



Gerrits
ENGINEERING

CIVIL | STRUCTURAL | MECHANICAL | ELECTRICAL

ENGINEERING | BUILDINGS | RELATIONSHIPS

BARRIE | ONTARIO | 705-737-3303

WWW.GERRENG.COM

December 11, 2024

Project Number 2103-001-24

Functional Servicing Report

Regarding:

Mixed-Use Residential Development
49 High Street
Barrie, Ontario

Prepared on behalf of:

Wild Gray Capital Management Inc.

By:

GERRITS ENGINEERING LIMITED
222 Maplevue Dr. W., Suite 300
Barrie, ON L4N 9E7



TABLE OF CONTENTS

1.	INTRODUCTION.....	2
1.1.	SUPPORTING & REFERENCE DOCUMENTS	2
1.2.	SUBJECT PROPERTY	2
1.3.	PROPOSED LAND USE	3
2.	SERVICING.....	3
2.1.	OVERVIEW	3
2.2.	DESIGN CRITERIA	3
3.	SANITARY SERVICING	4
3.1.	SANITARY CAPACITY REVIEW	4
4.	WATER SUPPLY AND DISTRIBUTION.....	5
4.1.	EXISTING WATER SYSTEM ANALYSIS	5
4.2.	INTERNAL WATER DISTRIBUTION SYSTEM	5
4.3.	FIRE FLOW REQUIREMENT	5
5.	STORM DRAINAGE AND STORMWATER MANAGEMENT	5
5.1.	EXISTING DRAINAGE CONDITIONS	6
5.2.	PROPOSED DRAINAGE CONDITIONS	6
5.3.	HYDROLOGY MODEL RESULTS	6
5.4.	STORMWATER QUALITY CONTROL DURING CONSTRUCTION	7
5.5.	PERMANENT QUALITY CONTROL	7
5.6.	EROSION AND SEDIMENT CONTROL	7
6.	CONCLUSIONS.....	8

APPENDICES

Appendix A – Design Calculations

Appendix B – Figures & Drawings

LIST OF FIGURES & DRAWINGS

N/A	City of Barrie Servicing Card
N/A	City of Barrie Servicing Card
PP-2	City of Barrie Drawing
PP-3	City of Barrie Drawing
ESC-1	Erosion & Sediment Control Plan
DWG GS-1	General Servicing Plan
STM 1-2	Pre and Post Development SWM



1. Introduction

Gerrits Engineering Ltd. (GEL) has been retained by Wild Gray Capital Management Inc. (Client) to provide engineering services for the conversion of an existing 4-storey building located at 49 High Street, in the City of Barrie, from commercial to mixed-use residential. Included in the engineering services to be provided by GEL is this Functional Servicing Report (FSR), which is to be submitted to the City of Barrie and other agencies as required in support of Site Plan Approval for the proposed development. The FSR will demonstrate how the proposed development will connect to the existing municipal infrastructure and manage stormwater runoff from the site. In particular, this FSR will examine the property's functional servicing with relation to:

- Water Supply
- Sanitary Sewerage
- Storm Sewerage

1.1. Supporting & Reference Documents

The following documents have been referenced in the preparation of this report:

- Ministry of the Environment, Guidelines for the Design of Sanitary Sewage Works and Water Works, 2008
- Ministry of the Environment, Stormwater Management Planning and Design Manual, 2003
- Ministry of the Environment, Design Guidelines for Drinking-Water Systems, 2008
- Ontario Building Code (OBC), 2012
- LSRCA Technical Guidelines for Stormwater Management Submissions, September 2016
- Hutchison Environmental Sciences Ltd. Phosphorous Budget Tool, March 2012
- City of Barrie Sanitary Infrastructure Design Standard (S600), 2023
- City of Barrie Stormwater Infrastructure Design Standard (D700), 2023
- City of Barrie Water Transmission and Distribution Policies and Design Standard, June 2022

1.2. Subject Property

The property is located within the downtown core of Barrie and has been assigned a civic address of 49 High Street. The site is approximately 0.1 ha in size and is bound by a commercial parking lot to the north, existing commercial developments to the east, Dunlop Street to the south and High Street to the west. The site has frontage along the east side of High Street and the north side of Dunlop Street, which provide access to the existing commercial units within the building. The legal description of the property is Part of Lot 33 North Side of Elizabeth Street and Part of Lot 13 East Side of High Street of Registered Plan 129 in the City of Barrie, County of Simcoe.

The existing site is presently developed and in operation as a 4-storey commercial use building. The site consists of entirely impervious surface area as the building envelope is maximized to each property line with negligible setbacks. The building is serviced by the adjacent infrastructure within the High Street and Dunlop Street rights-of-way. A sketch of the subject site and property boundary is provided in Figure 1 below. The base imagery for Figure 1 is provided from the QGIS Mapping Services.

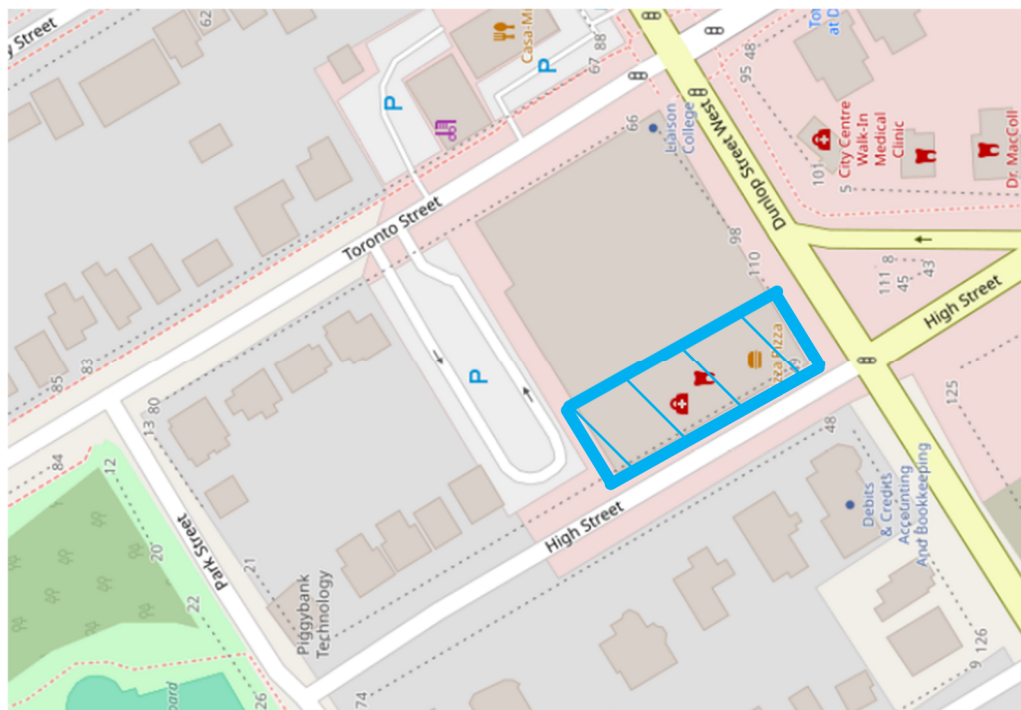


Figure 1 - Subject Property (Blue)

1.3. Proposed Land Use

The proponent is seeking to convert the existing 4-storey commercial building into a mixed-use residential building, while maintaining the existing building footprint. The first floor is to be converted from commercial floor area to parking and a lobby with some commercial floor area to remain at the south side of the building. The second floor is to remain as commercial floor area with a reduction in the area to construct mechanical storage and stairwells. The third and fourth floors are to be converted from commercial floor area to 20 residential units totaling 34 bedrooms. The development will provide commercial availability on the ground floor and second floor, similar to the existing developments fronting Dunlop Street, while also providing residential dwellings on the upper floors.

2. Servicing

2.1. Overview

Based on as-built data provided by the City of Barrie, there are existing municipal sewers and water distribution systems within the rights-of-way, which provide servicing to the existing building. It is proposed to utilize the existing municipal infrastructure for the development. No new service connections are anticipated currently. A general review of the existing services is discussed below, to ensure the design capacities are within an acceptable range.

2.2. Design Criteria

As defined by the City of Barrie & OBC, a summary of the water and wastewater design criteria is as follows:

Serviced Population

- | | | |
|--|---|-----------------------|
| • Density (Apartment Dwellings) | = | 1.67 ppu |
| • Development residential population – 20 units x 1.67 ppu | = | 34 pers |
| • Commercial floor area | = | 1103.5 m ² |



Wastewater Criteria

- Average Day Flow (ADF) Residential (New Development) = 225 L/c/d
- Average Day Flow (ADF) Commercial (OBC) = 8.06 L/m²/d
- Extraneous flows (peak per developable ha) = 0.1 L/s/ha
- Peak Factor (residential and commercial) = Harmon

$$M = 1 + \frac{14}{4 + P^{0.5}} = 4.35 = 4.0 \text{ (Maximum)}$$

Water Criteria

- Average Day Demand (ADD) Residential (New Development) = 225 L/c/d
- Average Day Demand (ADD) Commercial (OBC) = 8.06 L/m²/d
- Max Day Factor (MDD) = 9.4
- Peak Hour factor (PH) = 14.1
- Maximum pressure under Static Load = 700 kPa
- Minimum pressure in system at Peak Hour demand = 275 kPa
- Minimum pressure in system at Fire + MDD = 140 kPa

3. Sanitary Servicing

The projected daily average and peak sewage flows from the subject property are summarized in the table below.

Table 1 – Design Wastewater Flows

Average Daily Demand (Design)	26	m ³ /d
	0.3	L/s
Peak Hour Flow (Design)	112	m ³ /d
	1.3	L/s

3.1. Sanitary Capacity Review

The City of Barrie drawings, attached in Appendix B, indicate that there is an existing 100mm sanitary service connected to the existing 500mm sanitary sewer main on High Street. The inverts of the sanitary service have not been provided and it is assumed that the service was laid with a gradient of at least 0.5%. A smooth walled 100mm sewer at 0.5% gradient has capacity to convey 3.7 L/s, which is larger than the calculated peak hour flow of 1.3 L/s. The existing 100mm sanitary sewer service is sufficient to meet the servicing demands required for the proposed building renovations and change of use.



4. Water Supply and Distribution

4.1. Existing Water System Analysis

The existing water servicing for this Development has been considered from an internal perspective. An analysis of the onsite demands has been completed, as per the City of Barrie and the MOE guidelines and includes the design criteria previously discussed. The projected daily average, maximum day, and peak hourly flows from the subject property are summarized in the table below:

Table 2 – Design Water Flows

Average Daily Demand (Design)	26	m ³ /d
	0.3	L/s
Maximum Day Demand (Design)	103	m ³ /d
	1.2	L/s
Peak Hour Flow (Design)	181	m ³ /d
	2.1	L/s

4.2. Internal Water Distribution System

The City of Barrie drawings, attached in Appendix B, indicate that there is an existing 100mm cast iron water service connected to the 150mm ductile iron watermain on High Street, which provides service to the existing building. Under maximum day and peak hour flow demands the velocity of the water pipe is 0.15 m/s and 0.27 m/s, respectively, which are within acceptable ranges. The existing 100mm water service is sufficient to meet the servicing demands required for the proposed building renovations and change of use.

