Stormwater Management and Servicing Report

Apartment Building
161 Hinchey Avenue
Ottawa, Ontario

Prepared for:

Praveen Muppalla.
450 Creekview Way
Ottawa, ON, K1Y 1L5

Attention: Mr. Praveen Muppalla

LRL File No.: 200295

Revision 1 – September 29st, 2020

5430 Canotek Road | Ottawa, ON, K1J 9G2 | info@lrl.ca | www.lrl.ca | (613) 842-3434

TABLE OF CONTENTS

APPENDICES

Appendix A	**Pre-consultation / Correspondence**
Appendix B	**Water Supply Calculations**
Appendix C	**Wastewater Collection Calculation**
Appendix D	**Stormwater Management Calculation**
	LMF ICD Curves
	Watts Roof Drain Specification
Appendix E	**Civil Engineering Drawings**
Drawings/Figures	**Proposed Site Plan**
	Legal Survey
	As-built

LIST OF TABLES

LIST OF FIGURES

1 INTRODUCTION AND SITE DESCRIPTION

LRL Associates Ltd. was retained by Praveen Muppalla to complete a Stormwater Management Analysis and Servicing Brief for a proposed four (4) storey residential building located at 161 Hinchey Avenue in Ottawa, Ontario. The property is legally described as Lot 9, Registered Plan 35, Concession 1, City Ward 15 (Kitchissippi) and is zoned R4S. The location of the proposed development can be viewed in **Figure 1** below.

Figure 1: Arial View of Proposed Development

The site to be developed is rectangular shape with a frontage of approximately 15 m along Hinchey Avenue and a depth of approximately 30 m, and a surface area of approximately **0.046 ha.**

The topographic survey of the property was completed by Annis, O'Sullivan, Vollebekk Ltd. (Ontario Land Surveyors). Two site benchmarks were established during the survey for future construction use. These benchmarks, cross-cut on sidewalk along Hinchey Avenue with elevation 63.51 (benchmark No. 1) and 63.75 (benchmark No.2), are shown on the ***Legal Survey*** included in ***Drawings/Figures***.

The development proposes a new four (4) storey residential building consisting of 15 units. Vehicular parking is not proposed on site, however provision for bicycle parking (8 spaces bicycle

storage room) is proposed. For additional information, refer to a copy of the ***Site Plan (SP-01)*** included in ***Drawings/Figures***.

This report has been prepared in consideration of the terms and conditions noted above and with the civil drawings prepared for the new development. Should there be any changes in the design features, which may relate to the stormwater considerations, LRL Associates Ltd. should be advised to review the report recommendations.

2 Existing Site and Drainage Description

The subject site measures ***0.046 ha*** and currently consists of a single 2-storey residential building and a paved driveway. Elevations of existing site range between 63.99 m at northeast corner to 63.59 m at the west side of the site.

Sewer and watermain mapping, along with as-built information collected from the City of Ottawa indicate the following existing infrastructure located within the adjacent right-of-way:

Hinchey Avenue:

- 150 mm diameter PVC watermain
- 250 mm diameter PVC sanitary sewer
- 375 mm diameter PVC storm sewer

3 Scope of Work

As per applicable guidelines, the scope of work includes the following:

Stormwater management

- Calculate the allowable stormwater release rate.
- Calculate the anticipated post-development stormwater release rates.
- Demonstrate how the target quantity objectives will be achieved.

Water services

- Calculate the expected water supply demand at average and peak conditions.
- Calculate the required fire flow as per the Fire Underwriters Survey (FUS) method.
- Confirm the adequacy of water supply and pressure during peak flow and fire flow.
- Describe the proposed water distribution network and connection to the existing system.

Sanitary services

- Describe the existing sanitary sewers available to receive wastewater from the building.
- Calculate peak flow rates from the development.
- Describe the proposed sanitary sewer system.
- Review impact of increased sanitary flow on downstream sanitary sewer.

4 REGULATORY APPROVALS

An MECP Environmental Compliance Approval is not expected to be required for installation of the proposed storm and sanitary sewers within the site. A Permit to Take Water is not anticipated to be required for pumping requirements for sewer installation. The Rideau Valley Conservation Authority will need to be consulted in order to obtain municipal approval for site development. No other approval requirements from other regulatory agencies are anticipated.

5 WATER SUPPLY AND FIRE PROTECTION

5.1 Existing Water Supply Services and Fire Hydrant Coverage

The subject property lies within the City of Ottawa 1W water distribution network pressure zone. The subject property is located to the east of an existing 150 mm dia. watermain along Hinchey Avenue. There are currently three (3) existing fire hydrants near the property; one within 75m and two within 150 m from proposed building entrance. Refer to ***Appendix B*** for the location of fire hydrants.

5.2 Water Supply Servicing Design

The subject property is proposed to be serviced via a 150 mm diameter service lateral connected to the 150 mm watermain located within Hinchey Avenue. Refer to Site Servicing Plan C.401 in ***Appendix E*** for servicing layout.

Table 1 summarizes the City of Ottawa Design Guidelines design parameters employed in the preparation of the water demand estimate.

Table 1: ***City of Ottawa Design Guidelines Design Parameters***

Design Parameter	Value
Residential Bachelor / 1 Bedroom Apartment	1.4 P/unit
Residential 2 Bedroom Apartment	2.1 P/unit
Average Daily Demand	280 L/d/per
Minimum Depth of Cover	2.4 m from top of watermain to finished grade
Desired operating pressure range during normal operating conditions	350 kPa and 480 kPa
During normal operating conditions pressure must not drop below	275 kPa
During normal operating conditions pressure shall not exceed	552 kPa
During fire flow operating conditions pressure must not drop below	140 kPa
**Table updated to reflect technical Bulletin ISDTB-2018-02*	

The interior layout and architectural floor plans have been reviewed, and it was determined that the building will house nine (9) studio/1-bedroom apartments, and six (6) 2-bedroom units. Based on the City of Ottawa Design guidelines for population projection, this translates to approximately

approximately 25.2 residents. Table 2 below summarizes the proposed development as interpreted using table 4.1 of the City of Ottawa Design Guidelines.

Table 2: ***Development Residential Population Estimate***

Proposed Unit type	Persons Per Unit	Number of Units	Population
Studio/1 Bedroom	1.4	9	12.6
2 Bedroom Apartment	2.1	6	12.6
		Total Residential Population	25.2

The required water supply requirements for the residential units in proposed building have been calculated using the following formula:

Where:

$$Q = (q \times P \times M)$$

q = average water consumption (L/capita/day)
P = design population (capita)
M = Peak factor
Using a calculated Maximum Day Factor and Peak Hour factor of *10.3* and *15.5* respectively as per Table 3-3 in the *MOE Design Guidelines*, anticipated demands were calculated as follows:

- Average daily domestic water demand is **0.08** L/s,
- Maximum daily demand is **0.84** L/s, and
- Maximum hourly demand is **13.06** L/s.

Based on maximum hourly rate of 13.06 L/s a minimum of 100 mm dia. servicing is required. However, assuming the presence of sprinklers, it is recommended to upsize the water servicing to 150 mm. Refer to ***Appendix B*** for water demand calculations.

The City of Ottawa was contacted to obtain boundary conditions associated with the estimated water demand, as indicated in the boundary request correspondence included in ***Appendix B***. Table 3 below summarizes boundary conditions for the proposed development.

Table 3: ***Summary of Anticipated Demands and Boundary Conditions***

Design Parameter	Anticipated Demand (L/min)	Boundary Conditions @ Hinchey Avenue* (m H2O / kPa)
Average Daily Demand	4.9	115.2 / 505.2
Max Day + Fire Flow (per FUS)	50.5 + 9,000	93.0 / 287.6
Peak Hour	783.8	106.5 / 419.9
**Assumed Ground elevation at connection point = 63.65 m.*		
Water demand calculation per City of Ottawa Water Design guidelines. ***See Appendix B*** *for details.*		

Calculated average day demand has increased by 0.02 L/s since boundary conditions were requested. As indicated in Table 3, pressures in all scenarios meet the required pressure range stated in Table 1 as per City of Ottawa Design Guidelines. Refer to ***Appendix B*** for Boundary Conditions.

The estimated fire flow for the proposed buildings was calculated in accordance with *ISTB-2018-02*. The following parameters were provided by the Architect.

- Type of construction – Wood Frame Construction;
- Occupancy type – Limited Combustibility; and
- Sprinkler Protection – Standard Sprinkler System.

The estimated fire flow demand was estimated to be **9,000 L/min**, see ***Appendix B*** for details.

There are three (3) existing fire hydrants in close proximity to the proposed buildings that are available to provide the required fire flow demands of 9,000 L/min. Refer to ***Appendix B*** for fire hydrant locations. Table 4 below summarizes the aggregate fire flow of the contributing hydrants in close proximity to the proposed development based on Table 18.5.4.3 of *ISTB-2018-02*.

Table 4: ***Fire Protection Summary Table***

Building	Fire Flow Demand (L/min)	Fire Hydrants(s) within 75m	Fire Hydrant(s) within 150m	Available Combined Fire Flow (L/min)
Proposed 4 Storey Building	9,000	1	2	(1 x 5678) + (2 x 3785) = 13,248

The total available fire flow from contributing hydrants is equal to **13,248 L/min** which is sufficient to provide adequate fire flow for the proposed development. A certified fire protection system specialist will need to be employed to design the building's fire suppression system and confirm the actual fire flow demand.

The proposed water supply design conforms to all relevant City Guidelines and Policies.

6 SANITARY SERVICE

6.1 Existing Sanitary Sewer Services

There is an existing 250 mm dia. sanitary sewer within Hinchey Avenue across the subject site. The wastewater flow is ultimately conveyed to the West Nepean Collector trunk sewer.

The pre-development conditions of the lot were reviewed to calculate a total wet wastewater flow of **0.09 L/s** based on assumed conditions of 2 semi-detached residential dwellings.

The post development total flow was calculated to be is **0.30 L/s** as a result of proposed residential population and a small portion of infiltration. Refer to ***Appendix C*** for further information on the calculated sanitary flows. The post development conditions increase existing wastewater flow by approximately **0.21 L/s** as a result of additional residential population from pre-development conditions.

Based on existing as-built, refer to ***Drawings/Figures*** for as-built information, the existing 250mm dia. sanitary sewer within Hinchey Avenue is sloped at 0.70% and is calculated to have a maximum capacity of **49.75 L/s**. The proposed increase in total wastewater flow of **0.21 L/s** represents less than 1% of existing maximum capacity. Therefore, it is anticipated that the existing local sewer network has sufficient capacity to accommodate the proposed development.

6.2 Sanitary Sewer Servicing Design

The proposed development will be serviced via a 150 mm dia. sanitary service lateral which will connect to the existing 250mm dia. sanitary sewer located within Hinchey Avenue. Refer to LRL drawing C.401 for the proposed sanitary servicing.

The parameters used to calculate the anticipated sanitary flows are:; residential average population per unit of 1.4 person for single units and 2.1 persons for two-bedroom units, a residential daily demand of 280 L/p/day, a residential peaking factor of 4.0 and a total infiltration rate of 0.33 L/s/ha. Based on these parameters and the total site area of 0.046 ha, the total anticipated sanitary flow was estimated to **0.30 L/s**. Refer to ***Appendix C*** for the site sanitary sewer design sheet.

7 STORMWATER MANAGEMENT

7.1 Existing Stormwater Infrastructure

Stormwater runoff from the subject property is tributary to the City of Ottawa sewer system as such, approvals for the proposed development within this area are under the approval authority of the City of Ottawa.

In pre-development conditions, the stormwater runoff would flow uncontrolled overland to the west side of the site towards Hinchey Ave. right-of-way. There is an existing 375 mm diameter storm sewer within Hinchey Avenue right-of-way. Refer to ***Appendix D*** for pre- and post-development watershed information.

7.2 Design Criteria

The stormwater management criteria for this development are based on the pre-consultation with City of Ottawa officials, the City of Ottawa Sewer Design Guidelines including City of Ottawa Stormwater Management Design Guidelines, 2012 (City standards), as well as the Ministry of the Environment's Stormwater Planning and Design Manual, 2003 (SWMP Manual).

7.2.1 Water Quality

The subject property lies within the Ottawa River West sub-watershed and is therefore subject to review by the Rideau Valley Conservation Authority (RVCA). It was determined that no further treatment is required for stormwater runoff from the proposed development. Correspondence with RVCA is included in ***Appendix A***.

7.2.2 Water Quantity

Based on pre-consultation with the City, correspondence included in ***Appendix A***, the following stormwater management requirements were identified for the subject site:

- Meet an allowable release rate based on the existing Rational Method Coefficient no greater than 0.50, employing the City of Ottawa IDF parameters for a 5-year storm with a calculated time of concentration equal to or greater than 10 minutes;

- Attenuate all storms up to and including the City of Ottawa 100-year storm event on site; and

The allowable release rate for the subject site was calculated to be **6.63 L/s**. Refer to ***Appendix D*** for calculations.

7.3 Method of Analysis

The Modified Rational Method has been used to calculate the runoff rate from the site to quantify the detention storage required for quantity control of the development. Refer to ***Appendix D*** for storage calculations.

7.4 Proposed Stormwater Quantity Controls

The proposed stormwater management quantity control for this development will be accomplished using a flow restrictor in the storm sewer, as well as roof drains restricting the flow leaving the rooftop. Storage required as a result of quantity control will be accomplished through a combination of rooftop storage and super-size pipe storage in the rear yard.

The subject site is proposed to be serviced via a 300 mm diameter perforated subdrain and 250 mm diameter storm sewers that outlet to the existing 375 mm diameter storm sewer within Hinchey Avenue. The proposed site storm sewer and stormwater management system are shown on drawing C.401 and detailed calculations, including the design sheet, can be found in ***Appendix D***.

The existing site is delineated by catchments EWS-01 which currently drains uncontrolled towards the front of the property.

The site has been analyzed and post development watersheds have been allocated. Watershed WS-01 (0.005ha), consisting of grass and pavers, will flow uncontrolled. The runoff will be conveyed to the Hinchey Avenue right-of-way, as per the grading plan C301.

Overland flow within watershed WS-03 (0.018ha) will be captured by CBMH01. An IPEX Tempest LMF 45mm diameter ICD is proposed at CBMH01 to restricted collected runoff. Grading proposed

will provide positive overland drainage to the proposed storm water collection and control systems.

Runoff from the roof, delineated by Watershed WS-02 (0.023ha), will be captured by the proposed roof drains. Stormwater captured on the rooftop will be controlled by the roof drains, and conveyed to the storm sewer network, downstream of the ICD.

Table 5 below summarizes post-development drainage areas. Calculations can be seen in ***Appendix D.***

Table 5: ***Drainage Areas***

Drainage Area Name	Area	Weighted Runoff Coefficient	100 Year Weighted Runoff Coefficient (25% increase)
WS-01 (uncontrolled)	0.005	0.73	0.91
WS-02 (controlled)	0.023	0.90	1.0
WS-03 (controlled)	0.018	0.57	0.71

Rooftop detention of stormwater is provided with outlet control through two (2) proposed roof drains. The building's rooftop was analysed and divided into two (2) ponding areas. A total of two (2) roof drains, each of which is restricting the discharge rate to **0.95 L/s**, resulting in a total release rate from the roof of **1.90 L/s** is proposed. The roof drain flow control device has been selected to provide a flow rate of **0.95 L/s** at a maximum flow depth of **0.15 m**. Proposed roof drains are to be Watts RD-100-A with a ¼ exposed weir opening. See ***Appendix D*** for more information about the selected roof drain and flow restrictor.

