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