4.3. Fire Flow Requirement

The fire flow analysis and demand calculations are completed in accordance with the 2020 version of “Water Supply for Public Fire Protection” completed by the Fire Underwriters Survey (FUS). The subject building is a 4-Storey mixed-use with the largest gross floor area proposed to be utilized as residential. The subject building will be renovated such and is assumed to be classified as Wood Frame Construction (Type V). In addition, the building will be equipped with a standard water supply and a sprinkler system meeting NFPA 2024 standards. The Effective Area for Type V buildings is to be calculated as 100% of the floor area. This results in a Total Effective Area of approximately 4,005 m². The minimum fire flows for this specific building and projected occupancy are calculated in Appendix A and summarized as 267 L/s. A fire hydrant flow test was completed on October 25, 2024, by Vipond Inc, attached in Appendix A, on an existing Hydrant #4670 located south of the site on the south side of Dunlop Street West. The hydrant flow test indicates an available flow of 1058 L/s at a residual pressure of 20 PSI, and the hydrant flow test conversion calculation results in 503.8 L/s, both of which exceed the required calculated flow of 267 L/s.

5. Storm Drainage and Stormwater Management

A key component of the Development is the need to address environmental and related Stormwater Management (SWM) issues. These are examined in a framework aimed at meeting the City of Barrie and MOE requirements. SWM parameters have evolved from an understanding of the location and sensitivity of the site’s natural systems.

It is understood that the objectives of the SWM plan are to:

- Protect life and property from flooding and erosion.
- Maintain water quality for ecological integrity, recreational opportunities etc.
- Protect and maintain groundwater flow regime(s).
- Protect aquatic and fishery communities and habitats.
- Maintain and protect significant natural features.
- Protect and provide diverse recreational opportunities that are in harmony with the environment.



5.1. Existing Drainage Conditions

The subject property is approximately 0.1 Ha in size and is evaluated as having one drainage area consisting of building roof area. The existing roof area is drained by roof leaders to pipes connected to the underground storm sewer.

Using the Ministry of Transportation policies and Design Guidelines, the existing site statistics produce the following weighted runoff coefficient:

$$\begin{array}{rclclcl} \text{Building Roof} & = & 1,024 \text{ m}^2 & R & = & 0.95 & \text{AR} & = & \frac{973}{973} \\ & & & & & \text{Total} & \text{AR} & = & \end{array}$$

$$\text{Site Area} = 1,024 \text{ m}^2 \quad \text{AR} = 973 \text{ m}^2 \quad \text{Weighted R} = 0.95$$

5.2. Proposed Drainage Conditions

The proposed development will slightly increase the imperviousness of the site and it is important to quantify this change to determine if quantity control requirements are required. As per the proposed site's statistics, the post development weighted runoff coefficient is:

$$\begin{array}{rclclcl} \text{Building Roof} & = & 1,024 \text{ m}^2 & R & = & 0.95 & \text{AR} & = & \frac{973}{973} \\ & & & & & \text{Total} & \text{AR} & = & \end{array}$$

$$\text{Site Area} = 1,024 \text{ m}^2 \quad \text{AR} = 973 \text{ m}^2 \quad \text{Weighted R} = 0.95$$

5.3. Hydrology Model Results

Given the size of the site, the Modified Rational Method will be used to determine the existing and anticipated SWM release rates:

Catchment Area	=	approx. 0.1 ha
Runoff Coefficient	=	0.95 (existing condition)
	=	0.95 (proposed condition)
Time of Concentration (tc)	=	10 minutes
Rainfall Intensity	=	City of Barrie WPCC IDF Curve Parameters
Peaking Factor (Ci)	=	1.00 (2-10 year design periods)
	=	1.10 (25 year design period)
	=	1.20 (50 year design period)
	=	1.25 (100 year design period)
Peak Runoff Rate (Qr)	=	$C \times I \times A \times 360^{-1}$

Applying the above results in the following release rates:

Table 1: Existing & Post Development Uncontrolled Release Rates

	2 year (L/s)	5 year (L/s)	10 year (L/s)	25 year (L/s)	50 year (L/s)	100 year (L/s)
Existing Condition (allowable release rate)	22	29	34	44	53	61
Post Development (uncontrolled rate)	22	29	34	44	53	61



When reviewing the pre and post development conditions, it is determined that there is no additional runoff from the site generated from the building renovations and change of use. The existing stormwater servicing is sufficient to continue to be utilized in post development conditions and no further quantity control measures are proposed for the site re-development.

5.4. Stormwater Quality Control During Construction

To ensure stormwater quality control during construction, it is imperative that effective environmental and sedimentation controls be in place throughout the entire area subject to construction activities (where applicable). If there is earth grading activity planned, there will be a potential of soil erosion. It is therefore recommended that the following be implemented to assist in achieving acceptable stormwater runoff quality:

- Restoration of exposed surfaces with vegetation and non-vegetative material as soon as construction schedules permit;
- Installation of temporary sediment ponds, filter strips, silt fences and rock check dams or other similar facilities throughout the site, and specifically during all construction activities;
- Reduce stormwater drainage velocities where possible;
- Ensure that disturbed areas that are left inactive for more than 30 days shall be vegetated and stabilized as instructed by the Engineer;
- Minimize the amount of existing vegetation removed.

5.5. Permanent Quality Control

There is no change in the runoff quality from existing to post development conditions and therefore no additional quality control measures are proposed for the site re-development.

5.6. Erosion and Sediment Control

To ensure Stormwater runoff quality is controlled during construction, an erosion and sediment control strategy will be implemented to mitigate transportation of silt off-site to the existing roads and sewers. It is imperative that effective controls be put in place and maintained until all areas are stabilized with surface cover. All erosion and sediment control Best Management Practices (BMP) shall be designed, constructed and maintained in accordance with the City of Barrie's erosion control requirements.

Items that will be addressed for both temporary and permanent erosion and sediment controls are based on the following:

- Site location description and area;
- Existing and proposed land use;
- Vegetative cover;
- Existing drainage routes;
- Proposed site works;
- Proposed outlets;
- Permits required;
- Sediment filters and barriers - silt fences;
- Construction entrance location;
- Protection to catch basins and ditch inlets;

To prevent construction generated sediments from entering the storm sewers or leaving the site by overland flow, the following measures should be implemented during the construction phase:

- Temporary sediment control fencing should be erected around the perimeter of the grading activities.
- Temporary sediment fabric and stone filters should be installed on existing and proposed catch basins until surface cover and vegetation has been stabilized.
- A temporary construction access mud mat should be implemented to reduce the amount of materials that may be transported off site.



- Construction during drier months should be monitored for wind-borne transport of sediments. At the direction of the engineer, the contractor may be directed to water down exposed earth areas with an aqueous solution of calcium chloride.
- All disturbed areas not under immediate construction for 30 days, or not intended for building activities within a 3-month time period, should be stabilized with seeding.
- Built up sediment should be removed and disposed off-site at least once a month, or more frequently as directed by the engineer.

6. Conclusions

A summary of the servicing recommendations are as follows:

- **Water Servicing** – it is proposed to utilize the existing 100mm CI water service that is connected to the existing 150mm DI municipal watermain located within the High Street right-of-way.
- **Sanitary Servicing** – it is proposed to utilize the existing 100mm sanitary service that is connected to the existing 500mm municipal sanitary sewer main located within the High Street right-of-way.
- **Stormwater Drainage and Management** – the difference in stormwater runoff from the pre & post development condition is negligible and no additional quantity or quality controls are recommended.

The analysis and conceptual design outlined in this report demonstrates that the proposed Development is feasible, based on sound engineering principles and, the development will become a cohesive part of the City of Barrie.

All of which is respectfully submitted,

Gerrits Engineering Ltd.

Dan LeBlanc, P.Eng.
Civil Engineer





December 9, 2024

Appendix A

Design Calculations

SANITARY SERVICING DEMAND

Reference Documents

MECP Design Guidelines for Sewage Works (2008)
City of Barrie Sanitary Infrastructure Design Standard (2023)

Design Criteria

Total Site Area (ha)	0.1
Residential Site	
Residential Area (ha)	0.1
Units	20
Persons per unit	1.7
Total Population	34
Per Capita Flow (L/cap/day)	225
Commercial Site	
Commercial Area (m ²)	1916.0
Commercial Rate (L/m ² /d)	8.06
Commercial Peak Factor	14.1

Formulae

Total Sewage Flows

Average Daily Demand= $P \cdot q$

Peak Demand, $Q = (P \cdot q_r \cdot M) / 86.4 + I \cdot A$

Harmon Peaking Factor, $M = 1 + (14 / (4 + (P/1000)^{0.5}))$

Where:

P = population in thousands

q = Average Daily per capita domestic flow (L/cap*d)

Q_r = Peak domestic flow (L/s)

Q_c = Peak commercial flow (L/s)

I = Peak extraneous flows (L/ha*s)

A = Gross Area tributary in hectares

M = Harmon Formula Peaking Factor ($2 \leq M \leq 4$)

AVERAGE DAY SANITARY SERVICING DEMAND

DESCRIPTION		DOMESTIC FLOW				COMMERCIAL FLOW				INFILTRATION			TOTAL
Location	Occupancy	Total Population	Peak Factor	Per Capita Flow (l/cap/day)	Domestic Flow (L/s)	Total Commercial Area (m ²)	Commercial Rate (L/m ² /d)	Peaking Factor	Commercial Flow (L/s)	Total Area (ha)	Infiltration Rate (L/ha/sec)	Infiltration Flow (L/s)	Total Flow (L/s)
Building 1	Mixed Use	34	1.0	225	0.1	1916	8.06	1.0	0.2	0.10	0.10	0.01	0.3

PEAK SANITARY SERVICING DEMAND

DESCRIPTION		DOMESTIC FLOW				COMMERCIAL FLOW				INFILTRATION			TOTAL
Location	Occupancy	Total Population	Harmon Factor	Per Capita Flow (l/cap/day)	Domestic Flow (L/s)	Total Commercial Area (m ²)	Commercial Rate (L/m ² /d)	Peaking Factor	Commercial Flow (L/s)	Total Area (ha)	Infiltration Rate (L/ha/sec)	Infiltration Flow (L/s)	Total Flow (L/s)
Building 1	Mixed Use	34	4.0	225	0.4	1916	8.06	5.0	0.9	0.10	0.10	0.01	1.3

WATER SERVICING DEMAND

Reference Documents

MECP Design Guidelines for Drinking Water Systems (2008)
City of Barrie Drinking Water Infrastructure Design Standard

Design Criteria

Total Site Area (ha)	0.1
Residential Site	
Residential Area (ha)	0.1
Units	20
Persons per unit	1.7
Total Population	34
Per Capita Flow (L/cap/day)	225
Commercial Site	
Commercial Area (m ²)	1916
Commercial Rate (L/m ² /d)	8.06