The total available roof storage (m^3) has been calculated using the following formula:

$$V = (\frac{D_{Sl} * A_{Eff}}{3})$$

Where:

V = available (provided) rooftop storage (m^3)
D_{Sl} = slope ponding depth (m)
A_{Eff} = effective roof area (m^2)

Based on the equation above, it was calculated that **9.00 m³** of rooftop storage is available in the 100-year event. For additional details on the calculations for available area of rooftop storage, refer to ***Appendix D***.

All overland stormwater captured will ultimately be conveyed, via underground storm sewers, to

the City storm sewer running along 161 Hinchey Avenue at a maximum release rate of **6.63 L/s** (calculated controlled and uncontrolled flow).

Table 6 below summarize the release rates and storage volumes required to meet the allowable release rate of **6.63 L/s** for 100-year flow rates.

Table 6: ***Stormwater Release Rate & Storage Volume Summary (100 Year)***

Catchment Area	Drainage Area (ha)	100-year Release Rate (L/s)	100-Year Required Storage (m^3)	Total Available Storage (m^3)
WS-01 (Un-controlled)	0.005	2.40	0	0
WS-02 (Roof Controlled)	0.023	1.90	6.92	9.00
WS-03 (Controlled)	0.018	2.34	2.45	3.20
TOTAL	**0.046**	**6.63**	**9.37**	**12.20**

It is calculated that a total of **9.37 m^3** of storage will be required to attenuate flows to the allowable release rate of **6.63 L/s**. The project runoff exceeding the allowable release rate will be stored on-site via rooftop ponding at the building rooftop and underground pipe storage. The 100-year maximum ponding depths can be found on drawing "C601 – Stormwater Management Plan" of ***Appendix E***.

8 Erosion and Sediment Control

During construction, erosion and sediment controls will be provided primarily via a sediment control fence to be erected along the perimeter of the site where runoff has the potential of leaving the site. Inlet sediment control devices are also to be provided in any catch basin and/or manholes in and around the site that may be impacted by the site construction. Construction and maintenance requirements for erosion and sediment controls are to comply with Ontario Provincial Standard Specification OPSS 577. Refer to LRL Associates drawing C.101 for erosion and sediment control details.

9 Conclusion

This Stormwater Management and Servicing Report for the development proposed at 161 Hinchey Avenue presents the rationale and details for the servicing requirements for the subject property.

In accordance with the report objectives, the servicing requirements for the development are summarized below:

Water Service

- The maximum required fire flow was calculated at **9,000.0 L/min** using the FUS method.
- There are three (3) existing fire hydrants available to service the proposed development. They will provide a combined fire flow of **13,248 L/min** to the site.
- The new development/expansion will be serviced with a new 150 mmΦ water service to be connected to the existing 150mmΦ watermain within Hinchey Avenue.
- Boundary conditions received from the City of Ottawa indicate that sufficient pressure is available to service the proposed site.

Sanitary Service

- The anticipated sanitary flow from the proposed development is **0.30 L/s.**
- The proposed development will be serviced by a 150 mm diameter sanitary service that connects to the existing 250mm dia. sanitary sewer within Hinchey Avenue.

Stormwater Management

- Stormwater quality control is not required as per consultation with RVCA.
- The storm water release rates from the proposed development will meet calculated allowable release rate of **6.63 L/s.**
- Stormwater quantity control objectives will be met through on-site storm water ponding on the roof and sub-surface storage.

10 Report Conditions and Limitations

The report conclusions are applicable only to this specific project described in the preceding pages. Any changes, modifications or additions will require a subsequent review by LRL Associates Ltd. to ensure the compatibility with the recommendations contained in this document. If you have any questions or comments, please contact the undersigned.

Prepared by:
LRL Associates Ltd.

Mohan Basnet, P. Eng.
Civil Engineer

Amr Salem
Civil Designer

APPENDIX A

Pre-consultation / Correspondence

161 Hinchey Avenue – Infrastructure Notes

Available Infrastructure:

Sanitary: 250mm PVC (Install 2000)
Storm: 375mm Conc (Install 2000)
Water: 150mm PVC (Install 2000)

Water Boundary Conditions:

Will be provided at request of consultant. Requests must include the location of the service and the expected loads required by the proposed development. Please provide the following and submit Fire Flow Calculation Sheet per FUS method with the request:

- Location of service
- Type of development and amount of required fire flow (per FUS method – include FUS calculation sheet with request)
- Average Daily Demand (l/s)
- Maximum Hourly Demand (l/s)
- Maximum Daily Demand (l/s)
- Water Supply Redundancy – Fire Flow:
  Applicant to ensure that a second service with an inline valve chamber be provided where the average daily demand exceeds 50 m^3 / day (0.5787 l/s per day)

Water services larger than 19 mm require a Water Data Card. Please complete card and submit.

Stormwater Management:

- Coefficient (C) of runoff determined **as per existing conditions** but in no case more than 0.5
- TC = To be calculated, minimum 10 minutes
- Any storm events greater than 5 year, up to 100 year, and including 100-year storm event must be detained on site.
- Foundation drains are to be independently connected to sewer main unless being pumped with appropriate back up power, sufficient sized pump and back flow prevention.
- Roof drains are to be connected downstream of any incorporated ICD within the SWM system.

Stormwater management criteria (Quality Control)

Include a section in the SWM report concerning quality control requirements. It is the consultant's responsibility to check with the relevant Conservation Authority for quality control issues and include this information in the SWM report.

Phase I and Phase II ESA:

- Phase I ESA is required; Phase II ESA may be required depending on the results of the Phase I ESA. Phase I ESA must include an EcoLog ERIS Report.
- Phase I ESA and Phase II ESAs must conform to clause 4.8.4 of the Official Plan that requires that development applications conform to Ontario Regulation 153/04.

Required Studies

- Stormwater Management Report
- Site Servicing Study
- Geotechnical Study
- Phase I ESA
- Phase II ESA (depends on outcome of Phase I)

Required Plans

- Site Servicing Plan
- Grade Control and Drainage Plan
- Erosion and Sediment Control Plan (Can be combined with grading plan)

Relevant information

1. The Servicing Study Guidelines for Development Applications are available at the following address: https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans#servicing-study-guidelines-development-applications
2. Servicing and site works shall be in accordance with the following documents:
   - ⇨ Ottawa Sewer Design Guidelines (October 2012)
   - ⇨ Ottawa Design Guidelines – Water Distribution (2010)
   - ⇨ Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
   - ⇨ City of Ottawa Slope Stability Guidelines for Development Applications (revised 2012)
   - ⇨ City of Ottawa Environmental Noise Control Guidelines (January, 2016)
   - ⇨ City of Ottawa Park and Pathway Development Manual (2012)
   - ⇨ City of Ottawa Accessibility Design Standards (2012)
   - ⇨ Ottawa Standard Tender Documents (latest version)
   - ⇨ Ontario Provincial Standards for Roads & Public Works (2013)
3. Record drawings and utility plans are also available for purchase from the City (Contact the City's Information Centre by email at InformationCentre@ottawa.ca or by phone at (613) 580-2424 x.44455).
4. Any proposed work in utility easements requires written consent of easement owner.

Amr Salem

From: Jamie Batchelor <jamie.batchelor@rvca.ca>
Sent: July 9, 2020 11:40 AM
To: Amr Salem
Cc: Mohan Basnet; Maxime Longtin
Subject: RE: 161 Hinchey Avenue - Stormwater Quality Controls

Follow Up Flag: Follow up
Flag Status: Flagged

Good Morning Amr,

Given that the site will have no surface parking areas proposed, no additional water quality control will be required save and except best management practices.

Jamie Batchelor, MCIP, RPP
Planner, ext. 1191
Jamie.batchelor@rvca.ca

Rideau Valley Conservation Authority
3889 Rideau Valley Drive
PO Box 599, Manotick ON K4M 1A5
T 613-692-3571 | 1-800-267-3504 F 613-692-0831 | www.rvca.ca

From: Amr Salem <asalem@lrl.ca>
Sent: Monday, July 6, 2020 2:52 PM
To: Jamie Batchelor <jamie.batchelor@rvca.ca>
Cc: Mohan Basnet <mbasnet@lrl.ca>; Maxime Longtin <mlongtin@lrl.ca>
Subject: 161 Hinchey Avenue - Stormwater Quality Controls

Good morning Jamie,

I wanted to consult with you regarding a residential development we are working on located at 161 Hinchey Avenue.

Existing runoff from the site drains into municipal sewer along Hinchey Ave and travels approx. 610m before discharging into the Ottawa River.

The development proposes a residential 4-storey building, with no surface parking. The site will be landscape with stormwater coming primarily from rooftop and landscaped rear yard. *Refer to draft site plan attached for reference.*

Existing site area consists of an existing residential building and paved area.

Please provide your input about quality controls that may be required for this site.

Thank you,

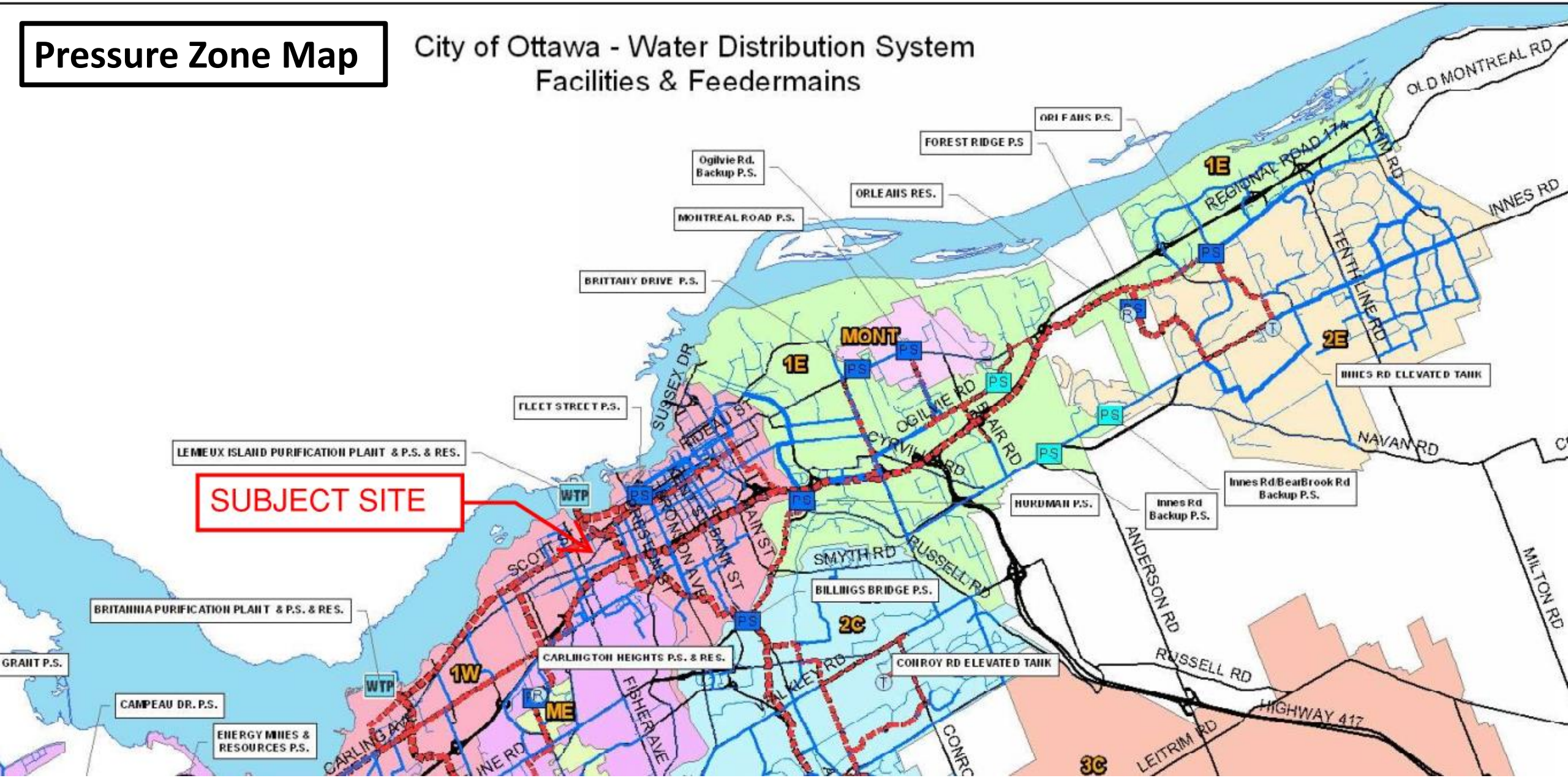
Amr Salem
Civil Designer
LRL Associates Ltd.
5430 Canotek Road
Ottawa, Ontario K1J 9G2
T (613) 842-3434 or (877) 632-5664 ext 248
F (613) 842-4338
E asalem@lrl.ca
W www.lrl.ca

We care deeply, so let us know how we did by completing our Customer Satisfaction Survey.
Nous nous soucions profondément de votre opinion, nous vous invitons donc à nous faire savoir si nous avons satisfait vos attentes en remplissant notre sondage sur la satisfaction de la clientèle

APPENDIX B

Water Supply Calculations

Pressure Zone Map



Water Supply Calculations

LRL File No.	200295
Date	September 21, 2020
Prepared by	Amr Salem

Residential Demand based on the City of Ottawa Design Guidelines-Water Distribution, 2010

Unit Type	Persons Per Unit	Number of Units	Population
1 Bedroom Apartment	1.4	9	12.6
2 Bedroom Apartment	2.1	6	12.6
	Total	**15**	**25.2**

Average Water Consumption Rate	280	L/c/d		
Average Day Demand	**7,056**	**L/d**	**0.08**	**L/s**
Maximum Day Factor	10.3		(MOE Table 3-3)	
Maximum Daily Demand	**72,654**	**L/d**	**0.84**	**L/s**
Peak Hour Factor	15.5		(MOE Table 3-3)	
Maximum Hour Demand	**1,128,733**	**L/d**	**13.06**	**L/s**

Water Service Pipe Sizing

Q = VA

Where: V = velocity
A = area of pipe
Q = flow rate

Assuming a maximum velocity of 1.8m/s, the diameter of pipe is calculated as:

Minimum pipe diameter (d) =	$(4Q/\pi V)^{1/2}$	
=	0.096	m
=	96	mm
Proposed pipe diameter (d) =	**150**	mm
=	**6**	Inches

Fire Flow Calculations

LRL File No. 200295
Date July 14, 2020
Method Fire Underwriters Survey (FUS)
Prepared by Amr Salem

Step	Task	Term	Options	Multiplier	Choose:	Value	Unit	Fire Flow
Structural Framing Material								
1	Choose frame used for building	Coefficient C related to the type of construction	Wood Frame	1.5	Ordinary Construction	1		
			Ordinary Construction	1.0				
			Non-combustible construction	0.8				
			Fire resistive construction <2 hrs	0.7				
			Fire resistive construction >2 hrs	0.6				
Floor Space Area (A)								
2	Total area					1,104	m^2	
3	Obtain fire flow before reductions	Required fire flow	Fire Flow = 220 x C x $A^{0.5}$				L/min	7,310
Reductions or surcharge due to factors affecting burning								
4	Choose combustibility of contents	Occupancy hazard reduction or surcharge	Non-combustible	-25%	Limited combustible	-15%	L/min	6,213
			Limited combustible	-15%				
			Combustible	0%				
			Free burning	15%				
			Rapid burning	25%				
5	Choose reduction for sprinklers	Sprinkler reduction	Full automatic sprinklers	-30%	False	0%	L/min	5,592
			Water supply is standard for both the system and fire department hose lines	-10%	True	-10%		
			Fully supervised system	-10%	False	0%		
6	Choose separation	Exposure distance between units	North side	3.1 to 10m	20%		L/min	9,227
			East side	20.1 to 30m	10%			
			South side	3.1 to 10m	20%			
			West side	10.1 to 20m	15%	65%		
Net required fire flow								
7	Obtain fire flow, duration, and volume	Minimum required fire flow rate (rounded to nearest 1000)					L/min	9,000
		Minimum required fire flow rate					L/s	150.0
		Required duration of fire flow					hr	2

Fire Hydrant Locations Figure

Table 18.5.4.3 Maximum fire flow hydrant capacity

Distance to buildings[a]		Maximum capacity[b]	
(ft)	(m)	(gpm)	(L/min)
≤ 250	≤ 76	1500	5678
> 250 and ≤ 500	> 76 and ≤ 152	1000	3785
> 500 and ≤ 1000	> 152 and ≤ 305	750	2839

[a] Measured in accordance with 18.5.1.4 and 18.5.1.5.

[b] Minimum 20 psi (139.9 kPa) residual pressure.

Amr Salem

From: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Sent: July 17, 2020 1:52 PM
To: Amr Salem
Cc: Mohan Basnet
Subject: RE: 200295 - 161 Hinchey Avenue Boundary Conditions Request
Attachments: 161 Hinchey July 2020.pdf

Follow Up Flag: Follow up
Flag Status: Completed

Good Afternoon Amr,

The following are boundary conditions, HGL, for hydraulic analysis at 161 Hinchey (zone 1W) assumed to be connected to the 152mm on Hinchey (see attached PDF for location).

Minimum HGL = 106.5m

Maximum HGL = 115.2m

MaxDay + FireFlow (150 L/s) = 93.0m

These are for current conditions and are based on computer model simulation.

Disclaimer: The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation.

Thank you.

Best Regards,

Mohammed Fawzi, E.I.T.
Engineering Intern
Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique
Development Review - Central Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext./poste 20120, Mohammed.Fawzi@ottawa.ca

From: Fawzi, Mohammed
Sent: July 17, 2020 11:23 AM

To: Amr Salem <asalem@lrl.ca>
Cc: Mohan Basnet <mbasnet@lrl.ca>
Subject: RE: 200295 - 161 Hinchey Avenue Boundary Conditions Request

Hi Amr,

Thank you. The request has been sent.

Best Regards,

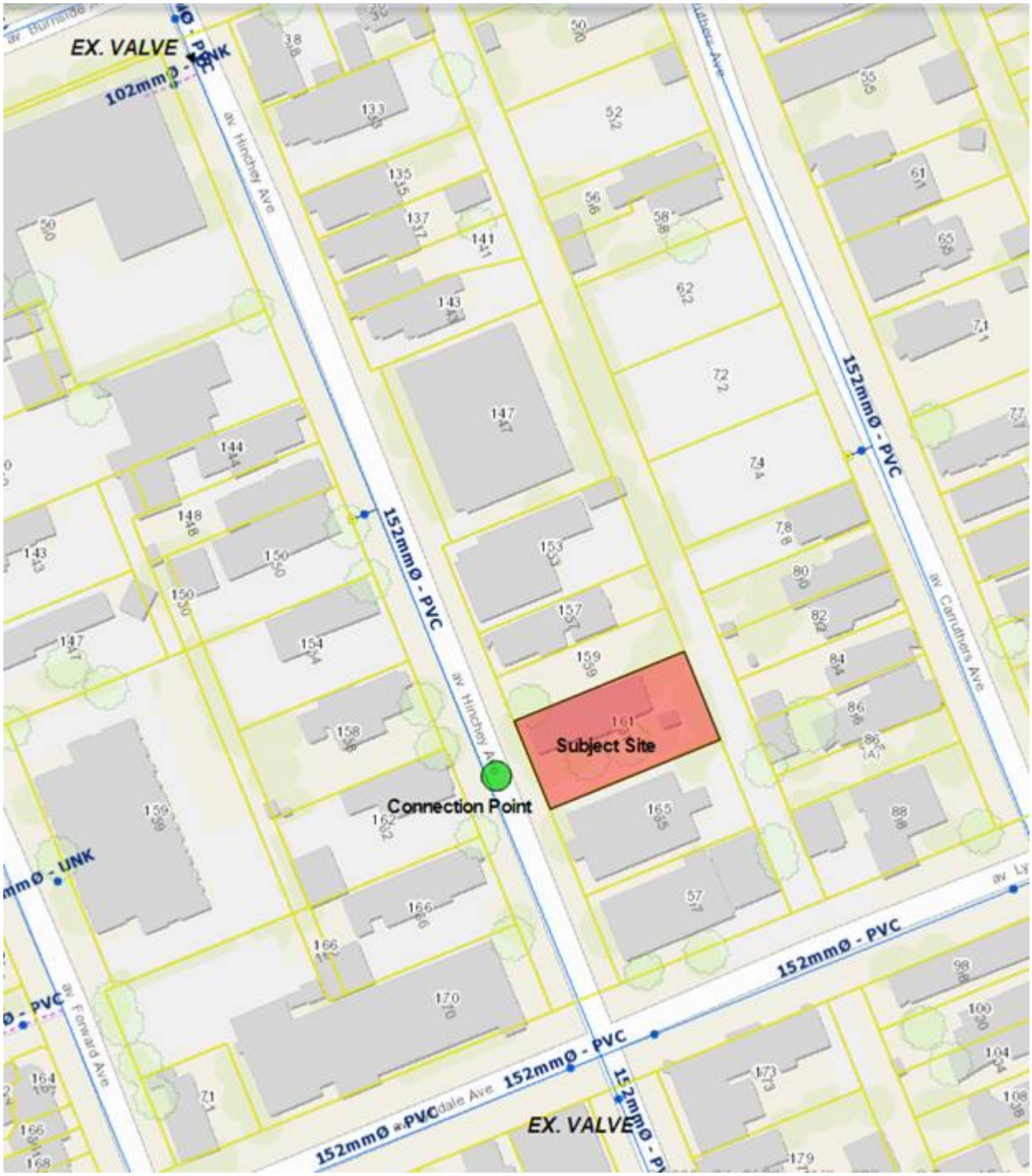
Mohammed Fawzi, E.I.T.
Engineering Intern
Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique
Development Review - Central Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext./poste 20120, Mohammed.Fawzi@ottawa.ca

From: Amr Salem <asalem@lrl.ca>
Sent: July 15, 2020 1:36 PM
To: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Cc: Mohan Basnet <mbasnet@lrl.ca>
Subject: 200295 - 161 Hinchey Avenue Boundary Conditions Request

Good afternoon Mohammed,

We would like to kindly request boundary conditions for the proposed development at *161 Hinchey Avenue* using the following proposed development demands:

- Location of Service / Street Number: **161 Hinchey Ave**
- Type of development: **one 4-storey residential building consisting of a total of 12 units.**
- Proposed Connection Point: **a single connection the 150mm watermain along Hinchey Avenue .**



- Please provide pressures for the following water demand scenarios required for the proposed development:

	L/min	L/s
Avg. Daily	3.6	0.06
Max Day + FUS	42.0 + 9,000	0.70 + 150
Peak Hour	747.0	12.45

Please contact me if you have any questions.

Thanks,

Amr Salem
Civil Designer
LRL Associates Ltd.
5430 Canotek Road
Ottawa, Ontario K1J 9G2
T (613) 842-3434 or (877) 632-5664 ext 248
F (613) 842-4338
E asalem@lrl.ca
W www.lrl.ca

We care deeply, so let us know how we did by completing our Customer Satisfaction Survey.
Nous nous soucions profondément de votre opinion, nous vous invitons donc à nous faire savoir si nous avons satisfait vos attentes en remplissant notre sondage sur la satisfaction de la clientèle

'

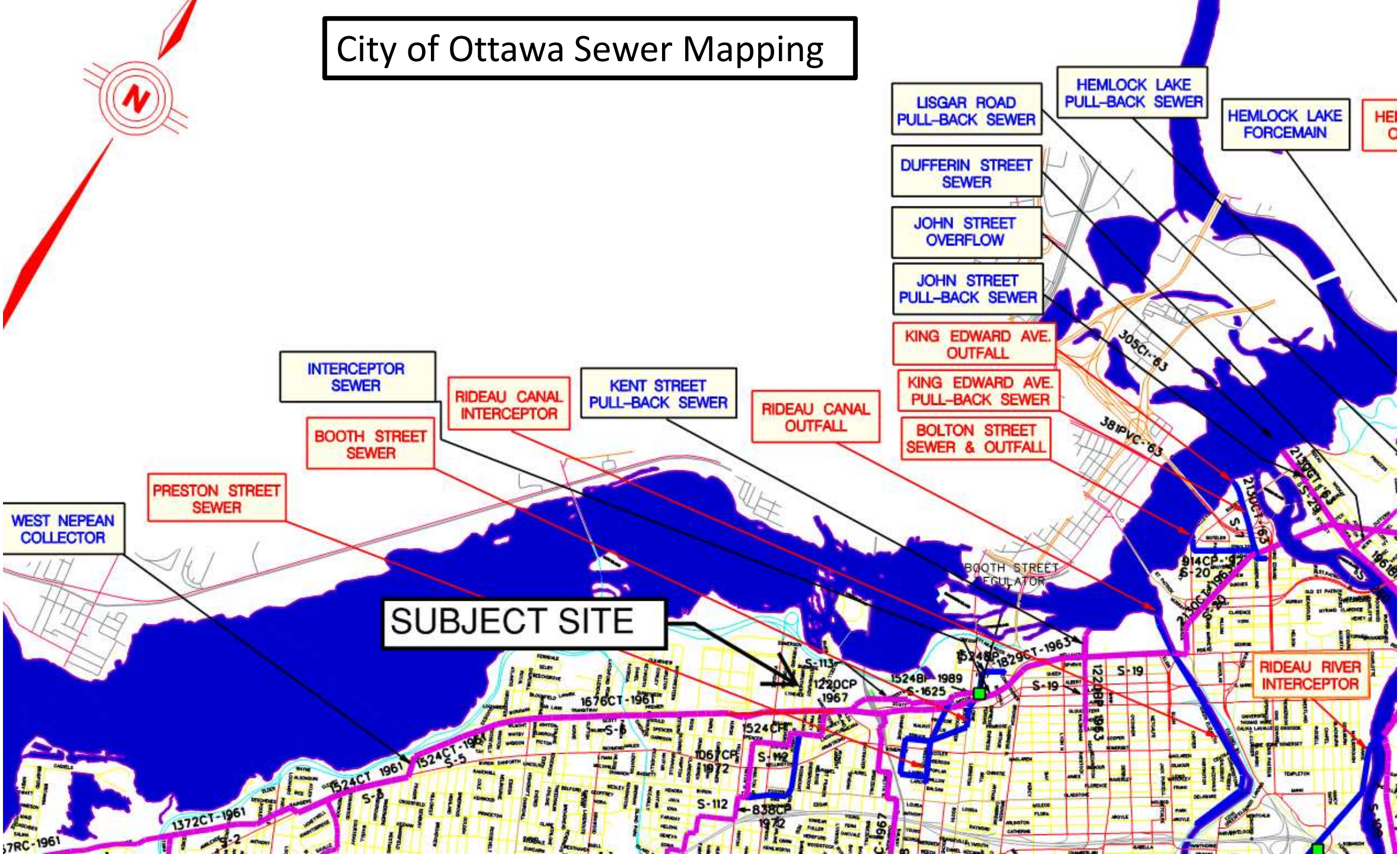
'


Boundary Condition for 161 Hinchey
50
144
148
143
150
147
150
154
158
159
162
166
166
170
147
153
157
159
161
165
57
72
74
78
80
82
84
86
86
88
71
77
79
83
85
87
89
91
99
98
100
104
108
110
173
179
60
62
152
HINCHEY AVE
CARRUTHERS AVE
LYNDALE AVE
N
Legend
PRIVATE
PUBLIC

APPENDIX C

Wastewater Collection Calculations

City of Ottawa Sewer Mapping



LRL File No. 200295
Project: Apartment Building
Location: 161 Hinchey Avenue
Date: July 31, 2020

Sanitary Design Parameters

Average Daily Flow = 280 L/p/day
Commercial & Institutional Flow = 50000 L/ha/day
Light Industrial Flow = 35000 L/ha/day
Heavy Industrial Flow = 55000 L/ha/day
Maximum Residential Peak Factor = 4.0
Commercial & Institutional Peak Factor = 1.5
Industrial Peak Factor = as per Appendix 4-B = 7
Extraneous Flow = 0.33L/s/gross ha

Pipe Design Parameters

Minimum Velocity = 0.60 m/s
Manning's n = 0.013

LOCATION			RESIDENTIAL AREA AND POPULATION						COMMERCIAL		INDUSTRIAL			INSTITUTIONAL		C+I+I	INFILTRATION			TOTAL FLOW (l/s)	PIPE					
STREET	FROM MH	TO MH	AREA (Ha)	POP.	CUMMULATIVE AREA (Ha)	CUMMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (Ha)	ACCU. AREA (Ha)	AREA (Ha)	ACCU. AREA (Ha)	PEAK FACT.	AREA (Ha)	ACCU. AREA (Ha)	PEAK FLOW (l/s)	TOTAL AREA (Ha)	ACCU. AREA (Ha)	INFILT. FLOW (l/s)		LENGTH (m)	DIA. (mm)	SLOPE (%)	MATERIAL	CAP. (FULL) (l/s)	VEL. (FULL) (m/s)
SITE	PROP. BLDG	EX. SAN	0.046	21.7	0.05	21.7	4.0	0.28	0.000	0.000	0.00	0.00	7.0	0.0	0.0	0.00	0.05	0.05	0.02	0.30	7.4	250	0.70%	PVC	49.75	1.01

NOTES: Existing inverts and slopes are estimated. They are to be confirmed on-site.