Formulae

Water Demand

$$ADD = (P \cdot q_r) + (q_c \cdot A)$$

$$MDD = (MDF_r \cdot P \cdot q_r) + (MDF_c \cdot q_c \cdot A)$$

$$PHD = (PHF_r \cdot P \cdot q_r) + (PHF_c \cdot q_c \cdot A)$$

Where:

P = population (persons)

q = flow rate (units vary)

A = Area (ha)

MDF = Max Day Factor

PHF = Peak Hour Factor

AVERAGE DAY DEMAND

DESCRIPTION		DOMESTIC FLOW				COMMERCIAL FLOW				TOTAL
Location	Occupancy	Total Population	Factor	Per Capita Flow (l/cap/day)	Domestic Flow (L/s)	Total Commercial Area (m ²)	Factor	Commercial Rate (L/m ² /d)	Commercial Flow (L/s)	Total Flow (L/s)
Building 1	Mixed Use	34	1.0	225	0.1	1916	1.0	8.06	0.2	0.3

MAX DAY DEMAND

DESCRIPTION		DOMESTIC FLOW				COMMERCIAL FLOW				TOTAL
Location	Occupancy	Total Population	Factor	Per Capita Flow (l/cap/day)	Domestic Flow (L/s)	Total Commercial Area (ha)	Factor	Commercial Rate (L/m ² /d)	Commercial Flow (L/s)	Total Flow (L/s)
Building 1	Mixed Use	34	9.4	225	0.8	1916	2.0	8.06	0.4	1.2

PEAK HOUR DEMAND

DESCRIPTION		DOMESTIC FLOW				COMMERCIAL FLOW				TOTAL
Location	Occupancy	Total Population	Factor	Per Capita Flow (l/cap/day)	Domestic Flow (L/s)	Total Commercial Area (ha)	Factor	Commercial Rate (L/m ² /d)	Commercial Flow (L/s)	Total Flow (L/s)
Building 1	Mixed Use	34	14.1	225	1.2	1916	5.0	8.06	0.9	2.1

FIRE UNDERWRITERS SURVEY (2020) FIRE FLOW DEMAND

Reference Documents

Fire Underwriters Survey (2020)
Site Plan Completed By Khalsa Design Inc. dated May 30, 2024
Note: Building information collected from site plan

Building Information

Building Classification	Residential Group C
Number of Storeys	4
Total GFA	4005
Largest Floor Area (m ²)	1016
Floor Area above (m ²)	1013
2nd Largest Floor Area (m ²)	1013

1. BASE RFF

Parameters

Construction Type	Coefficient
Type V Wood Frame Construction	1.5
Total Effective Area	
100% of gross floor area	4005

Required Fire Flow

$$RFF = 220 \cdot C \cdot \sqrt{A}$$

Where:

RFF = Required fire flow in litres per minute (L/min)

C = The construction coefficient related to the type of building construction

A = The total effective floor area (m²)

21000	Required Fire Flow (L/min)
350	Required Fire Flow (L/s)

2. OCCUPANCY & CONTENTS ADJUSTMENT

Parameters

Occupancy and Contents	Adjustment
Limited Combustible Contents	-15%

Required Fire Flow Adjusted

$$RFF_2 = 220 \cdot C \cdot \sqrt{A + a_1}$$

Where:

RFF₂ = Adjusted required fire flow in litres per minute (L/min)

C = The construction coefficient related to the type of building construction

A = The total effective floor area (m²)

a₁ = Flow adjustment for occupancy & contents (L/min)

-3150	Flow Adjustment (L/min)
17850	Adjusted Required Fire Flow (L/min)
298	Adjusted Required Fire Flow (L/s)

3. SPRINKLER ADJUSTMENT

Parameters

NFPA 13 Sprinkler Standard	Adjustment
YES	-30%
Standard Water Supply	Adjustment
YES	-10%
Fully Supervised System	Adjustment
NO	0%

Fire Flow Adjustments

$$a_2 = RFF_2 \cdot TSA$$

Where:

RFF₂ = Adjusted required fire flow in litres per minute (L/min) from step 2

a₂ = Flow adjustment for sprinklers (L/min)

TSA = Total sprinkler adjustment (%)

-7140	Flow Adjustment (L/min)
-119	Flow Adjustment (L/s)

4. EXPOSURE ADJUSTMENT

Parameters

North Separation Distance	Adjustment
Greater than 30 m	0%
Length-Height Factor: N/A	
East Separation Distance	Adjustment
0 m to 3 m	25%
Length-Height Factor: Over 100	
South Separation Distance	Adjustment
Greater than 30 m	0%
Length-Height Factor: N/A	
West Separation Distance	Adjustment
20.1 m to 30 m	2%
Length-Height Factor: 32	

Fire Flow Adjustments

$$a_3 = RFF_2 \cdot TSA$$

Where:

RFF₂ = Adjusted required fire flow in litres per minute (L/min) from step 2

a₃ = Flow adjustment for exposure (L/min)

TSA = Total separation adjustment (%) up to a maximum of 75%

4820	Flow Adjustment (L/min)
80	Flow Adjustment (L/s)

REQUIRED FIRE FLOW DEMAND

TOTAL REQUIRED FIRE FLOW	TARGET DURATION	MINIMUM VOLUME
16000 L/min	3.50 Hours	3360000 L
267 L/s		3360 m ³
4227 GPM		887621 Gallons

FLOW TEST RESULTS



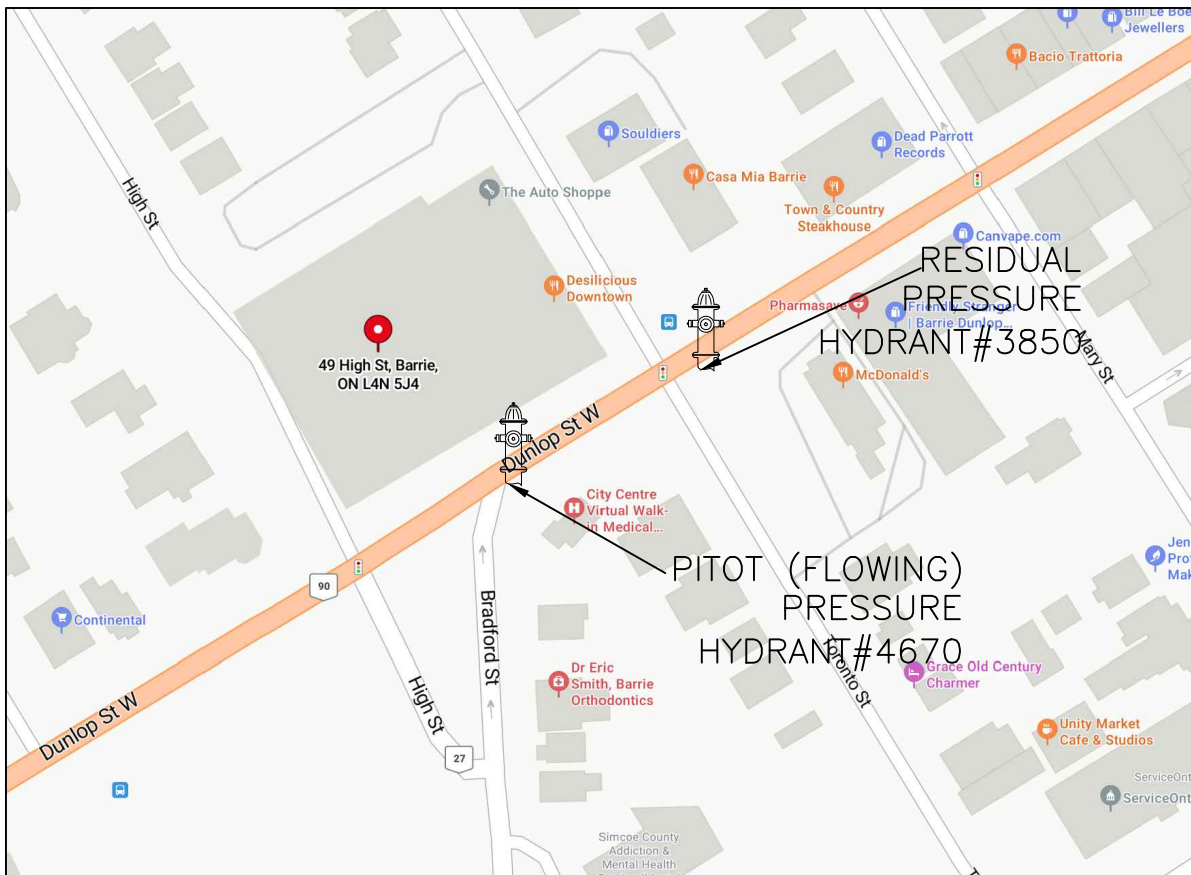
DATE : OCT-25-2024

LOCATION : 49 HIGH STREET

BARRIE

ONTARIO

TEST BY : LEN. K



STATIC PRESSURE : 76 PSI

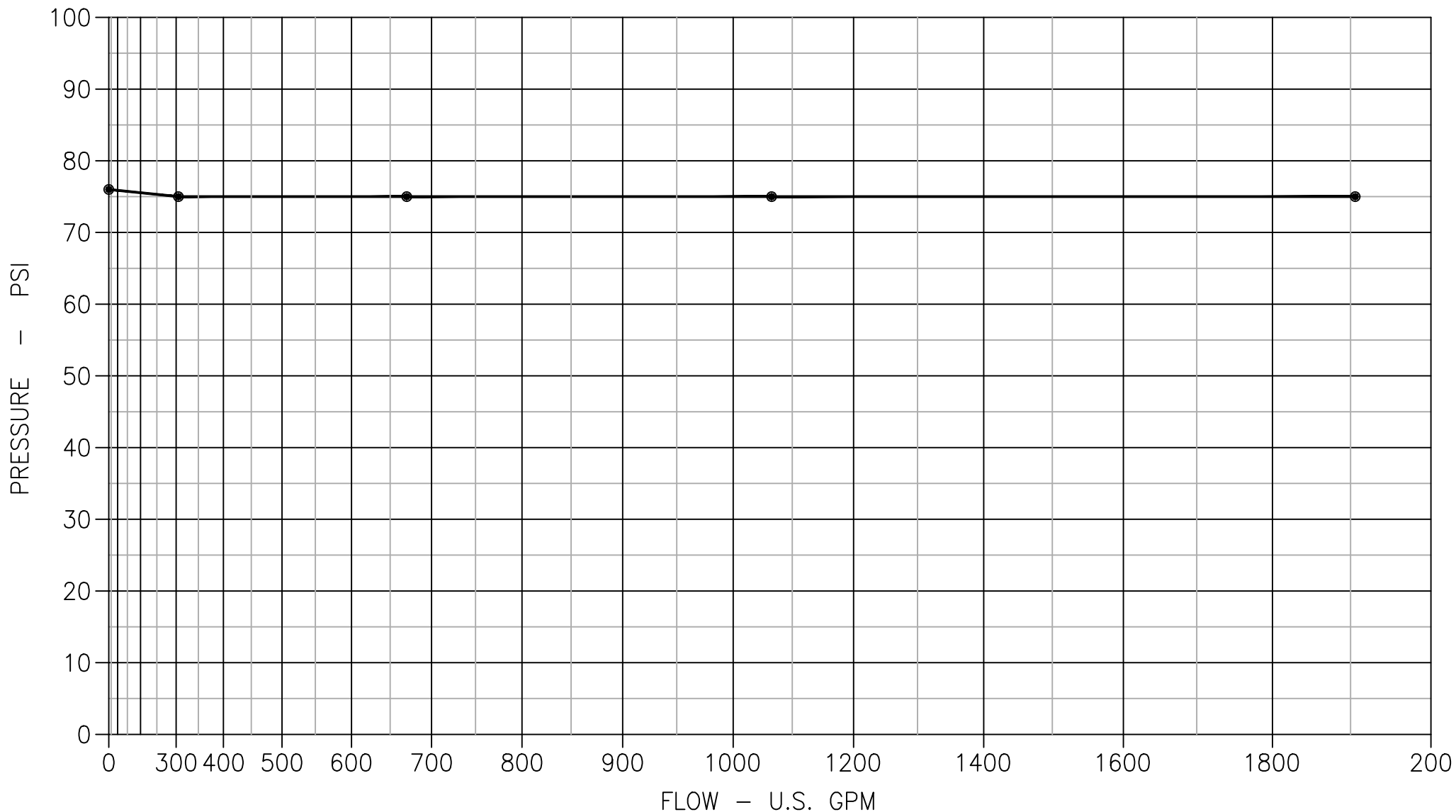
TEST NO.	NO. OF NOZZLES	NOZZLE DIAMETER (INCHES)	DISCHARGE CO-EFFICIENT	RESIDUAL PRESSURE (PSI)	PITOT PRESSURE (PSI)	DISCHARGE (U.S.GPM)
1	1	1-1/8	0.97	75	68	308
2	1	1-3/4	0.90	75	56	666
3	1	2-1/2	0.90	75	40	1067
4	2	2-1/2	0.90	75	32	1908