Designed: A.S.	PROJECT: Apartment Building		
Checked: M.B.	LOCATION: 161 Hinchey Avenue		
Dwg. Reference: C.401	File Ref.: 200295	Date: July 24, 2020	Sheet No. 1 of 1

APPENDIX D

Stormwater Management Calculations
LMF ICD Curves
Watts Roof Drain Specification

LRL Associates Ltd.
Storm Watershed Summary

LRL File No.	200295
Project:	Apartment Building
Location:	161 Hinchey Ave
Date:	September 17, 2020
Designed:	Amr Salem
Drawing Reference:	C701/C702

Pre-Development Catchments

WATERSHED	C = 0.2	C = 0.80	C = 0.90	Total Area (m^2)	Total Area (ha)	Combined C
EWS-01	226.0	0.0	232.0	458.0	0.046	0.55
TOTAL	**226.0**	**0.0**	**232.0**	**458.0**	**0.046**	**0.55**

Post-Development Catchments

WATERSHED	C = 0.20	C = 0.80	C = 0.90	Total Area (m^2)	Total Area (ha)	Combined C
WS-01(UNCONTROLLED)	13.0	0.0	40.0	53.0	0.005	0.73
WS-02 (CONTROLLED)	0.0	0.0	225.0	225.0	0.023	0.90
WS-03 (CONTROLLED)	86.0	0.0	94.0	180.0	0.018	0.57
TOTAL	**99.0**	**0.0**	**359.0**	**458.0**	**0.0458**	**0.75**

LRL File No. 200295
Project: Apartment Building
Location: 161 Hinchey Ave
Date: September 17, 2020
Designed: Amr Salem
Drawing Ref.: C.601

Stormwater Management Design Sheet

Runoff Equation

$Q = 2.78CIA$ (L/s)
C = Runoff coefficient
I = Rainfall intensity (mm/hr) $= A / (Td + C)^B$
A = Area (ha)
T_c = Time of concentration (min)

Pre-development Stormwater Management

$i_E = 998.071 / (Td + 6.053)^{0.814}$ a = 998.071 b = 0.814 C = 6.053

C = 0.50 max of 0.5 as per City of Ottawa
I = 104.2 mm/hr
Tc = 10 min
Total Area = 0.046 ha

Allowable Release Rate= 6.63 L/s

Post-development Stormwater Management

					$\sum R_{n=5}$	$\sum R_{n=100}$
	Total Site Area =	0.0458	ha	$\sum R_C$	0.75	0.94
Controlled	WS-02 (Roof)	0.023	ha	R_C	0.90	1.00
	WS-03	0.018	ha	R_C	0.57	0.71
	Total Controlled =	0.041	ha	$\sum R_C$	0.75	0.94
Un-controlled	WS-01	0.005	ha	R_C	0.73	0.91
	Total Un-Controlled =	0.005	ha	$\sum R_C$	0.73	0.91

Post-development Stormwater Management (Uncontrolled Catchment WS-01)

100 Year Storm Event:

$i_{100} = 1735.688 / (Td + 6.014)^{0.820}$ a = 1735.688 b = 0.820 C = 6.014

Time (min)	Intensity (mm/hr)	Uncontrolled Runoff (L/s)	Controlled Release Rate Constant (L/s)	Total Release Rate (L/s)
10	178.6	2.40	0.00	2.40

Post-development Stormwater Management (WS-03)

100 Year Storm Event:

$i_{100} = 1735.688 / (Td + 6.014)^{0.820}$ a = 1735.688 b = 0.820 C = 6.014

		Storage Required				
Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate Constant (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	178.6	6.32	2.39	2.34	0.00	2.34
15	142.9	5.05	2.45	2.34	0.00	2.34
20	120.0	4.24	2.29	2.34	0.00	2.34
25	103.8	3.67	2.00	2.34	0.00	2.34
30	91.9	3.25	1.64	2.34	0.00	2.34
35	82.6	2.92	1.22	2.34	0.00	2.34
40	75.1	2.66	0.77	2.34	0.00	2.34
45	69.1	2.44	0.28	2.34	0.00	2.34
50	64.0	2.26	0.00	2.34	0.00	2.34
60	55.9	1.98	0.00	2.34	0.00	2.34
70	49.8	1.76	0.00	2.34	0.00	2.34
80	45.0	1.59	0.00	2.34	0.00	2.34
90	41.1	1.45	0.00	2.34	0.00	2.34
100	37.9	1.34	0.00	2.34	0.00	2.34
110	35.2	1.25	0.00	2.34	0.00	2.34
120	32.9	1.16	0.00	2.34	0.00	2.34

Total Storage Required = 2.45 m^3 *refer to LRL Plan C.601*
Available Subsurface Storage = 3.20 m^3 **Storage accounted for in superpipe and CBMH*

Inlet Control Device (ICD)
Discharge = 2.34 L/s
Head = 1.68 m

Post-development Stormwater Management (WS-02 On Roof)

100 Year Storm Event:

$i_{100} = 1735.688 / (Td + 6.014)^{0.820}$ a = 1735.688 b = 0.820 C = 6.014

		Storage Required				
Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate Constant (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	178.6	11.17	5.56	1.90	0.00	1.90
15	142.9	8.94	6.33	1.90	0.00	1.90
20	120.0	7.50	6.72	1.90	0.00	1.90
25	103.8	6.50	6.89	1.90	0.00	1.90
30	91.9	5.75	6.92	1.90	0.00	1.90
35	82.6	5.17	6.86	1.90	0.00	1.90
40	75.1	4.70	6.72	1.90	0.00	1.90
45	69.1	4.32	6.53	1.90	0.00	1.90
50	64.0	4.00	6.30	1.90	0.00	1.90
60	55.9	3.50	5.75	1.90	0.00	1.90
70	49.8	3.11	5.10	1.90	0.00	1.90
80	45.0	2.81	4.39	1.90	0.00	1.90
90	41.1	2.57	3.63	1.90	0.00	1.90
100	37.9	2.37	2.83	1.90	0.00	1.90
110	35.2	2.20	1.99	1.90	0.00	1.90
120	32.9	2.06	1.13	1.90	0.00	1.90

$V = (r^*w)^*h/3 = Ah/3$

Summary of Roof Storage

Maximum Required Roof Storage (100 Year) =	6.92	m^3		
Watts Roof Drain Discharge =	0.0063	L/s/mm		
Proposed Head =	150	mm	*An Emergency overflow scupper is provided above this height.	
Control FlowDrain =	0.95	L/s		
Number of Roof Drains =	2			
Total Flow from Roof Drain =	1.90	L/s		
Available Roof Surface =	225	m^2		
Effective Roof Surface =	180	m^2	80	(% of total roof surface)
Available Roof Storage =	**9.00**	m^3		
Roof Drain Model =	Watts Roof Drain with Adjustable Flow Setting (Watts RD-100-A-ADJ Weir Opening = 1/4 Exposed)			

Total Storage Required = 6.92 m^3
Available Roof Storage = 9.00 m^3 refer to LRL Plan C.601

Summary of release Rates and Storage Volumes

Catchment Area	Drainage Area (ha)	100-year Release Rate (L/s)	100-Year Required Storage (m^3)	Total Available Storage (m^3)
WS-01	0.005	2.40	0	0
WS-02 (Roof Controls)	0.023	1.90	6.92	9.00
WS-03	0.018	2.34	2.45	3.20
TOTAL	**0.046**	**6.63**	**9.37**	**12.20**

LRL Associates Ltd.

Storm Design Sheet

LRL File No.	200295
Project:	Apartment Building
Location:	161 Hinchey Ave
Date:	July 30, 2020
Designed:	Amr Salem
Drawing Reference:	C.401

Storm Design Parameters

Rational Method Q = 2.78CIA

Q = Peak flow in litres per second (L/s)
A = Drainage area in hectares (ha)
C = Runoff coefficient
I = Rainfall intensity (mm/hr)

Runoff Coefficient (C)

Grass	0.20
Gravel	0.80
Asphalt / rooftop	0.90

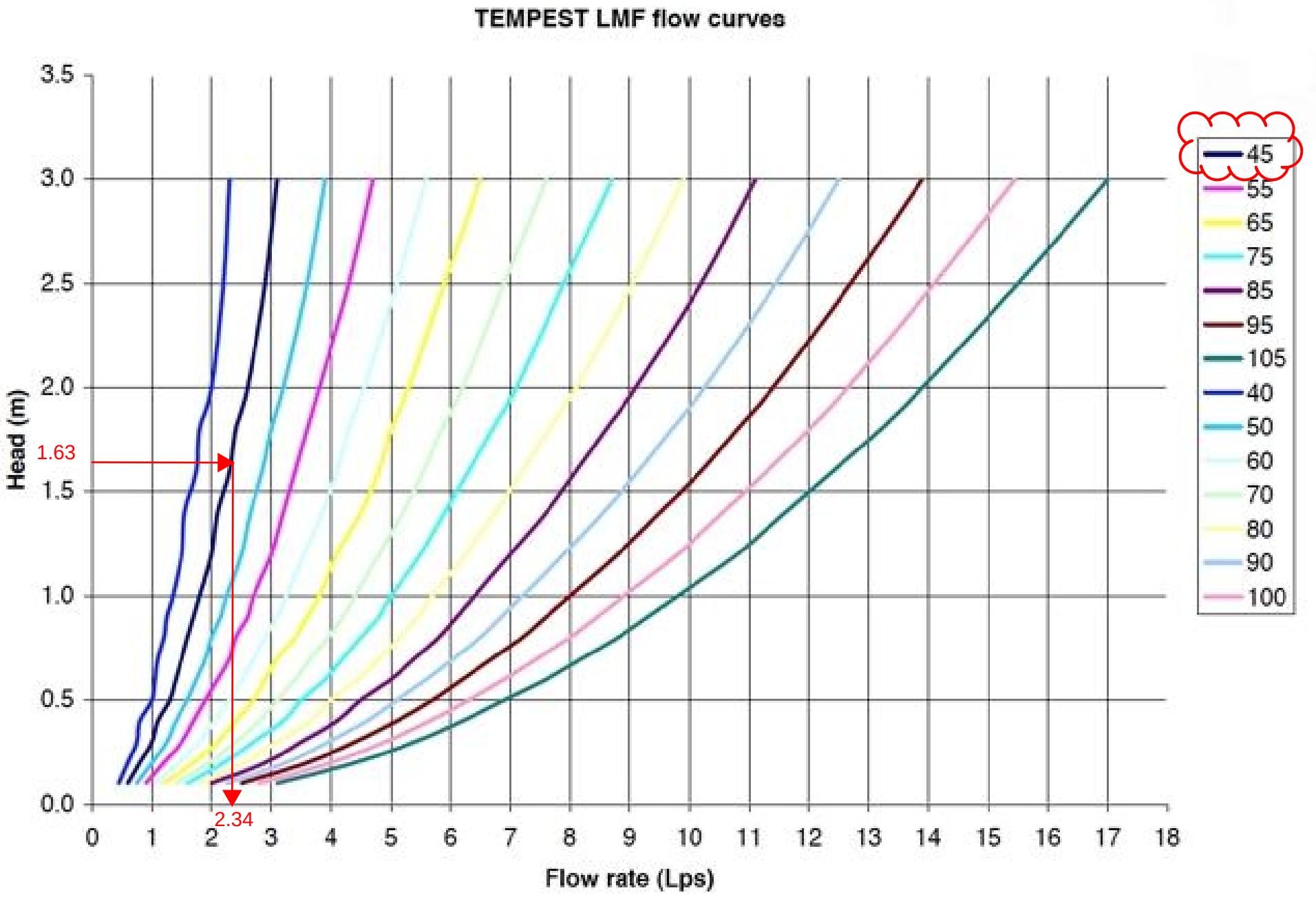
Ottawa Macdonald-Cartier International Airport IDF curve equation (5 year event, intensity in mm/hr)

$I = 998.071 / (T_c + 6.053)^{0.814}$

Min. velocity = 0.80 m/s

Manning's "n" = 0.013

LOCATION			AREA (ha)			FLOW						STORM SEWER							
WATERSHED / STREET	From MH	To MH	C = 0.20	C = 0.80	C = 0.90	Indiv. 2.78AC	Accum. 2.78AC	Time of Conc. (min.)	Rainfall Intensity (mm/hr)	Peak Flow Q (L/s)	Controlled Flow Q (L/s)	Pipe Diameter (mm)	Type	Slope (%)	Length (m)	Capacity Full (L/s)	Velocity Full (m/s)	Time of Flow (min.)	Ratio (Q/Q_{FULL})
WS-03	CB	CBMH01	0.009	0.000	0.009	0.028	0.03	10.00	104.2	2.95	2.34	450	HDPE	0.50%	8.6	201.6	1.27	0.11	0.01
WS-02 - Roof Controls	CBMH01	CBMH02	0.000	0.000	0.023	0.056	0.08	10.11	103.6	8.76	1.90	250	PVC	1.00%	28.5	59.5	1.21	0.39	0.15
	CBMH02	EX. STM	0.00	0.00	0.00	0.000	0.08	10.51	101.6	8.59	4.24	250	PVC	1.00%	5.0	59.5	1.21	0.07	0.14

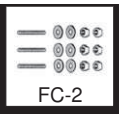

TEMPEST LMF flow curves
Head (m)
Flow rate (Lps)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
1.63
2.34
45
55
65
75
85
95
105
40
50
60
70
80
90
100

RD-100-A

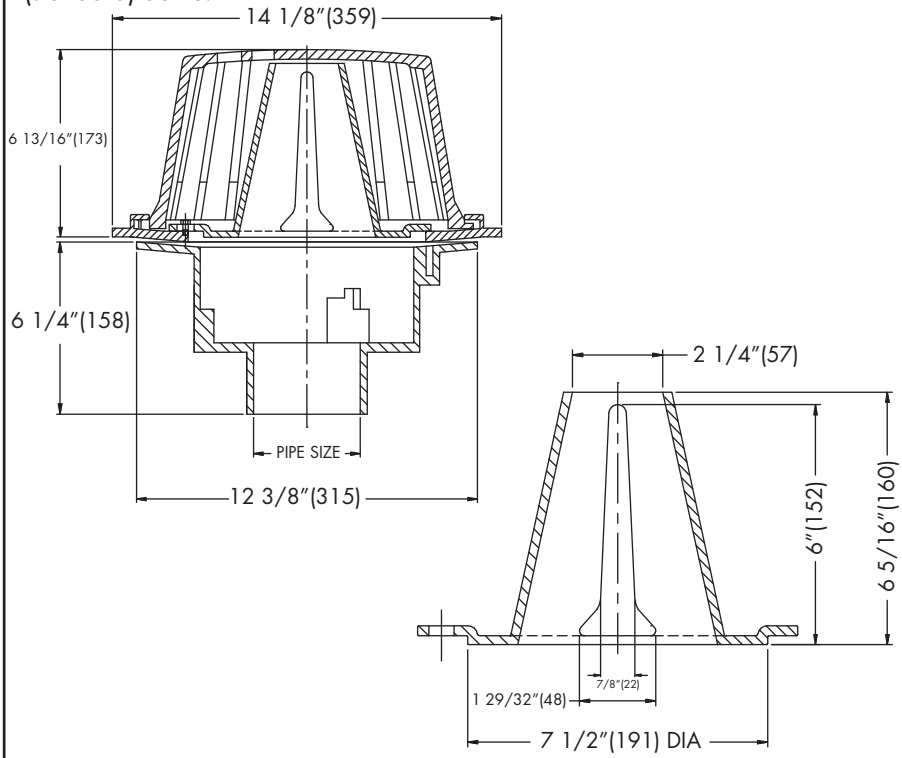
Tag: _____

Large Capacity Roof Drain

Components:



SPECIFICATION: Watts Drainage Products RD-100 epoxy coated cast iron roof drain with deep sump, wide serrated flashing flange, flashing clamp device with integral gravel stop, accutrol weir and self-locking polyethylene (standard) dome.



Free Area Sq. In.
137

Deck opening 10" (254) with sump receiver 13-1/4" (337)

** Side Outlet (-SO) option only available in 2"(51), 3"(76), 4"(102) pipe sizes. Underdeck Clamp (-BED and -D options) are not available when -SO is selected.

Order Code: RD-10☐-A☐-☐-☐

Ex. RD-102P-K

Pipe Sizing (Select One)		
Suffix	Description	
2	2"(51) Pipe Size	☐
3	3"(76) Pipe Size	☐
4	4"(102) Pipe Size	☐
5	5"(127) Pipe Size	☐
6	6"(152) Pipe Size	☐
8	8"(203) Pipe Size	☐

Outlet Type (Select One)		
Suffix	Description	
NH	No Hub (MJ)	☐
P	Push On	☐
T	Threaded Outlet	☐
X	Inside Caulk	☐

Options (Select One or More)		
Suffix	Description	
-B	Sump Receiver Flange	☐
-BED	Sump Receiver, Adj Ext., Deck Clamp	☐
-C	Secondary Membrane Clamp	☐
-D	Underdeck Clamp	☐
-E	Adjustable Extension	☐
-GSS	Stainless Steel Ballast Guard	☐
-H	Adj. to 6" IRMA Ballast Guard	☐
-K	Ductile Iron Dome	☐
-K80	Aluminum Dome	☐
-L	Vandal Proof Dome	☐
-R	2" High External Water Dam	☐
-SO	Side Outlet**	☐
-V	Fixed Extension (1-1/2",2",3",4"	☐
-W	Adj. Water Level Regulator	☐
-W-1	Waterproofing Flange	☐
-Z	Extended Integral Wide Flange	☐
-5	Sediment Bucket	☐
-6	Vandal Proof Top	☐
-12	Galvanized Dome	☐
-13	All Galvanized	☐
-83	Mesh Covered Dome	☐
-113M	Special Epoxy from 3M Range	☐

Optional Body Material (NH Only)		
Suffix	Description	
-60	PVC Body w/Socket Outlet	☐
-61	ABS Body w/Socket Outlet	☐

Job Name _____ Contractor _____

Job Location _____ Contractor's P.O. No. _____

Engineer _____ Representative _____

USA: Tel: (800) 338-2581 • Fax: (828) 248-3929 • Watts.com
Canada: Tel: (905) 332-4090 • Fax: (905) 332-7068 • Watts.ca
Latin America: Tel: (52) 81-1001-8600 • Fax: (52) 81-8000-7091 • Watts.com

A Watts Water Technologies Company

WATTS®	Adjustable Accutrol Weir Tag: _____	Adjustable Flow Control for Roof Drains

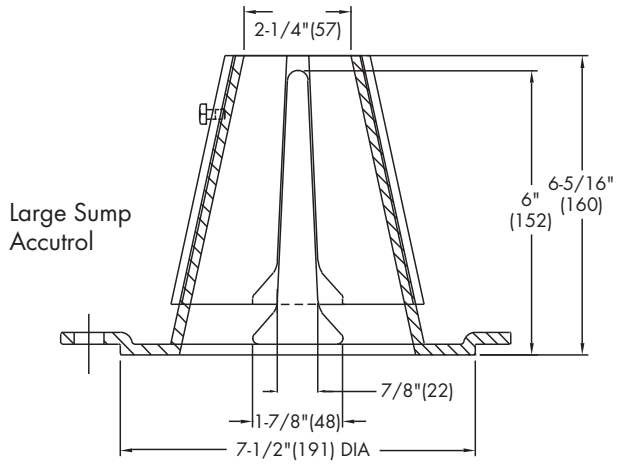
ADJUSTABLE ACCUTROL (for Large Sump Roof Drains only)

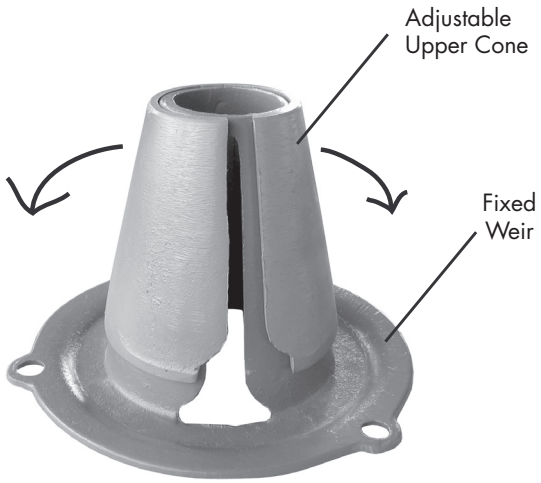
For more flexibility in controlling flow with heads deeper than 2", Watts Drainage offers the Adjustable Accutrol. The Adjustable Accutrol Weir is designed with a single parabolic opening that can be covered to restrict flow above 2" of head to less than 5 gpm per inch, up to 6" of head. To adjust the flow rate for depths over 2" of head, set the slot in the adjustable upper cone according to the flow rate required. Refer to Table 1 below.
Note: Flow rates are directly proportional to the amount of weir opening that is exposed.

EXAMPLE:

For example, if the adjustable upper cone is set to cover 1/2 of the weir opening, flow rates above 2"of head will be restricted to 2-1/2 gpm per inch of head.

Therefore, at 3"of head, the flow rate through the Accutrol Weir that has 1/2 the slot exposed will be:
[5 gpm (per inch of head) x 2 inches of head] + 2-1/2 gpm (for the third inch of head) = 12-1/2 gpm.





1/2 Weir Opening Exposed Shown Above

TABLE 1. Adjustable Accutrol Flow Rate Settings

Weir Opening Exposed	1"	2"	3"	4"	5"	6"
	Flow Rate (gallons per minute)					
Fully Exposed	5	10	15	20	25	30
3/4	5	10	13.75	17.5	21.25	25
1/2	5	10	12.5	15	17.5	20
1/4	5	10	11.25	12.5	13.75	15
Closed	5	5	5	5	5	5

Job Name _____ Contractor _____

Job Location _____ Contractor's P.O. No. _____

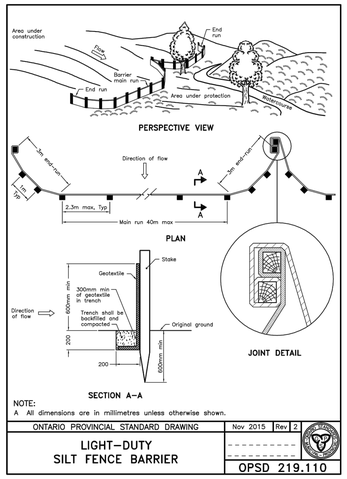
Engineer _____ Representative _____

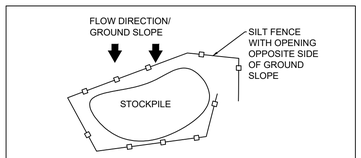
USA: Tel: (800) 338-2581 • Fax: (828) 248-3929 • Watts.com
Canada: Tel: (905) 332-4090 • Fax: (905) 332-7068 • Watts.ca
Latin America: Tel: (52) 81-1001-8600 • Fax: (52) 81-8000-7091 • Watts.com

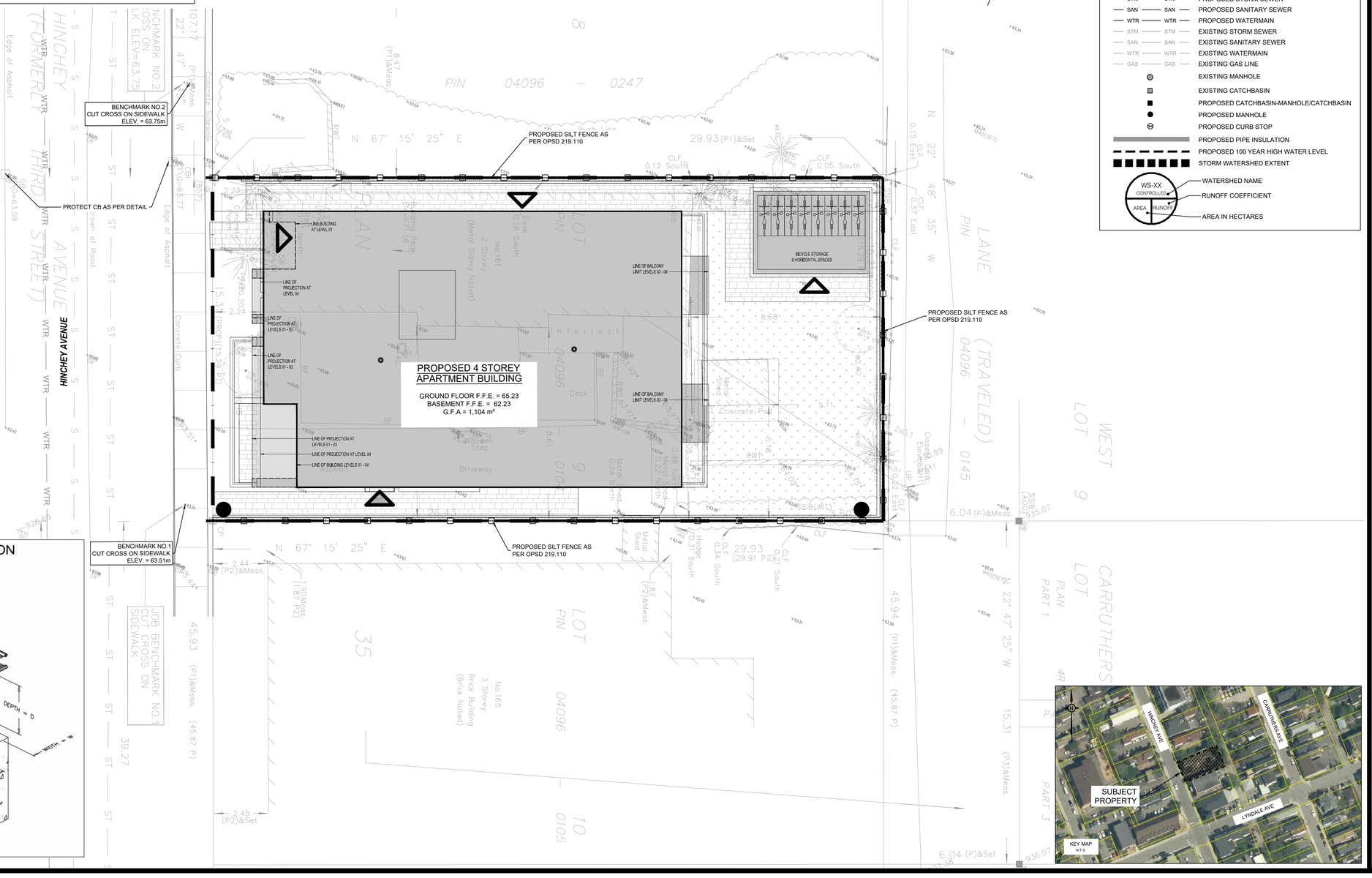
WATTS®
A Watts Water Technologies Company

APPENDIX E

Civil Engineering Drawings







EROSION AND SEDIMENT CONTROL MEASURES:

** CONTRACTOR IS RESPONSIBLE FOR ALL INSTALLATION, MONITORING, REPAIR AND REMOVAL OF ALL EROSION AND SEDIMENT CONTROL FEATURES **

1. PRIOR TO START OF CONSTRUCTION:

- PRIOR TO THE REMOVAL OF ANY VEGETATIVE COVER, MOVING OF SOIL AND CONSTRUCTION:
- INSTALL SILT FENCE IMMEDIATELY DOWNSTREAM FROM AREAS TO BE DISTURBED (SEE PLAN FOR LOCATION).
- INSTALL GEOSOCK INSERTS WITH AN OVERFLOW IN ALL THE DOWNSTREAM CATCHBASINS AND MANHOLES
- INSTALL SILTSACK FILTERS IN ALL CONCRETE CATCH BASINS STRUCTURES
- INSPECT MEASURES IMMEDIATELY AFTER INSTALLATION.

2. DURING CONSTRUCTION:

- WORK TO BE DONE IN THE VICINITY OF MAJOR WATERWAYS TO BE CARRIED OUT FROM JULY TO SEPTEMBER ONLY.
- MINIMIZE THE EXTENT OF DISTURBED AREAS AND THE DURATION OF EXPOSURE.
- PROTECT DISTURBED AREAS FROM RUNOFF.
- PROVIDE TEMPORARY COVER SUCH AS SEEDING OR MULCHING IF DISTURBED AREA WILL NOT BE REHABILITATED WITHIN 30 DAYS.
- INSPECT SILT FENCES, FILTER CLOTHS AND CATCH BASIN SUMPS WEEKLY AND AFTER EVERY MAJOR STORM EVENT. CLEAN AND REPAIR WHEN NECESSARY.
- CONSTRUCT SWALES AS PER DETAIL.
- PLAN TO BE REVIEWED AND REVISED AS REQUIRED DURING CONSTRUCTION
- EROSION CONTROL FENCING TO BE ALSO INSTALLED AROUND THE BASE OF ALL STOCKPILES.
- DO NOT LOCATE TOPSOIL PILES AND EXCAVATION MATERIAL CLOSER THAN 2.5m FROM ANY PAVED SURFACE, OR ONE WHICH IS TO BE PAVED BEFORE THE PILE IS REMOVED. ALL TOPSOIL PILES ARE TO BE SEEDED IF THEY ARE TO REMAIN ON SITE LONG ENOUGH FOR SEEDS TO GROW (LONGER THAN 30 DAYS).
- CONTROL WIND-BLOWN DUST OFF SITE TO ACCEPTABLE LEVELS BY SEEDING TOPSOIL PILES AND OTHER AREAS TEMPORARILY (PROVIDE WATERING AS REQUIRED).
- ALL EROSION CONTROL STRUCTURE TO REMAIN IN PLACE UNTIL ALL DISTURBED GROUND SURFACES HAVE BEEN STABILIZED EITHER BY PAVING OR RESTORATION OF VEGETATIVE GROUND COVER.
- NO ALTERNATE METHODS OF EROSION PROTECTION SHALL BE PERMITTED UNLESS APPROVED BY THIS CONSULTING ENGINEER AND THE CITY DEPARTMENT OF PUBLIC WORKS.
- CONTRACTOR RESPONSIBLE FOR CITY ROADWAY AND SIDEWALK TO BE CLEANED OF ALL SEDIMENT FROM VEHICULAR TRACKING ETC. AT THE END OF EACH WORK DAY.
- PROVIDE GRAVEL ENTRANCE WHEREVER EQUIPMENT LEAVES THE SITE TO PREVENT MUD TRACKING ONTO PAVED SURFACES. GRAVEL BED SHALL BE A MINIMUM OF 15m LONG, 4M WIDE AND 0.3m DEEP AND SHALL CONSIST OF COARSE (50mm CRUSHERT-RUN LIMESTONE) MATERIAL. MAINTAIN GRAVEL ENTRANCE IN CLEAN CONDITION.
- DURING WET CONDITIONS, TIRES OF ALL VEHICLES/EQUIPMENT LEAVING THE SITE ARE TO BE SCRAPED.
- ANY MUD/MATERIAL TRACKED ONTO THE ROAD SHALL BE REMOVED IMMEDIATELY BY HAND OR RUBBER TIRE LOADER.
- TAKE ALL NECESSARY STEPS TO PREVENT BUILDING MATERIAL, CONSTRUCTION DEBRIS OR WASTE BEING SPILLED OR TRACKED ONTO ABUTTING PROPERTIES OR PUBLIC STREETS DURING CONSTRUCTION AND PROCEED IMMEDIATELY TO CLEAN UP ANY AREAS SO AFFECTED.

3. AFTER CONSTRUCTION:

- PROVIDE PERMANENT COVER CONSISTING OF TOPSOIL AND SEED TO DISTURBED AREAS.
- REMOVE STRAW BALE FLOW CHECK DAMS, SILT FENCES AND FILTER CLOTHS ON CATCH BASINS AND MANHOLE COVERS AFTER DISTURBED AREAS HAVE BEEN REHABILITATED AND STABILIZED.
- INSPECT AND CLEAN CATCH BASIN SUMPS AND STORM SEWERS.

NOTE:
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING | Nov 2015 | Rev 2

LIGHT–DUTY SILT FENCE BARRIER

OPSD 219.110

STOCKPILE EROSION PROTECTION

N.T.S.