AVAILABLE FIRE FLOW AT 20PSI RESIDUAL PRESSURE = 16772.581 USGPM



49 HIGH STREET	BY : LEN K.
BARRIE	OFFICE : BARRIE
ONTARIO	TEST BY : VIPOND
	DATE : OCT-25-2024

STATIC:	RESIDUAL:	FLOW:
<u>76</u> PSI	TEST#1 <u>75</u> PSI	@ <u>308</u> GPM
	TEST#2 <u>75</u> PSI	@ <u>666</u> GPM
	TEST#3 <u>75</u> PSI	@ <u>1067</u> GPM
	TEST#4 <u>75</u> PSI	@ <u>1908</u> GPM



HYDRANT FLOW TESTING CONVERSION CALCULATIONS

For hydrant testing data and location of hydrants refer to testing completed by Vipond Inc. on October 25, 2024.

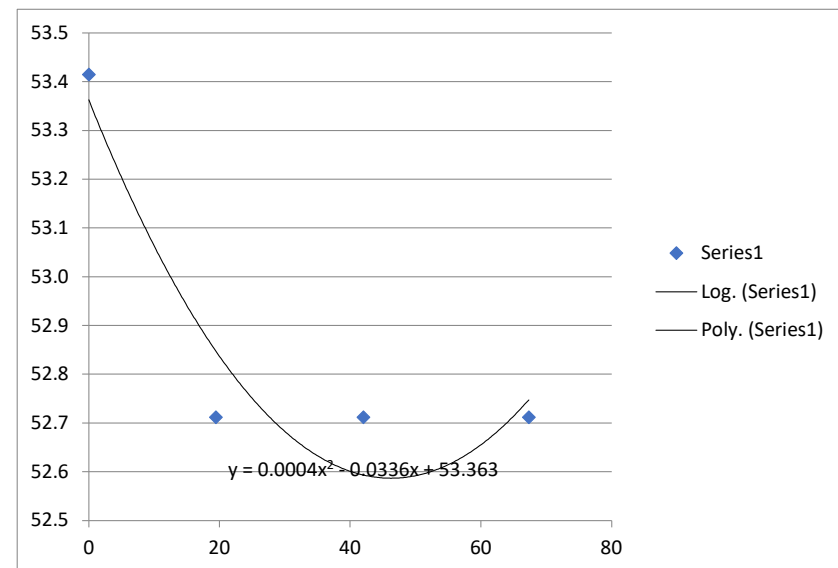
Test Location: Hydrant 4670 on Dunlop Street
Static Pressure: 76.0 psi
Main Size: 200.0 mm

Test	
Flow (USGPM)	Residual Pressure (psi)
308	75
666	75
1067	75
1908	75

Pump Flow Points	
Flow (L/s)	Head (m)
0	53.4
19.4	52.7
42.0	52.7
67.3	52.7

Q_T 1067.0 GPM
 h_a 56.0 psi
 h_t 1.0 psi
 Q_A 7984.7 GPM

503.8 L/s @ 20 psi Residual



PRE AND POST DEVELOPMENT RELEASE RATES

IDF Curve Parameters

Storm Event	Coeff A	Coeff B	Coeff C
2-Year	675.586	4.681	0.780
5-Year	843.019	4.582	0.763
10-Year	976.898	4.745	0.760
25-Year	1133.123	4.734	0.756
50-Year	1251.473	4.847	0.753
100-Year	1383.628	4.905	0.754

Site Statistics

Predevelopment	
Total Site Area (ha)	0.10
Runoff Coefficient, C	0.95
Time of Concentration (mins)	10
Post Development	
Total Site Area (ha)	0.10
Runoff Coefficient, C	0.95
Time of Concentration (mins)	10

Formulae

Rainfall Intensity, I (mm/hr) = $A/(t_c+B)^C$

Release Rate, Q (m³/s) = $C_i I A / 360$

Where: t_c = Time of Concentration (min)
 C_i = Peaking Coefficient
 C = Runoff Coefficient
 I = Rainfall Intensity (mm/hr)
 A = Area (ha)

PREDEVELOPMENT RELEASE RATES

Return Rate	Peaking Coefficient, C_i	Runoff Coefficient, C	Rainfall Intensity (mm/hr)	Release Rate (m ³ /s)	Release Rate (L/s)
2-Year	1	0.95	83.10	0.022	22
5-Year	1	0.95	109.11	0.029	29
10-Year	1	0.95	126.38	0.034	34
25-Year	1.1	0.95	148.26	0.044	44
50-Year	1.2	0.95	164.13	0.053	53
100-Year	1.25	0.95	180.44	0.061	61

POST DEVELOPMENT RELEASE RATES

Return Rate	Peaking Coefficient, C_i	Runoff Coefficient, C	Rainfall Intensity (mm/hr)	Release Rate (m ³ /s)	Release Rate (L/s)
2-Year	1	0.95	83.10	0.022	22
5-Year	1	0.95	109.11	0.029	29
10-Year	1	0.95	126.38	0.034	34
25-Year	1.1	0.95	148.26	0.044	44
50-Year	1.2	0.95	164.13	0.053	53
100-Year	1.25	0.95	180.44	0.061	61



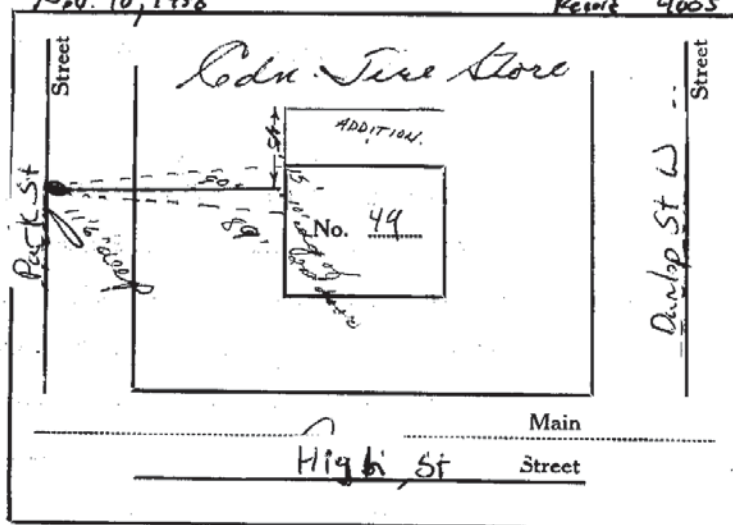
Appendix B

Figures & Drawings

Nov. 10, 1958

Resort 4005

90 Feet	6"	.....	@	\$ 1.75	\$ 1.25
90 Feet	4"	.....	@	1.50	1.35
Bends	6"	.....	@		
Bends	6"	.....	@		
Sweeps	6"	.....	@		
Sweeps	4"	.....	@		
Adapters	6"	.....	@		
Adapters	4"	.....	@		
'Ys		.....	@		
'Ts		.....	@		
Hrs. Compressor		.....	@		
Hrs. Shovel		.....	@		
Hrs. Labour		.....	@		
Hrs. Truck & Equip.		.....	@		
Hrs. Misc.		.....	@		
TOTAL COST				\$	135.00



WATER CONNECTIONS

No.

.....

.....

.....

MAIN SEWER

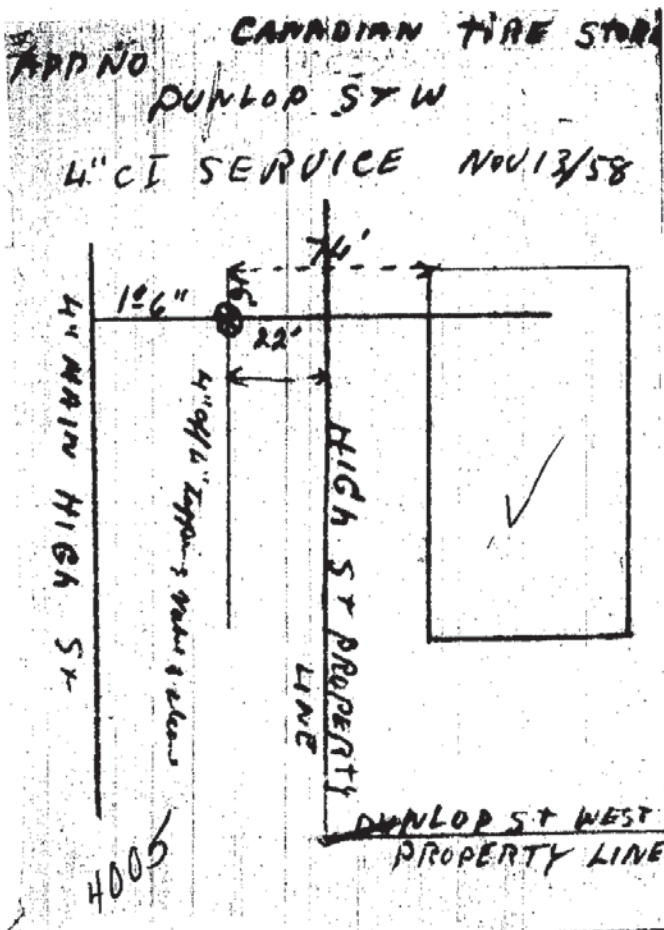
.....

.....

.....

No.

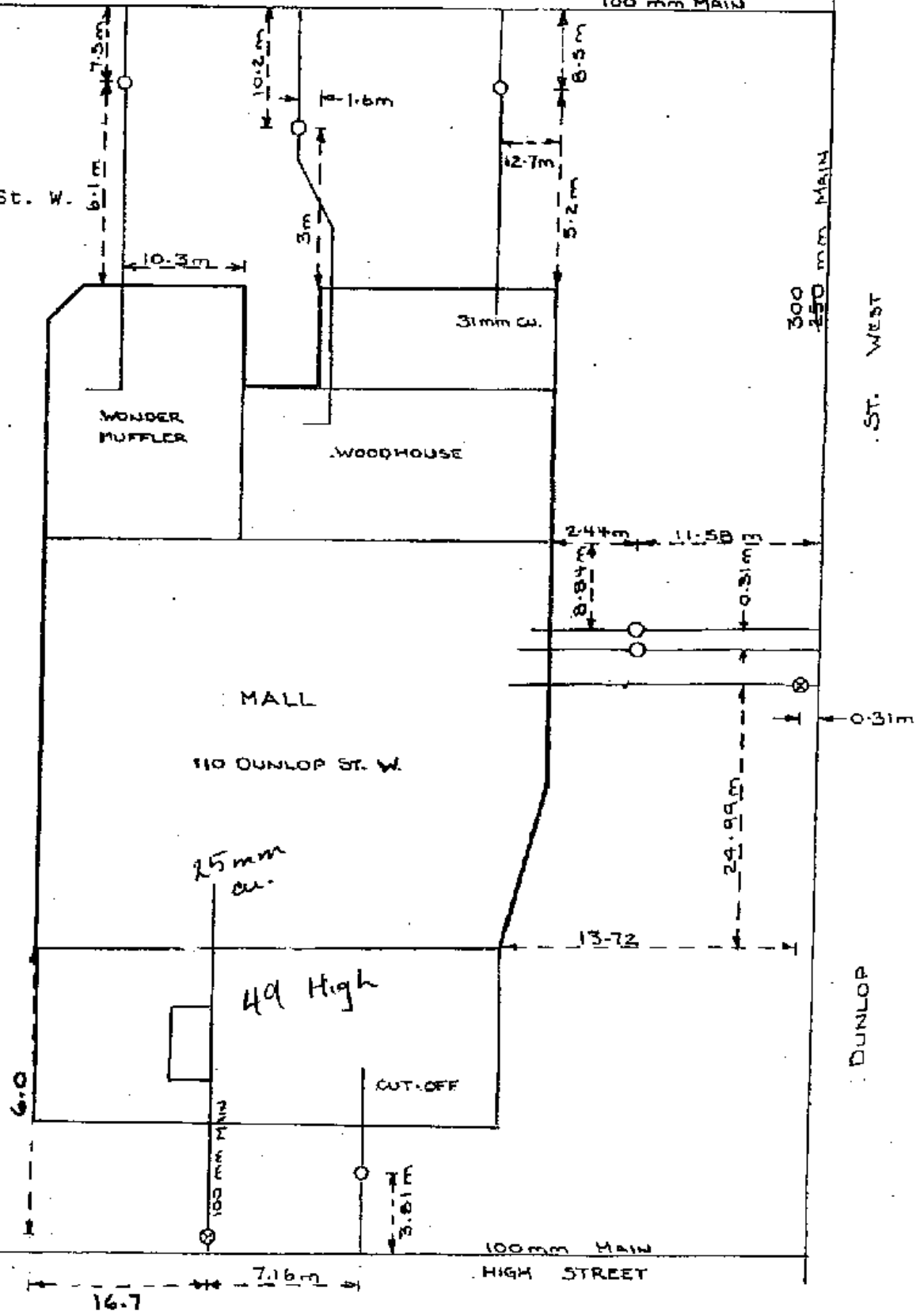
WATER CONNECTIONS



TORONTO STREET

100 mm MAIN

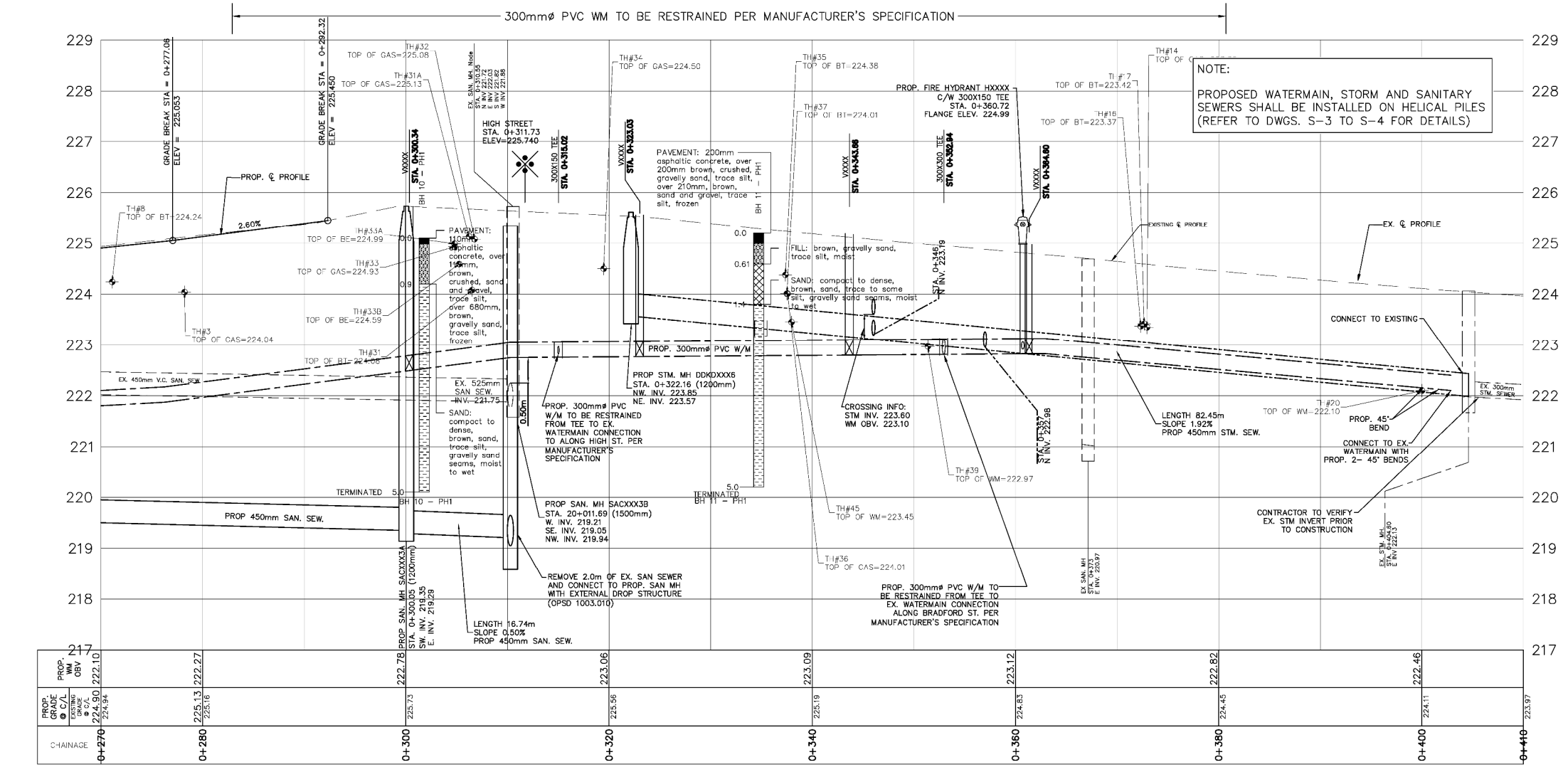
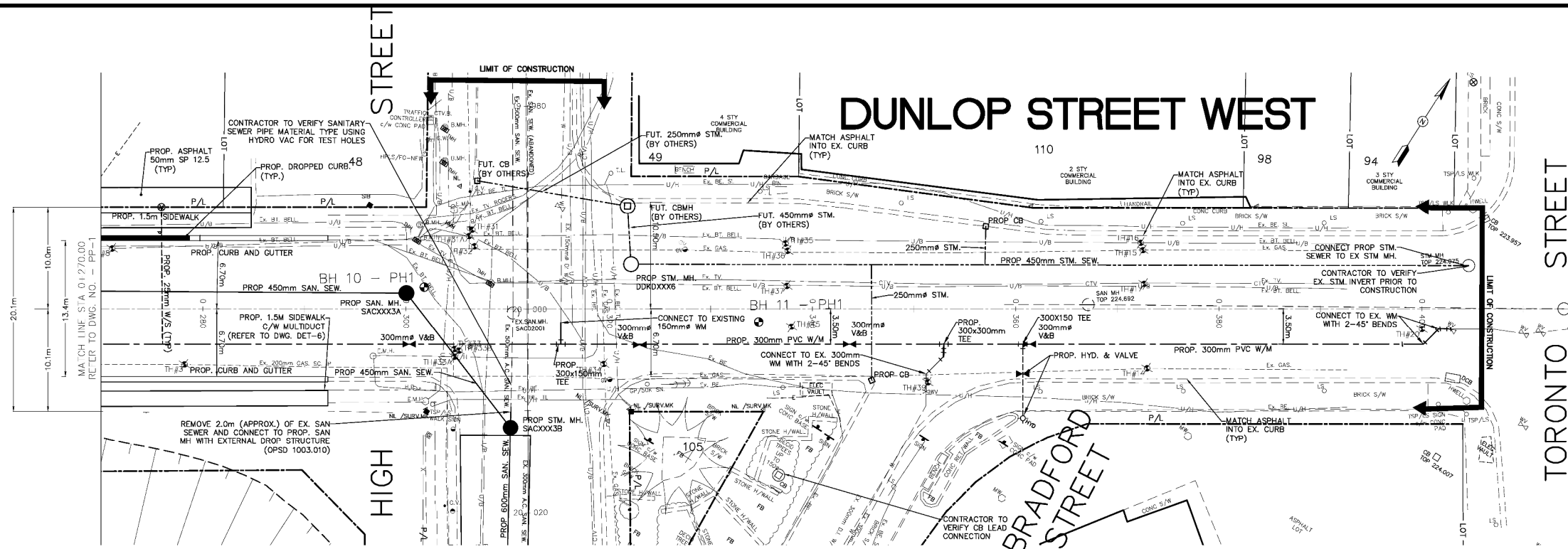
94, & 98, &
110 Dunlop St. W.
49 High



ST. WEST

DUNLOP

100 mm MAIN
HIGH STREET



GENERAL NOTES

REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

BENCH MARKS

DISTANCE NOTE
DISTANCES SHOWN HEREON ARE GROUND DISTANCES AND CAN BE CONVERTED TO GRID DISTANCES BY MULTIPLYING BY THE COMBINED SCALE FACTOR.