LEGEND:

▬	EXISTING PROPERTY LINE TO REMAIN
═	PROPOSED CURB
═ DC	PROPOSED DEPRESSED CURB
┬┬┬	PROPOSED TERRACING (3:1 MIN.)
—□—□—	PROPOSED SILT FENCE AS PER OPSD 219.110
—○—○—	PROPOSED FENCE
▼	PROPOSED DOOR ENTRANCE/EXIT
▨	PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
▨	PROPOSED CONCRETE FEATURES/SLAB
▨	PROPOSED HEAVY DUTY ASPHALT
▨	PROPOSED LIGHT DUTY ASPHALT
▨	PROPOSED RIP RAP
×50.00	PROPOSED ELEVATION
×50.00HP	PROPOSED HIGH POINT ELEVATION
×50.00S	PROPOSED SWALE ELEVATION
×50.00BC	PROPOSED BOTTOM OF CURB / ASPHALT ELEVATION
×50.00TC	PROPOSED TOP OF CURB ELEVATION
×50.00EX	MATCH INTO EXISTING ELEVATION
×70.19	EXISTING ELEVATION
➡	PROPOSED OVERLAND MAJOR FLOW ROUTE
— SUB — SUB —	PROPOSED 100mmØ PERFORATED SUBDRAIN
— STM — STM —	PROPOSED STORM SEWER
— SAN — SAN —	PROPOSED SANITARY SEWER
— WTR — WTR —	PROPOSED WATERMAIN
— STM — STM —	EXISTING STORM SEWER
— SAN — SAN —	EXISTING SANITARY SEWER
— WTR — WTR —	EXISTING WATERMAIN
— GAS — GAS —	EXISTING GAS LINE
●	EXISTING MANHOLE
■	EXISTING CATCHBASIN
■	PROPOSED CATCHBASIN-MANHOLE/CATCHBASIN
●	PROPOSED MANHOLE
⊗	PROPOSED CURB STOP
▬	PROPOSED PIPE INSULATION
— — —	PROPOSED 100 YEAR HIGH WATER LEVEL
■ ■ ■	STORM WATERSHED EXTENT

WS-XX / CONTROLLED — WATERSHED NAME
RUNOFF — RUNOFF COEFFICIENT
AREA — AREA IN HECTARES

STORM DRAIN INLET PROTECTION

KEY MAP
N.T.S.

USE AND INTERPRETATION OF DRAWINGS

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION ARE PART OF THE CONTRACT DOCUMENTS AND DESCRIBE USE AND INTENT OF THE DRAWING. THE CONTRACT DOCUMENTS INCLUDE NOT ONLY THE DRAWINGS, BUT ALSO THE OWNER-CONTRACTOR AGREEMENTS, CONDITIONS OF THE CONTRACT, THE SPECIFICATIONS, ADDENDA, AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT. THESE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ANY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. WORK NOT COMPLETELY DELINEATED HEREON SHALL BE CONSTRUCTED OF THE SAME MATERIALS AND DETAILED SIMILARLY AS WORK SHOWN MORE COMPLETELY ELSEWHERE IN THE CONTRACT DOCUMENTS.

BY USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER CONFIRMS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS. THE CONTRACTOR CONFIRMS THAT HE HAS VISITED THE SITE, FAMILIARIZED HIMSELF WITH THE LOCAL CONDITIONS, VERIFIED FIELD DIMENSIONS AND CORRELATED HIS OBSERVATIONS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

AS INSTRUMENTS OF SERVICE, ALL DRAWINGS, SPECIFICATIONS, CADD FILES OR OTHER ELECTRONIC MEDIA AND COPIED THERE OF FURNISHED BY THE ENGINEER ARE HIS PROPERTY. THEY ARE TO BE USED ONLY FOR THIS PROJECT AND ARE NOT TO BE USED ON ANY OTHER PROJECT, INCLUDING REPEATS OF THE PROJECT. CHANGES TO THE DRAWINGS MAY ONLY BE MADE BY THE ENGINEER.

UNLESS THE REVISION TITLE IS "ISSUED FOR CONSTRUCTION", THESE DRAWINGS SHALL BE CONSIDERED PRELIMINARY AND SHALL NOT BE USED AS A CONSTRUCTION DOCUMENT.

THESE DRAWINGS ILLUSTRATES THE WORK TO BE DONE. THE ENGINEER IS NOT RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES USED TO DO THE WORK, OR THE SAFETY ASPECTS OF CONSTRUCTION, AND NOTHING ON THESE DRAWINGS EXPRESSED OR IMPLIED CHANGES THIS CONDITION. CONTRACTOR SHALL DETERMINE ALL CONDITIONS AT THE SITE AND SHALL BE RESPONSIBLE FOR KNOWING HOW THEY AFFECT THE WORK. SUBMITTAL OF A BID TO PERFORM THIS WORK IS ACKNOWLEDGEMENT OF THE RESPONSIBILITIES, AND THAT THEY HAVE BEEN FULLY CONSIDERED IN PLANNING OF THE WORK, AND THE BID PRICE. NO CLAIMS FOR EXTRA CHARGES DUE TO THESE CONDITIONS WILL BE FORTHCOMING.

UNAUTHORIZED CHANGES:

IN THE EVENT THE CLIENT, THE CLIENT'S CONTRACTORS OR SUBCONTRACTORS, OR ANYONE FOR WHOM THE CLIENT IS LEGALLY LIABLE MAKES OR PERMITS TO BE MADE ANY CHANGES TO ANY REPORTS, PLANS, SPECIFICATIONS OR OTHER CONSTRUCTION DOCUMENTS PREPARED BY LRL ASSOCIATES LTD. (LRL) WITHOUT OBTAINING LRL'S PRIOR WRITTEN CONSENT, THE CLIENT SHALL ASSUME FULL RESPONSIBILITY FOR THE RESULTS OF SUCH CHANGES. THEREFORE THE CLIENT AGREES TO WAIVE ANY CLAIM AGAINST LRL AND TO RELEASE LRL FROM ANY LIABILITY ARISING DIRECTLY OR INDIRECTLY FROM SUCH UNAUTHORIZED CHANGES.

IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS LRL FROM ANY DAMAGES, LIABILITIES OR COST, INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.

IN ADDITION, THE CLIENT AGREES TO INCLUDE IN ANY CONTRACTS FOR CONSTRUCTION APPROPRIATE LANGUAGE THAT PROHIBITS THE CONTRACTOR OR ANY SUBCONTRACTORS OF ANY TIER FROM MAKING ANY CHANGES OR MODIFICATIONS TO LRL'S CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF LRL AND THAT FURTHER REQUIRES THE CONTRACTOR TO INDEMNIFY BOTH LRL AND THE CLIENT FROM ANY LIABILITY OR COST ARISING FROM SUCH CHANGES MADE WITHOUT SUCH PROPER AUTHORIZATION.

GENERAL NOTES:

EXISTING SERVICES AND UTILITIES SHOWN ON THESE DRAWINGS ARE TAKEN FROM THE BEST AVAILABLE RECORDS, BUT MAY NOT BE COMPLETE OR TO DATE. CONTRACTOR SHALL VERIFY IN FIELD FOR LOCATION AND ELEVATION OF PIPES AND CHECK WITH THE UTILITY COMPANIES BEFORE DIGGING OR PERFORMING WORK.

CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

2m 0.5 0 2 4m

SCALE: 1:100

NOT FOR CONSTRUCTION TENDER OR PERMIT

No.	REVISIONS	BY	DATE
02	ISSUED FOR APPROVAL	A.S.	29 SEP 2020
01	ISSUED FOR APPROVAL	A.S.	31 JUL 2020

M. BASNET
100501996
2020/09/29

NOT AUTHENTIC UNLESS SIGNED AND DATED

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434

CLIENT
PRAVEEN MUPPALLA
450 Creekview Way
Ottawa, ON, K1Y 1L5

DESIGNED BY:	DRAWN BY:	APPROVED BY:
A.S.	A.S.	M.B.

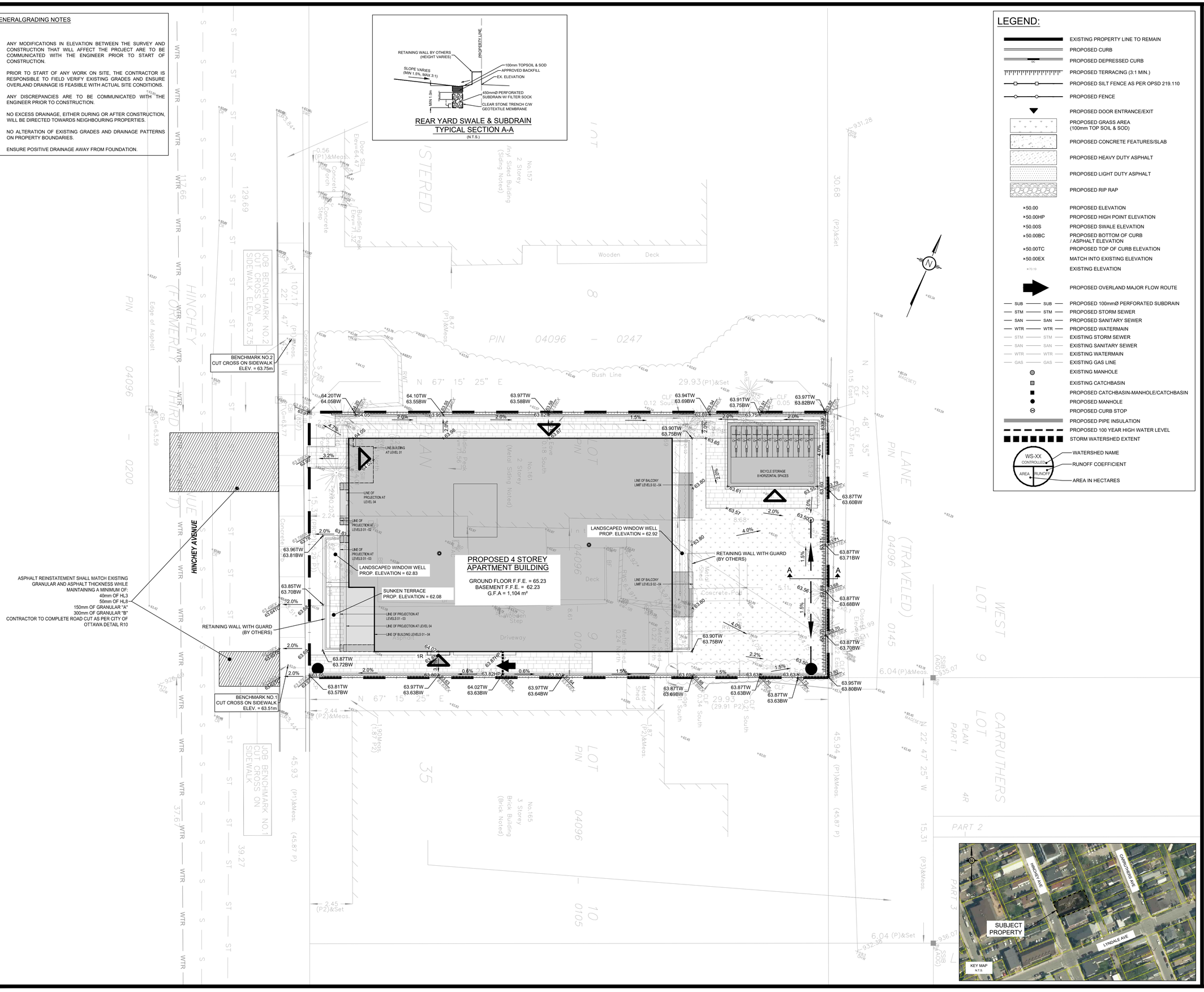
PROJECT
APARTMENT BUILDING
161 HINCHEY AVENUE

DRAWING TITLE
EROSION AND SEDIMENT CONTROL PLAN

PROJECT NO.
200295

DATE
JULY 2020

C101



GENERALGRADING NOTES

1. ANY MODIFICATIONS IN ELEVATION BETWEEN THE SURVEY AND CONSTRUCTION THAT WILL AFFECT THE PROJECT ARE TO BE COMMUNICATED WITH THE ENGINEER PRIOR TO START OF CONSTRUCTION.
2. PRIOR TO START OF ANY WORK ON SITE, THE CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY EXISTING GRADES AND ENSURE OVERLAND DRAINAGE IS FEASIBLE WITH ACTUAL SITE CONDITIONS.
3. ANY DISCREPANCIES ARE TO BE COMMUNICATED WITH THE ENGINEER PRIOR TO CONSTRUCTION.
4. NO EXCESS DRAINAGE, EITHER DURING OR AFTER CONSTRUCTION, WILL BE DIRECTED TOWARDS NEIGHBOURING PROPERTIES.
5. NO ALTERATION OF EXISTING GRADES AND DRAINAGE PATTERNS ON PROPERTY BOUNDARIES.
6. ENSURE POSITIVE DRAINAGE AWAY FROM FOUNDATION.

REAR YARD SWALE & SUBDRAIN
TYPICAL SECTION A-A

(N.T.S.)

ASPHALT REINSTATEMENT SHALL MATCH EXISTING GRANULAR AND ASPHALT THICKNESS WHILE MAINTAINING A MINIMUM OF:
40mm OF HL3
50mm OF HL8
150mm OF GRANULAR "A"
300mm OF GRANULAR "B"
CONTRACTOR TO COMPLETE ROAD CUT AS PER CITY OF OTTAWA DETAIL R10

RETAINING WALL WITH GUARD
(BY OTHERS)

RETAINING WALL WITH GUARD
(BY OTHERS)

PROPOSED 4 STOREY
APARTMENT BUILDING

GROUND FLOOR F.F.E. = 65.23
BASEMENT F.F.E. = 62.23
G.F.A = 1,104 m²

LANDSCAPED WINDOW WELL
PROP. ELEVATION = 62.83

LANDSCAPED WINDOW WELL
PROP. ELEVATION = 62.92

SUNKEN TERRACE
PROP. ELEVATION = 62.08

LEGEND:

━━━	EXISTING PROPERTY LINE TO REMAIN
═══	PROPOSED CURB
DC	PROPOSED DEPRESSED CURB
┬┬┬┬	PROPOSED TERRACING (3:1 MIN.)
—□—□—	PROPOSED SILT FENCE AS PER OPSD 219.110
—○—○—	PROPOSED FENCE
▼	PROPOSED DOOR ENTRANCE/EXIT
▨	PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
▨	PROPOSED CONCRETE FEATURES/SLAB
▨	PROPOSED HEAVY DUTY ASPHALT
▨	PROPOSED LIGHT DUTY ASPHALT
▨	PROPOSED RIP RAP
×50.00	PROPOSED ELEVATION
×50.00HP	PROPOSED HIGH POINT ELEVATION
×50.00S	PROPOSED SWALE ELEVATION
×50.00BC	PROPOSED BOTTOM OF CURB / ASPHALT ELEVATION
×50.00TC	PROPOSED TOP OF CURB ELEVATION
×50.00EX	MATCH INTO EXISTING ELEVATION
×70.15	EXISTING ELEVATION
➡	PROPOSED OVERLAND MAJOR FLOW ROUTE
— SUB — SUB	PROPOSED 100mmØ PERFORATED SUBDRAIN
— STM — STM	PROPOSED STORM SEWER
— SAN — SAN	PROPOSED SANITARY SEWER
— WTR — WTR	PROPOSED WATERMAIN
— STM — STM	EXISTING STORM SEWER
— SAN — SAN	EXISTING SANITARY SEWER
— WTR — WTR	EXISTING WATERMAIN
— GAS — GAS	EXISTING GAS LINE
●	EXISTING MANHOLE
■	EXISTING CATCHBASIN
■	PROPOSED CATCHBASIN-MANHOLE/CATCHBASIN
●	PROPOSED MANHOLE
⊖	PROPOSED CURB STOP
▬	PROPOSED PIPE INSULATION
— — —	PROPOSED 100 YEAR HIGH WATER LEVEL
■■■■	STORM WATERSHED EXTENT

WS-XX
CONTROLLED
AREA | RUNOFF

- WATERSHED NAME
- RUNOFF COEFFICIENT
- AREA IN HECTARES

NOT FOR CONSTRUCTION TENDER OR PERMIT

USE AND INTERPRETATION OF DRAWINGS

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION ARE PART OF THE CONTRACT DOCUMENTS AND DESCRIBE USE AND INTENT OF THE DRAWING. THE CONTRACT DOCUMENTS INCLUDE NOT ONLY THE DRAWINGS, BUT ALSO THE OWNER-CONTRACTOR AGREEMENTS, CONDITIONS OF THE CONTRACT, THE SPECIFICATIONS, ADDENDA, AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT. THESE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ANY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. WORK NOT COMPLETELY DELINEATED HEREON SHALL BE CONSTRUCTED OF THE SAME MATERIALS AND DETAILED SIMILARLY AS WORK SHOWN MORE COMPLETELY ELSEWHERE IN THE CONTRACT DOCUMENTS.