HORIZONTAL BENCH MARK 03120040046
NAD-1983 UTM-17 260362.430, N491602.772 COMBINED SCALE FACTOR: 0.99970087

HORIZONTAL BENCH MARK 03120040023
NAD-1983 UTM-17 260372.229, N491595.518 COMBINED SCALE FACTOR: 0.99970230

VERTICAL BENCH MARK 00119841119
NAD-1983 UTM-17 260362.157, N491604.565 COMBINED SCALE FACTOR: 0.99970175 ELEVATION: 232.449m

VERTICAL BENCH MARK 001193114555
TOWNSHIP: BARRIE FUNDAMENTAL BENCH-MARK IN QUEENS PARK
12.2 m NORTHEAST OF CURB AT NORTHEAST SIDE OF PARKSIDE DRIVE, 1.8 m NORTHEAST OF BOUNDARY BETWEEN PARK AND DRILL HALL GROUNDS, TABLET IN TOP, NAD-1983 UTM-17 260378.0, N491596 COMBINED SCALE FACTOR: 0.99973247
ELEVATION: 229.099m

NO.	REVISIONS	DATE	APPROVED
0	ISSUED FOR TENDER	19/09/05	

DUNLOP STREET WEST RECONSTRUCTION

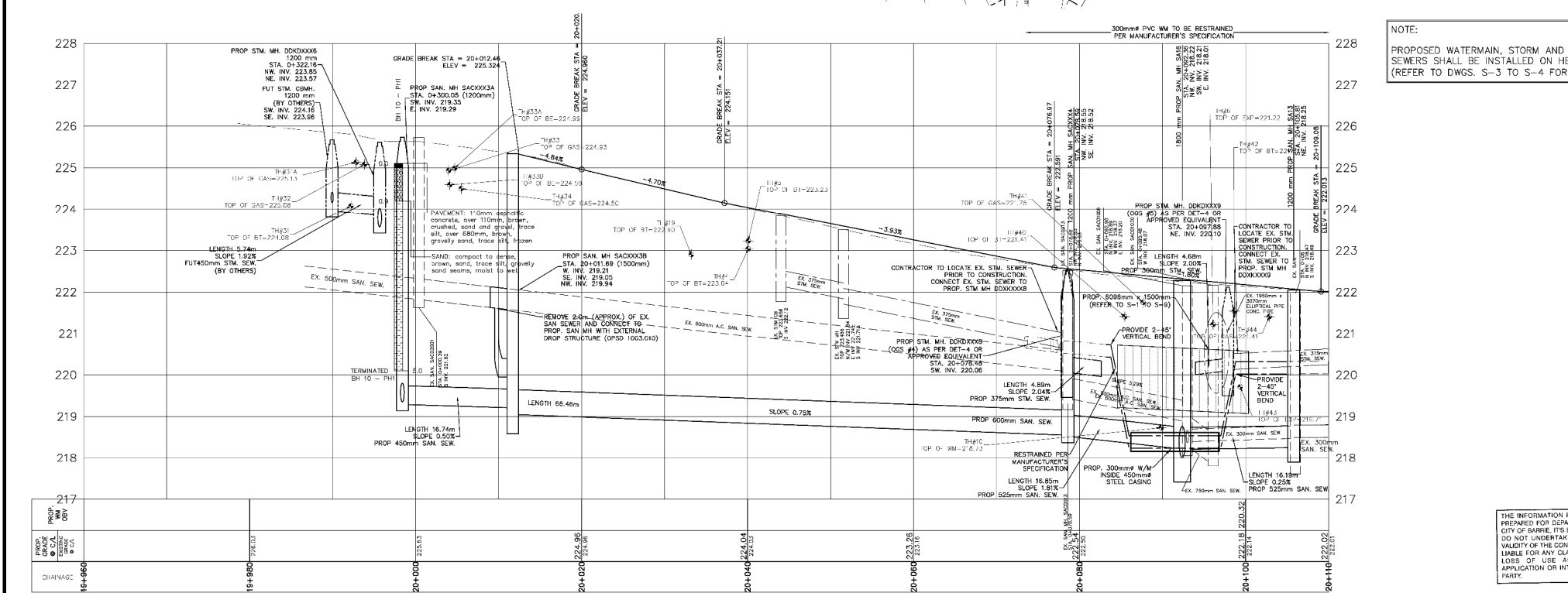
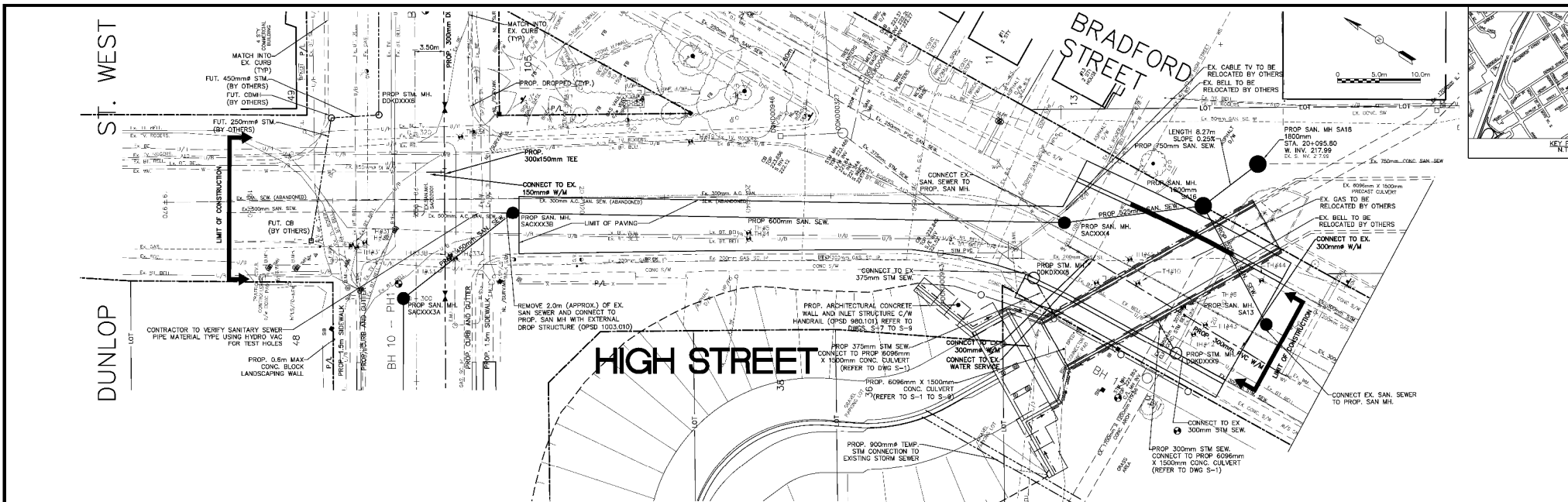
STA 0+270 TO STA 0+406
DUNLOP STREET WEST

Barrie

ENGINEERING DEPARTMENT

SCALE HOR. 1:250 VERT. 1:50
DESIGN DP DRAWN DP
REVIEWED DO DATE 19/09/05

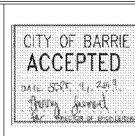
CONTRACT NO. FIN2019-145T
SHEET NO. PP-2



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

BENCH MARKS
DISTANCE NOTE
DISTANCES SHOWN HEREIN ARE GROUND DISTANCES AND CAN BE CONVERTED TO GRID DISTANCES BY MULTIPLYING BY THE COMBINED SCALE FACTOR.
HORIZONTAL BENCH MARK 03120040046
NAD-1983 UTM-17 693362.430, NAD1983 692 772 COMBINED SCALE FACTOR: 0.99970087
HORIZONTAL BENCH MARK 03120040023
NAD-1983 UTM-17 693372.228, NAD1983 692 772 COMBINED SCALE FACTOR: 0.99970230
VERTICAL BENCH MARK 00118041116
NAD-1983 UTM-17 693362.430, NAD1983 692 772 COMBINED SCALE FACTOR: 0.99970175 ELEVATION: 232.449m
VERTICAL BENCH MARK 00118104555
NAD-1983 UTM-17 693372.228, NAD1983 692 772 COMBINED SCALE FACTOR: 0.99970230 ELEVATION: 232.099m
12.3 m NORTHWEST OF CORNER AT NORTHEAST CORNER OF PARKER DRIVE, 1.8 m NORTHWEST OF INTERSECTION BETWEEN PARKER DRIVE AND DUNLOP STREET, TABLE IN TOP, NAD-1983 UTM-17 693372.228, NAD1983 692 772 COMBINED SCALE FACTOR: 0.99973247 ELEVATION: 238.099m

NO.	REVISIONS	DATE	APPROVED
0	ISSUED FOR TENDER	19/09/05	



DUNLOP STREET WEST RECONSTRUCTION

STA 19+975 TO STA 20+110
HIGH STREET

Barrie ENGINEERING DEPARTMENT	
SCALE HOR. 1:250	VERT. 1:50
DESIGN DP	DRAWN DP
REVIEWED DO	DATE 19/09/05

THE INFORMATION PROVIDED HEREIN IS FOR THE CITY OF BARRIE, ITS EMPLOYEES AND AGENTS. IT IS NOT TO BE USED FOR ANY OTHER PURPOSE. THE CITY OF BARRIE, ITS EMPLOYEES AND AGENTS, SHALL NOT BE LIABLE FOR ANY CLAIMS, DAMAGES, LOSSES OR EXPENSES OF ANY KIND, INCLUDING REASONABLE ATTORNEY'S FEES, ARISING OUT OF OR IN CONNECTION WITH THE USE OR RELIANCE ON THE INFORMATION PROVIDED HEREIN.

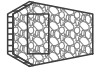
NOTES FOR SEDIMENT & EROSION CONTROL

1. DISTURBED AREAS THAT HAVE FAILED TO HAVE STABLE GROUND COVER ESTABLISHED BY OCTOBER 30TH SHALL BE PROTECTED WITH A SILTATION CONTROL FENCE OR STRAW MULCH ETC. AND MAINTAINED BY THE CONTRACTOR UNTIL VEGETATION BECOMES ESTABLISHED IN THE SUBSEQUENT GROWING SEASON.
2. ANY DEWATERING WASTE SHALL BE DISCHARGED TO A VEGETATED AREA AT LEAST 30 M FROM ANY WATERCOURSE AND FILTERED. FILTERING METHODS MUST BE APPROVED BY THE SITE ADMINISTRATOR.
3. SILT FENCE SHALL BE PUT IN PLACE PRIOR TO AND MAINTAINED DURING ALL GRADING. SILT FENCE SHALL COMPLY WITH OPSD 219.110 FOR LIGHT DUTY AND / OR OPSD 219.130 FOR HEAVY DUTY; UNLESS NOTED OTHERWISE. SILT FENCE TO BE INSPECTED PRIOR TO COMMENCEMENT OF EARTH GRADING ACTIVITIES. SILT FENCE TO BE INSPECTED AND REPAIRED OR REPLACED IF DAMAGED AS DIRECTED BY THE SITE ADMINISTRATOR. SILT CONTROLS TO BE INSPECTED ON A REGULAR BASIS AND AFTER EVERY RAIN EVENT. INSTALLATION SHALL BE TO THE MANUFACTURER'S SUGGESTED SPECIFICATIONS.
4. THE CONTRACTOR SHALL BE PREPARED FOR UNEXPECTED CONDITIONS AND ACCORDINGLY HAVE STOCKPILED MATERIALS ON SITE FOR NECESSARY REPAIRS AS A RESULT OF FAILED OR INADEQUATE CONTROL MEASURES. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE A WEEK, AND AFTER EVERY RAINFALL EVENT.
5. MUD MATS WHERE CONSTRUCTION TRAFFIC ENTERS OR LEAVES THE SITE SHALL BE USED. MUD MATS TO BE 300mm IN DEPTH, 6.0m WIDE BY 20.0m LONG, FIRST 10.0m TO 150mmØ CLEAR STONE WITH THE REMAINING 10.0m CONSISTING OF 50mmØ CLEAR STONE; OR MEET MUNICIPAL STANDARDS WHERE IDENTIFIED.
6. CONTRACTOR SHALL OBTAIN A CURRENT COPY AND BECOME FAMILIAR WITH OPSS 805, CONSTRUCTION SPECIFICATION FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS WELL AS ALL APPLICABLE MUNICIPAL STANDARDS.
7. THE CONTRACTOR MAY CONSIDER ALTERNATIVE SEDIMENT AND EROSION CONTROL MEASURES. SUCH MEASURES SHOULD BE PRESENTED IN WRITING FOR APPROVAL OF THE SITE ADMINISTRATOR AND MUST BE APPROVED IN WRITING BY THE CONSERVATION AUTHORITY.
8. THE TOPS OF ALL FILTER FABRIC MUST BE A MINIMUM OF 1.0 METRES ABOVE THE GROUND LEVEL AND ATTACHED TO THE FENCE WITH A CONTINUOUS STEEL WIRE. ALTERNATIVELY, THE FILTER FABRIC MUST BE FOLDED OVER THE TOP OF THE FENCE AND ATTACHED TO THE FENCE WITH WIRE LOOPED THROUGH THE FABRIC ON BOTH SIDES OF THE FENCE. FILTER FABRIC IS TO BE TERRAFIX 270R OR EQUIVALENT.
9. ALL DISTURBED GROUND LEFT INACTIVE SHALL BE STABILIZED BY SEEDING, SODDING, MULCHING, OR COVERING OR OTHER EQUIVALENT CONTROL MEASURES. THIS PERIOD OF INACTIVITY SHALL BE AT THE DISCRETION OF THE MUNICIPAL DIRECTOR OF ENGINEERING BUT SHALL NOT EXCEED (30) DAYS OR SUCH LONGER PERIOD DEEMED ADVISABLE BY THE MUNICIPAL DIRECTOR OF ENGINEERING.
10. CONTRACTOR SHALL INSTALL AND MAINTAIN CATCHBASIN SEDIMENT BARRIERS THROUGHOUT THE SITE DURING ALL CONSTRUCTION ACTIVITIES IN ORDER TO MITIGATE SEDIMENT ENTERING THE STORM STORM SEWERS.
11. NO FUEL TO BE STORED ON SITE. IN CASE OF A SPILL PLEASE CONTACT:MOECC SPILLS ACTION CENTER 1-800-268-6060.
12. SEDIMENT CONTROLS ARE TO REMAIN IN PLACE UNTIL WRITTEN DIRECTION IS RECEIVED FROM THE ENGINEER REGARDING THEIR REMOVAL.
13. EROSION AND SEDIMENT CONTROLS WILL BE INSPECTED ON AS PER MUNICIPAL REQUIREMENTS OR AFTER SIGNIFICANT RAINFALL EVENTS.

SEQUENCE OF CONSTRUCTION

1. ENGINEER AND MUNICIPALITY TO BE NOTIFIED PRIOR TO INITIATION OF ANY ON SITE WORKS.
2. SILT FENCE AND CONSTRUCTION ACCESS MATS TO BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY WORKS ONSITE.
3. VEGETATION REMOVAL MAY COMMENCE AFTER ALL SILT FENCE IS INSTALLED AND APPROVED BY THE ENGINEER.
4. COMMENCE WITH EARTH EXCAVATION AND SITE SERVICING (TO BE REMOVED FROM SITE - NO STOCKPILE).
5. EROSION CONTROL MEASURES TO BE MAINTAINED AS DIRECTED BY THE ENGINEER DURING THE CONSTRUCTION PERIOD. ADDITIONAL CONTROL MEASURES MAY BE REQUIRED AT THE DISCRETION OF THE ENGINEER.
6. ALL DISTURBED GROUND LEFT INACTIVE FOR MORE THAN 30 DAYS SHALL BE STABILIZED WITH SEED, SOD, MULCH OR OTHER ADEQUATE COVERING, AS INSTRUCTED BY THE ENGINEER.
7. ALL CONSTRUCTION VEHICLES TO ACCESS THE SITE VIA THE DESIGNATED CONSTRUCTION ENTRANCES AS SHOWN.

LEGEND

- 

SILT FENCE

ROCK CHECK DAM

STRAW BALE

SAND BAG BARRIER

TEMPORARY SWALE

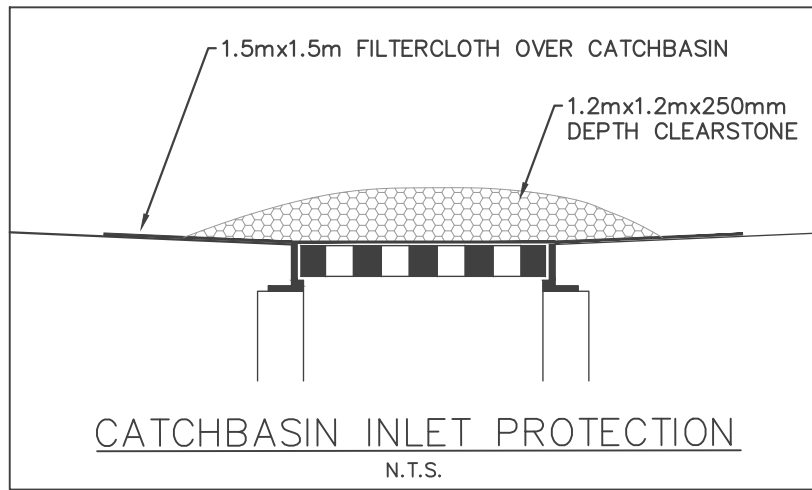
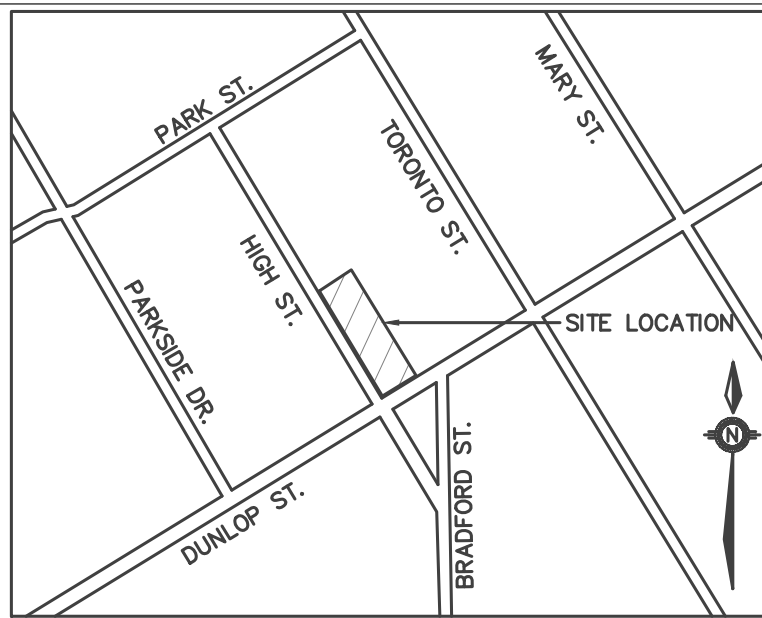
DIRECTION OF INTERIM OVERLAND FLOW
- 

ASPHALT REMOVAL AREA

SIDEWALK REMOVAL AREA

DECIDUOUS TREE

CONIFEROUS TREE



Gerrits
ENGINEERING

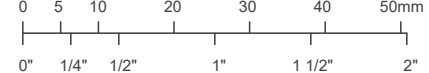
222 Mopview Drive West, Suite 300
Barrie, ON L4N 9E7 Canada
Tel.: 705.737.3303
Fax.: 705.737.1772
www.gerritseng.com

This drawing has been created electronically.

Handwritten or manual revisions to the drawing are only valid when accompanied by the design engineer's initials.

Do not scale drawings.
Check and verify all dimensions and information on the drawings and report all errors or omissions to the Consultant before proceeding with the work.
This drawing shall not be reproduced in any manner, in part or in whole, for any project other than that for which it was prepared.
This drawing, and all design concepts it contains, are an instrument of professional service and remain the property of Gerrits Engineering.

This drawing may have been reduced.



No.	Issuance Description	YY/MM/DD
1.	CLIENT REVIEW	24/10/01
2.	1st SUBMISSION	24/12/11

BENCHMARK

Vertical Control Monuments

Marker No: 0312040046

Benchmark No: 31144585

Monument Type: Brass Tablet

Description of Location: Fundamental benchmark in Queen's Park, 12.2m North-East of curb at North-East Side of Parkside Drive, 1.0m North-East of boundary between park and drill hall

6' U.T.M. Coordinates: Zone 17, EASTING: 603767m, NORTHING: 4915877m

Marker No: 0311984119

Benchmark No: 84U119

Monument Type: DEEP BM - G.S.C.

Description of Location: DEEP BM in 0.2m diameter manhole in Queen's Park near intersection of Toronto Street and Rose Street 10.8m South of South edge of South sidewalk on Rose Street, 44m from North-East corner of sidewalk intersection at Rose St. and Toronto St. NOTE: Has a protective cover

6' U.T.M. Coordinates: Zone 17, EASTING: 603822m, NORTHING: 4916085m

Horizontal Control Monuments

Marker No: 0312040046

Benchmark No: 0312040046

Monument Type: R.I.B. with Brass Cap

Description of Location: The Horizontal Monument 0312040046 is located in Queen's Park on South-East corner of Rose Street and Parkside Drive. NOTE: A protective water valve cover has been placed over monument cap

U.T.M. Coordinates: Zone 17 NAD 83

Marker No: 0312040063

Benchmark No: 0312040063

Monument Type: R.I.B. with Brass Cap

Description of Location: The Horizontal Monument 0312040063 is located on Sunnyside Road at the Hwy 403 bridge, on the North end of walkway and on North side of the bridge. Set flush in the walkway. NOTE: Monument set in concrete.