BY USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER CONFIRMS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS. THE CONTRACTOR CONFIRMS THAT HE HAS VISITED THE SITE, FAMILIARIZED HIMSELF WITH THE LOCAL CONDITIONS, VERIFIED FIELD DIMENSIONS AND CORRELATED HIS OBSERVATIONS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

AS INSTRUMENTS OF SERVICE, ALL DRAWINGS, SPECIFICATIONS, CADD FILES OR OTHER ELECTRONIC MEDIA AND COPIED THERE OF FURNISHED BY THE ENGINEER ARE HIS PROPERTY. THEY ARE TO BE USED ONLY FOR THIS PROJECT AND ARE NOT TO BE USED ON ANY OTHER PROJECT, INCLUDING REPEATS OF THE PROJECT. CHANGES TO THE DRAWINGS MAY ONLY BE MADE BY THE ENGINEER.

UNLESS THE REVISION TITLE IS "ISSUED FOR CONSTRUCTION", THESE DRAWINGS SHALL BE CONSIDERED PRELIMINARY AND SHALL NOT BE USED AS A CONSTRUCTION DOCUMENT.

THESE DRAWINGS ILLUSTRATES THE WORK TO BE DONE. THE ENGINEER IS NOT RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES USED TO DO THE WORK, OR THE SAFETY ASPECTS OF CONSTRUCTION, AND NOTHING ON THESE DRAWINGS EXPRESSED OR IMPLIED CHANGES THIS CONDITION. CONTRACTOR SHALL DETERMINE ALL CONDITIONS AT THE SITE AND SHALL BE RESPONSIBLE FOR KNOWING HOW THEY AFFECT THE WORK. SUBMITTAL OF A BID TO PERFORM THIS WORK IS ACKNOWLEDGEMENT OF THE RESPONSIBILITIES, AND THAT THEY HAVE BEEN FULLY CONSIDERED IN PLANNING OF THE WORK, AND THE BID PRICE. NO CLAIMS FOR EXTRA CHARGES DUE TO THESE CONDITIONS WILL BE FORTHCOMING.

UNAUTHORIZED CHANGES:

IN THE EVENT THE CLIENT, THE CLIENT'S CONTRACTORS OR SUBCONTRACTORS, OR ANYONE FOR WHOM THE CLIENT IS LEGALLY LIABLE MAKES OR PERMITS TO BE MADE ANY CHANGES TO ANY REPORTS, PLANS, SPECIFICATIONS OR OTHER CONSTRUCTION DOCUMENTS PREPARED BY LRL ASSOCIATES LTD. (LRL) WITHOUT OBTAINING LRL'S PRIOR WRITTEN CONSENT, THE CLIENT SHALL ASSUME FULL RESPONSIBILITY FOR THE RESULTS OF SUCH CHANGES. THEREFORE THE CLIENT AGREES TO WAIVE ANY CLAIM AGAINST LRL AND TO RELEASE LRL FROM ANY LIABILITY ARISING DIRECTLY OR INDIRECTLY FROM SUCH UNAUTHORIZED CHANGES.

IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS LRL FROM ANY DAMAGES, LIABILITIES OR COST, INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.

IN ADDITION, THE CLIENT AGREES TO INCLUDE IN ANY CONTRACTS FOR CONSTRUCTION APPROPRIATE LANGUAGE THAT PROHIBITS THE CONTRACTOR OR ANY SUBCONTRACTORS OF ANY TIER FROM MAKING ANY CHANGES OR MODIFICATIONS TO LRL'S CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF LRL AND THAT FURTHER REQUIRES THE CONTRACTOR TO INDEMNIFY BOTH LRL AND THE CLIENT FROM ANY LIABILITY OR COST ARISING FROM SUCH CHANGES MADE WITHOUT SUCH PROPER AUTHORIZATION.

GENERAL NOTES:

EXISTING SERVICES AND UTILITIES SHOWN ON THESE DRAWINGS ARE TAKEN FROM THE BEST AVAILABLE RECORDS, BUT MAY NOT BE COMPLETE OR TO DATE. CONTRACTOR SHALL VERIFY IN FIELD FOR LOCATION AND ELEVATION OF PIPES AND CHECK WITH THE UTILITY COMPANIES BEFORE DIGGING OR PERFORMING WORK.

CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

2m 0.5 0 2 4m

SCALE: 1:100

No.	REVISIONS	BY	DATE
02	ISSUED FOR APPROVAL	A.S.	29 SEP 2020
01	ISSUED FOR APPROVAL	A.S.	31 JUL 2020

M. BASNET
100501996
2020/09/29

NOT AUTHENTIC UNLESS SIGNED AND DATED

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434

CLIENT
PRAVEEN MUPPALLA
450 Creekview Way
Ottawa, ON, K1Y 1L5

DESIGNED BY:	DRAWN BY:	APPROVED BY:
A.S.	A.S.	M.B.

PROJECT
APARTMENT BUILDING
161 HINCHEY AVENUE

DRAWING TITLE

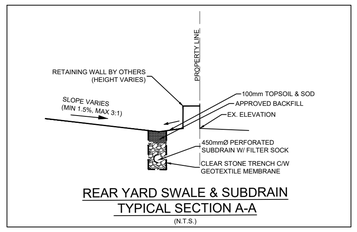
GRADING AND DRAINAGE PLAN

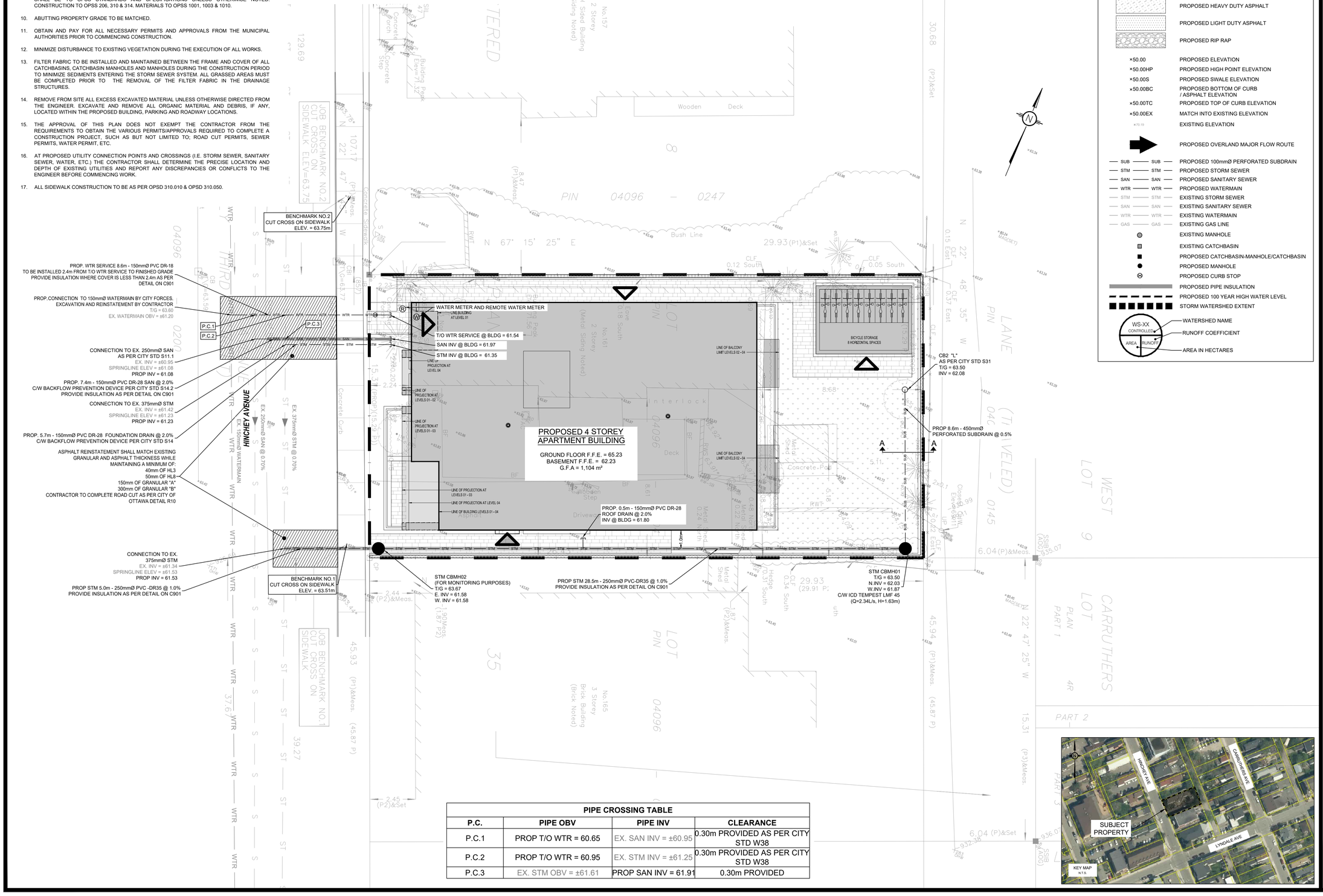
PROJECT NO.
200295

DATE
JULY 2020

C301

KEY MAP
N.T.S.





NOTES: GENERAL

1. CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT FOR CONSTRUCTION PURPOSES.
2. ALL ELEVATIONS ARE GEODETIC AND UTILIZE METRIC UNITS.
3. JOB BENCH MARK - CONFIRM WITH LRL PRIOR TO UTILIZATION.
4. ALL GROUND SURFACES SHALL BE EVENLY GRADED WITHOUT PONDING AREAS AND WITHOUT LOW POINTS EXCEPT WHERE APPROVED SWALE, CATCH BASIN OUTLETS AND/OR STORM DETENTION AREAS ARE PROVIDED.
5. STRIP AND REMOVE ALL TOPSOIL FROM IMPROVED AREAS.
6. COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
7. ALL EDGES OF DISTURBED PAVEMENT SHALL BE SAW CUT TO FORM A CLEAN STRAIGHT LINE PRIOR TO PLACING NEW PAVEMENT. PAVEMENT REINSTATEMENT SHALL BE WITH STEP JOINTS OF 500mm WIDTH MINIMUM.
8. CURBS TO BE BARRIER, CONSTRUCTED AS PER OPSD 600.110.
9. ALL MATERIAL SUPPLIED AND PLACED FOR PARKING LOT AND ACCESS ROAD CONSTRUCTION SHALL BE TO OPSS STANDARDS AND SPECIFICATIONS UNLESS OTHERWISE NOTED. CONSTRUCTION TO OPSS 206, 310 & 314. MATERIALS TO OPSS 1001, 1003 & 1010.
10. ABUTTING PROPERTY GRADE TO BE MATCHED.
11. OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS FROM THE MUNICIPAL AUTHORITIES PRIOR TO COMMENCING CONSTRUCTION.
12. MINIMIZE DISTURBANCE TO EXISTING VEGETATION DURING THE EXECUTION OF ALL WORKS.
13. FILTER FABRIC TO BE INSTALLED AND MAINTAINED BETWEEN THE FRAME AND COVER OF ALL CATCHBASINS, CATCHBASIN MANHOLES AND MANHOLES DURING THE CONSTRUCTION PERIOD TO MINIMIZE SEDIMENTS ENTERING THE STORM SEWER SYSTEM. ALL GRASSED AREAS MUST BE COMPLETED PRIOR TO THE REMOVAL OF THE FILTER FABRIC IN THE DRAINAGE STRUCTURES.
14. REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL UNLESS OTHERWISE DIRECTED FROM THE ENGINEER. EXCAVATE AND REMOVE ALL ORGANIC MATERIAL AND DEBRIS, IF ANY, LOCATED WITHIN THE PROPOSED BUILDING, PARKING AND ROADWAY LOCATIONS.
15. THE APPROVAL OF THIS PLAN DOES NOT EXEMPT THE CONTRACTOR FROM THE REQUIREMENTS TO OBTAIN THE VARIOUS PERMITS/APPROVALS REQUIRED TO COMPLETE A CONSTRUCTION PROJECT, SUCH AS BUT NOT LIMITED TO; ROAD CUT PERMITS, SEWER PERMITS, WATER PERMIT, ETC.
16. AT PROPOSED UTILITY CONNECTION POINTS AND CROSSINGS (I.E. STORM SEWER, SANITARY SEWER, WATER, ETC.) THE CONTRACTOR SHALL DETERMINE THE PRECISE LOCATION AND DEPTH OF EXISTING UTILITIES AND REPORT ANY DISCREPANCIES OR CONFLICTS TO THE ENGINEER BEFORE COMMENCING WORK.
17. ALL SIDEWALK CONSTRUCTION TO BE AS PER OPSD 310.010 & OPSD 310.050.

NOTES: SEWERS

1. SEWER BEDDING AS PER PIPE TRENCH DETAIL WITH GRANULAR 'A' BEDDING COMPACTED TO 95% OF ITS SPMDD.
2. ALL WORK SHALL BE PERFORMED, AS APPLICABLE IN ACCORDANCE WITH OPSS 407, AND 410.
3. CONTRACTOR TO CONFIRM ELEVATION OF EXISTING SEWERS AT PROPOSED CONNECTION POINTS AND REPORT ANY DISCREPANCIES TO THE ENGINEER BEFORE COMMENCING ANY WORK.
4. ALL SEWERS WITH LESS THAN 2.0m OF COVER ARE SUBJECT TO INSULATION DETAIL.

NOTES: WATER SERVICE

1. PROPOSED WATER SERVICE TO BE 2.4m BELOW GRADE, OR INSULATED AS PER DETAIL ON C901

REAR YARD SWALE & SUBDRAIN
TYPICAL SECTION A-A
(N.T.S.)

LEGEND:

▬	EXISTING PROPERTY LINE TO REMAIN
═	PROPOSED CURB
DC	PROPOSED DEPRESSED CURB
	PROPOSED TERRACING (3:1 MIN.)
	PROPOSED SILT FENCE AS PER OPSD 219.110
	PROPOSED FENCE
▼	PROPOSED DOOR ENTRANCE/EXIT
	PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
	PROPOSED CONCRETE FEATURES/SLAB
	PROPOSED HEAVY DUTY ASPHALT
	PROPOSED LIGHT DUTY ASPHALT
	PROPOSED RIP RAP
×50.00	PROPOSED ELEVATION
×50.00HP	PROPOSED HIGH POINT ELEVATION
×50.00S	PROPOSED SWALE ELEVATION
×50.00BC	PROPOSED BOTTOM OF CURB / ASPHALT ELEVATION
×50.00TC	PROPOSED TOP OF CURB ELEVATION
×50.00EX	MATCH INTO EXISTING ELEVATION
×70.19	EXISTING ELEVATION
➡	PROPOSED OVERLAND MAJOR FLOW ROUTE
SUB —— SUB	PROPOSED 100mmØ PERFORATED SUBDRAIN
STM —— STM	PROPOSED STORM SEWER
SAN —— SAN	PROPOSED SANITARY SEWER
WTR —— WTR	PROPOSED WATERMAIN
STM —— STM	EXISTING STORM SEWER
SAN —— SAN	EXISTING SANITARY SEWER
WTR —— WTR	EXISTING WATERMAIN
GAS —— GAS	EXISTING GAS LINE
●	EXISTING MANHOLE
■	EXISTING CATCHBASIN
■	PROPOSED CATCHBASIN-MANHOLE/CATCHBASIN
●	PROPOSED MANHOLE
⊗	PROPOSED CURB STOP
▬	PROPOSED PIPE INSULATION
– – –	PROPOSED 100 YEAR HIGH WATER LEVEL
■ ■ ■	STORM WATERSHED EXTENT
WS-XX	WATERSHED NAME
CONTROLLED	RUNOFF COEFFICIENT
AREA	AREA IN HECTARES

PIPE CROSSING TABLE			
P.C.	**PIPE OBV**	**PIPE INV**	**CLEARANCE**
P.C.1	PROP T/O WTR = 60.65	EX. SAN INV = ±60.95	0.30m PROVIDED AS PER CITY STD W38
P.C.2	PROP T/O WTR = 60.95	EX. STM INV = ±61.25	0.30m PROVIDED AS PER CITY STD W38
P.C.3	EX. STM OBV = ±61.61	PROP SAN INV = 61.91	0.30m PROVIDED

KEY MAP
N.T.S.