U.T.M. Coordinates: Zone 17 NAD 83

Issued For:

1st SUBMISSION

Client

**WILD GRAY CAPITAL
MANAGEMENT**
75 First Street, Suite 14
Orangerville, ON L9W 2E7

Project

BUILDING CONVERSION

49 High Street,
Barrie, ON L4N 5J4

Drawing:

**EROSION &
SEDIMENT CONTROL
& REMOVALS PLAN**

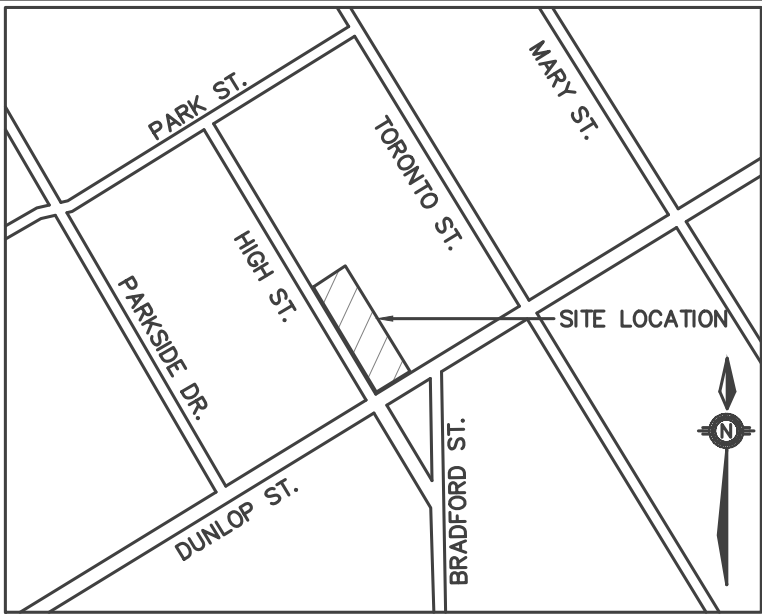
Project No.	2103-001-24	Designed by: IO	Checked by: KF
Scale:	1:250	Drawn by: IO	Approved by: DL

Orientation	Stamp
-------------	-------



Drawing No.

ESC-1



KEYPLAN
N.T.S

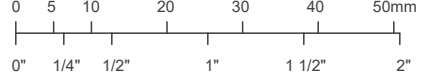
222 Mapleview Drive West, Suite 300
Barrie, ON L4N 9E7 Canada
Tel.: 705.737.3303
Fax.: F.705.737.1772
www.gerritseng.com

This drawing has been created electronically.

Handwritten or manual revisions to the drawing are only valid when accompanied by the design engineer's initials.

Do not scale drawings.
Check and verify all dimensions and information on the drawings and report all errors or omissions to the Consultant before proceeding with the work.
This drawing shall not be reproduced in any manner, in part or in whole, for any project other than that for which it was prepared.
This drawing, and all design concepts it contains, are an instrument of professional service and remain the property of Gerrits Engineering.

This drawing may have been reduced.



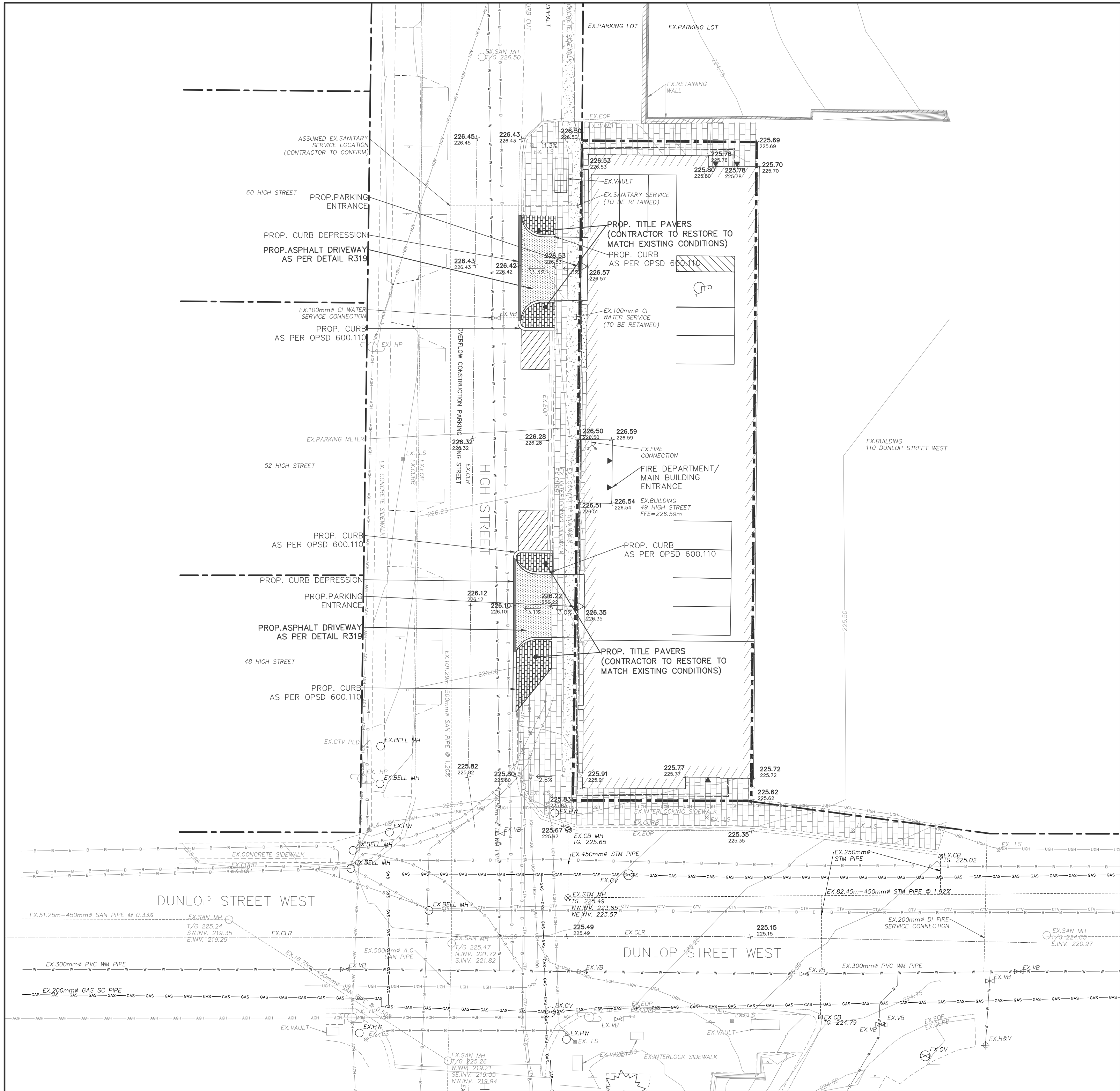
LEGEND

- RETAINING WALL
- PRIVACY FENCE
- ACOUSTIC FENCE
- CHAIN LINK FENCE
- SILT FENCE
- GAS LINE
- HYDRO LINE
- BELL LINE

- SAN# EXISTING SANITARY MAINTENANCE HOLE
- SAN# PROPOSED SANITARY MAINTENANCE HOLE
- CB# EXISTING CATCH BASIN
- CB# PROPOSED CATCH BASIN
- STM# EXISTING STORM MAINTENANCE HOLE
- STM# PROPOSED STORM MAINTENANCE HOLE
- SERVICE CAP
- DOWN SPOUTS
- FIRE DEPT CONNECTION
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- EXISTING VALVE BOX
- PROPOSED VALVE BOX
- PROPOSED SIGN
- EXISTING LIGHT POLE
- MANDOOR
- OVERHEAD DOOR

- LANDSCAPE AREA
- LIGHT DUTY ASPHALT AREA
- HEAVY DUTY ASPHALT AREA
- GRAVEL AREA
- CONCRETE AREA
- INTERLOCKING AREA

- PROPOSED ELEVATION T/W-TOP WALL
- EXISTING ELEVATION B/W-BOTTOM WALL
- PROPOSED GRADE
- OVERLAND FLOW ROUTE
- 3:1 SLOPE (OR AS LABELED)
- SWALE
- HIGH POINT
- RISERS



No.	Issuance Description	YY/MM/DD
1.	CLIENT REVIEW	24/10/01
2.	1st SUBMISSION	24/12/11

BENCHMARK
Vertical Control Monuments
BM# No: 011784110
Benchmark No: 31144555
Monument Type: Brass Tied
Description of Location: Fundamental benchmark in Queen's Park, 12.2m North-East of curb at North-East Side of Parkside Drive, 1.0m North-East of boundary between park and drill hall grounds, labels in top of concrete slab.
6" U.T.M. Coordinates: Zone 17, EASTING: 603767m, NORTHING: 4915897m
BM# No: 011584110
Benchmark No: 841119
Monument Type: DEEP BM - G.S.C.
Description of Location: DEEP BM in 0.2m diameter manhole in Queen's Park near intersection of Toronto Street and Rose Street 10.0m South of South edge of South sidewalk on Rose Street, 44m from North-East corner of sidewalk intersection at Rose St. and Toronto St. NOTE: Has a protective cover.
6" U.T.M. Coordinates: Zone 17, EASTING: 603822m, NORTHING: 4916085m
Horizontal Control Monuments
BM# No: 012004046
Benchmark No: 031204046
Monument Type: R.I.B. with Brass Cap
Description of Location: The Horizontal Monument 031204046 is located in Queen's Park on South-East corner of Rose Street and Parkside Drive. NOTE:
A protective water valve cover has been placed over monument cap.
U.T.M. Coordinates: Zone 17 NAD 83
BM# No: 031204046
Benchmark No: 031204046
Monument Type: R.I.B. with Brass Cap
Description of Location: The Horizontal Monument 031204046 is located on Sunnyside Road at the Hwy 403 bridge, on the North end of walkway and on North side of the bridge. Set flush in the walkway. NOTE: Monument set in concrete.
U.T.M. Coordinates: Zone 17 NAD 83

Issued For:
1st SUBMISSION

Client
WILD GRAY CAPITAL MANAGEMENT
75 First Street, Suite 14
Orangeville, ON L9W 2E7

Project
BUILDING CONVERSION

49 High Street,
Barrie, ON L4N 5J4

Drawing:
GENERAL SERVICING & GRADING PLAN

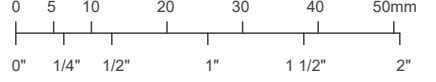
Project No.	2103-001-24	Designed by: IO	Checked by: KF
Scale:	1:250	Drawn by: IO	Approved by: DL
Orientation	Stamp		



Drawing No.

Handwritten or manual revisions to the drawing are only valid when accompanied by the design engineer's initials.

This drawing may have been reduced.

[illegible]

1st SUBMISSION

**WILD GRAY CAPITAL
MANAGEMENT**
75 First Street, Suite 14
Orangeville, ON L9W 2E7

BUILDING CONVERSION

49 High Street,
Barrie, ON L4N 5J4

PRE & POST DEVELOPMENT STORMWATER MANAGEMENT PLAN

Project No.	2103-001-24	Designed by: IO	Checked by: KF
Scale:	1:250	Drawn by: IO	Approved by DL

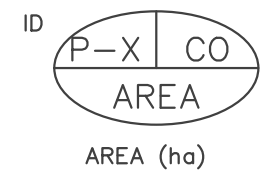
stamp



STM 1-2



LEGEND



RUNOFF COEFFICIENT

AREA (ha)

———— CATCHMENT BOUNDARY

 OVERLAND FLOW ROUTE

100 YEAR PONDING AREA