USE AND INTERPRETATION OF DRAWINGS

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION ARE PART OF THE CONTRACT DOCUMENTS AND DESCRIBE USE AND INTENT OF THE DRAWING. THE CONTRACT DOCUMENTS INCLUDE NOT ONLY THE DRAWINGS, BUT ALSO THE OWNER-CONTRACTOR AGREEMENTS, CONDITIONS OF THE CONTRACT, THE SPECIFICATIONS, ADDENDA, AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT. THESE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ANY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. WORK NOT COMPLETELY DELINEATED HEREON SHALL BE CONSTRUCTED OF THE SAME MATERIALS AND DETAILED SIMILARLY AS WORK SHOWN MORE COMPLETELY ELSEWHERE IN THE CONTRACT DOCUMENTS.

BY USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER CONFIRMS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS. THE CONTRACTOR CONFIRMS THAT HE HAS VISITED THE SITE, FAMILIARIZED HIMSELF WITH THE LOCAL CONDITIONS, VERIFIED FIELD DIMENSIONS AND CORRELATED HIS OBSERVATIONS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

AS INSTRUMENTS OF SERVICE, ALL DRAWINGS, SPECIFICATIONS, CADD FILES OR OTHER ELECTRONIC MEDIA AND COPIED THERE OF FURNISHED BY THE ENGINEER ARE HIS PROPERTY. THEY ARE TO BE USED ONLY FOR THIS PROJECT AND ARE NOT TO BE USED ON ANY OTHER PROJECT, INCLUDING REPEATS OF THE PROJECT. CHANGES TO THE DRAWINGS MAY ONLY BE MADE BY THE ENGINEER.

UNLESS THE REVISION TITLE IS "ISSUED FOR CONSTRUCTION", THESE DRAWINGS SHALL BE CONSIDERED PRELIMINARY AND SHALL NOT BE USED AS A CONSTRUCTION DOCUMENT.

THESE DRAWINGS ILLUSTRATES THE WORK TO BE DONE. THE ENGINEER IS NOT RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES USED TO DO THE WORK, OR THE SAFETY ASPECTS OF CONSTRUCTION, AND NOTHING ON THESE DRAWINGS EXPRESSED OR IMPLIED CHANGES THIS CONDITION. CONTRACTOR SHALL DETERMINE ALL CONDITIONS AT THE SITE AND SHALL BE RESPONSIBLE FOR KNOWING HOW THEY AFFECT THE WORK. SUBMITTAL OF A BID TO PERFORM THIS WORK IS ACKNOWLEDGEMENT OF THE RESPONSIBILITIES, AND THAT THEY HAVE BEEN FULLY CONSIDERED IN PLANNING OF THE WORK, AND THE BID PRICE. NO CLAIMS FOR EXTRA CHARGES DUE TO THESE CONDITIONS WILL BE FORTHCOMING.

UNAUTHORIZED CHANGES:

IN THE EVENT THE CLIENT, THE CLIENT'S CONTRACTORS OR SUBCONTRACTORS, OR ANYONE FOR WHOM THE CLIENT IS LEGALLY LIABLE MAKES OR PERMITS TO BE MADE ANY CHANGES TO ANY REPORTS, PLANS, SPECIFICATIONS OR OTHER CONSTRUCTION DOCUMENTS PREPARED BY LRL ASSOCIATES LTD. (LRL) WITHOUT OBTAINING LRL'S PRIOR WRITTEN CONSENT, THE CLIENT SHALL ASSUME FULL RESPONSIBILITY FOR THE RESULTS OF SUCH CHANGES. THEREFORE THE CLIENT AGREES TO WAIVE ANY CLAIM AGAINST LRL AND TO RELEASE LRL FROM ANY LIABILITY ARISING DIRECTLY OR INDIRECTLY FROM SUCH UNAUTHORIZED CHANGES.

IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS LRL FROM ANY DAMAGES, LIABILITIES OR COST, INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.

IN ADDITION, THE CLIENT AGREES TO INCLUDE IN ANY CONTRACTS FOR CONSTRUCTION APPROPRIATE LANGUAGE THAT PROHIBITS THE CONTRACTOR OR ANY SUBCONTRACTORS OF ANY TIER FROM MAKING ANY CHANGES OR MODIFICATIONS TO LRL'S CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF LRL AND THAT FURTHER REQUIRES THE CONTRACTOR TO INDEMNIFY BOTH LRL AND THE CLIENT FROM ANY LIABILITY OR COST ARISING FROM SUCH CHANGES MADE WITHOUT SUCH PROPER AUTHORIZATION.

GENERAL NOTES:

EXISTING SERVICES AND UTILITIES SHOWN ON THESE DRAWINGS ARE TAKEN FROM THE BEST AVAILABLE RECORDS, BUT MAY NOT BE COMPLETE OR TO DATE. CONTRACTOR SHALL VERIFY IN FIELD FOR LOCATION AND ELEVATION OF PIPES AND CHECK WITH THE UTILITY COMPANIES BEFORE DIGGING OR PERFORMING WORK.

CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

2m 0.5 0 2 4m
SCALE: 1:100

NOT FOR CONSTRUCTION TENDER OR PERMIT

No.	REVISIONS	BY	DATE
02	ISSUED FOR APPROVAL	A.S.	29 SEP 2020
01	ISSUED FOR APPROVAL	A.S.	31 JUL 2020

M. BASNET
100501996
2020/09/29

NOT AUTHENTIC UNLESS SIGNED AND DATED

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434

CLIENT
PRAVEEN MUPPALLA
450 Creekview Way
Ottawa, ON, K1Y 1L5

DESIGNED BY:	DRAWN BY:	APPROVED BY:
A.S.	A.S.	M.B.

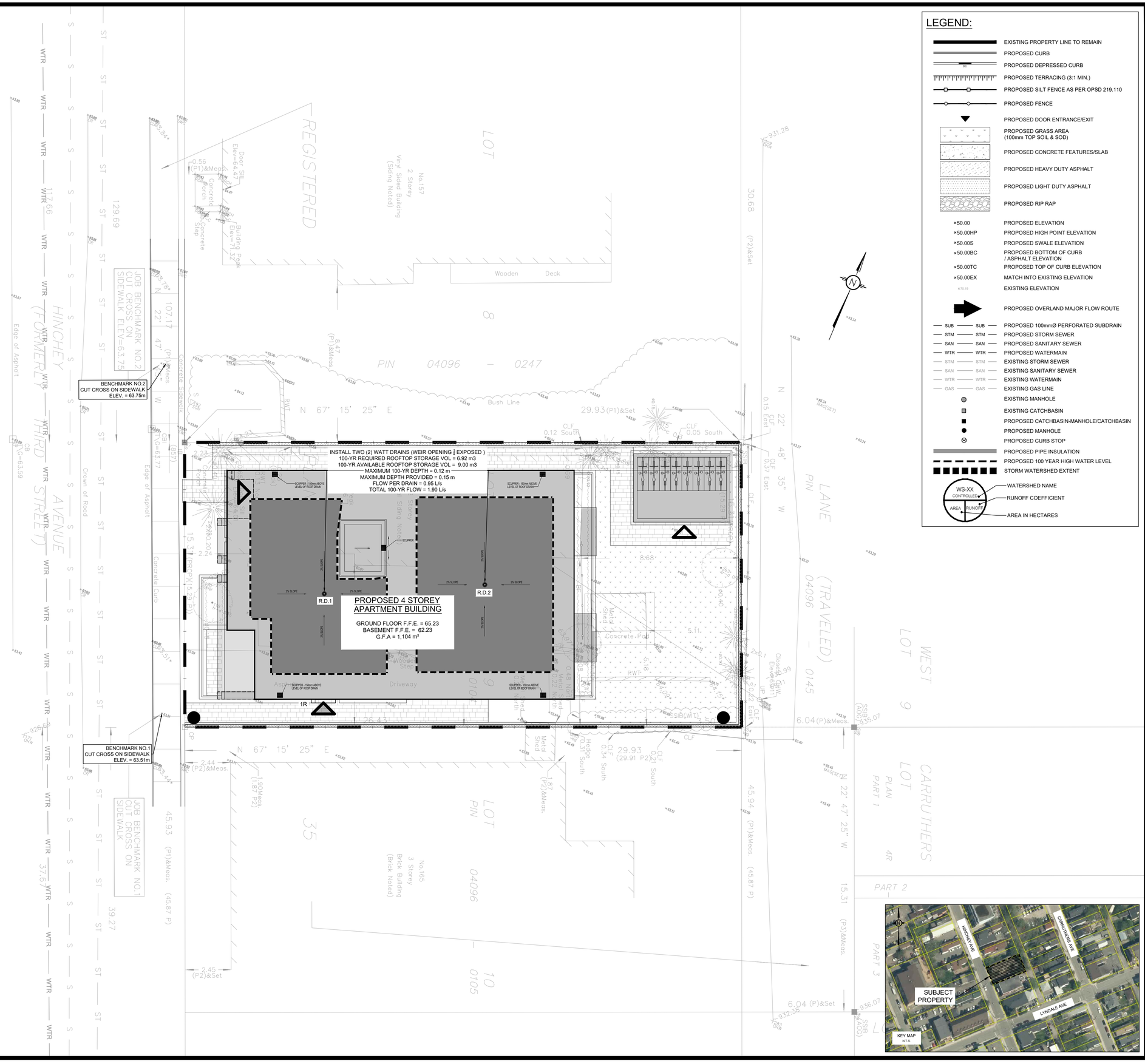
PROJECT
APARTMENT BUILDING
161 HINCHEY AVENUE

DRAWING TITLE
SERVICING PLAN

PROJECT NO.
200295

DATE
JULY 2020

C401



LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
- PROPOSED CURB
- PROPOSED DEPRESSED CURB
- PROPOSED TERRACING (3:1 MIN.)
- PROPOSED SILT FENCE AS PER OPSD 219.110
- PROPOSED FENCE
- PROPOSED DOOR ENTRANCE/EXIT
- PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
- PROPOSED CONCRETE FEATURES/SLAB
- PROPOSED HEAVY DUTY ASPHALT
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED RIP RAP
- ×50.00 PROPOSED ELEVATION
- ×50.00HP PROPOSED HIGH POINT ELEVATION
- ×50.00S PROPOSED SWALE ELEVATION
- ×50.00BC PROPOSED BOTTOM OF CURB / ASPHALT ELEVATION
- ×50.00TC PROPOSED TOP OF CURB ELEVATION
- ×50.00EX MATCH INTO EXISTING ELEVATION
- ×70.19 EXISTING ELEVATION
- PROPOSED OVERLAND MAJOR FLOW ROUTE
- SUB SUB PROPOSED 100mmØ PERFORATED SUBDRAIN
- STM STM PROPOSED STORM SEWER
- SAN SAN PROPOSED SANITARY SEWER
- WTR WTR PROPOSED WATERMAIN
- STM STM EXISTING STORM SEWER
- SAN SAN EXISTING SANITARY SEWER
- WTR WTR EXISTING WATERMAIN
- GAS GAS EXISTING GAS LINE
- EXISTING MANHOLE
- EXISTING CATCHBASIN
- PROPOSED CATCHBASIN-MANHOLE/CATCHBASIN
- PROPOSED MANHOLE
- PROPOSED CURB STOP
- PROPOSED PIPE INSULATION
- PROPOSED 100 YEAR HIGH WATER LEVEL
- STORM WATERSHED EXTENT
- WS-XX CONTROLLED AREA RUNOFF — WATERSHED NAME / RUNOFF COEFFICIENT / AREA IN HECTARES

USE AND INTERPRETATION OF DRAWINGS

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION ARE PART OF THE CONTRACT DOCUMENTS AND DESCRIBE USE AND INTENT OF THE DRAWING. THE CONTRACT DOCUMENTS INCLUDE NOT ONLY THE DRAWINGS, BUT ALSO THE OWNER-CONTRACTOR AGREEMENTS, CONDITIONS OF THE CONTRACT, THE SPECIFICATIONS, ADDENDA, AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT. THESE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ANY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. WORK NOT COMPLETELY DELINEATED HEREON SHALL BE CONSTRUCTED OF THE SAME MATERIALS AND DETAILED SIMILARLY AS WORK SHOWN MORE COMPLETELY ELSEWHERE IN THE CONTRACT DOCUMENTS.

BY USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER CONFIRMS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS. THE CONTRACTOR CONFIRMS THAT HE HAS VISITED THE SITE, FAMILIARIZED HIMSELF WITH THE LOCAL CONDITIONS, VERIFIED FIELD DIMENSIONS AND CORRELATED HIS OBSERVATIONS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

AS INSTRUMENTS OF SERVICE, ALL DRAWINGS, SPECIFICATIONS, CADD FILES OR OTHER ELECTRONIC MEDIA AND COPIED THERE OF FURNISHED BY THE ENGINEER ARE HIS PROPERTY. THEY ARE TO BE USED ONLY FOR THIS PROJECT AND ARE NOT TO BE USED ON ANY OTHER PROJECT, INCLUDING REPEATS OF THE PROJECT. CHANGES TO THE DRAWINGS MAY ONLY BE MADE BY THE ENGINEER.

UNLESS THE REVISION TITLE IS "ISSUED FOR CONSTRUCTION", THESE DRAWINGS SHALL BE CONSIDERED PRELIMINARY AND SHALL NOT BE USED AS A CONSTRUCTION DOCUMENT.

THESE DRAWINGS ILLUSTRATES THE WORK TO BE DONE. THE ENGINEER IS NOT RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES USED TO DO THE WORK, OR THE SAFETY ASPECTS OF CONSTRUCTION, AND NOTHING ON THESE DRAWINGS EXPRESSED OR IMPLIED CHANGES THIS CONDITION. CONTRACTOR SHALL DETERMINE ALL CONDITIONS AT THE SITE AND SHALL BE RESPONSIBLE FOR KNOWING HOW THEY AFFECT THE WORK. SUBMITTAL OF A BID TO PERFORM THIS WORK IS ACKNOWLEDGEMENT OF THE RESPONSIBILITIES, AND THAT THEY HAVE BEEN FULLY CONSIDERED IN PLANNING OF THE WORK, AND THE BID PRICE. NO CLAIMS FOR EXTRA CHANGES DUE TO THESE CONDITIONS WILL BE FORTHCOMING.

UNAUTHORIZED CHANGES:

IN THE EVENT THE CLIENT, THE CLIENT'S CONTRACTORS OR SUBCONTRACTORS, OR ANYONE FOR WHOM THE CLIENT IS LEGALLY LIABLE MAKES OR PERMITS TO BE MADE ANY CHANGES TO ANY REPORTS, PLANS, SPECIFICATIONS OR OTHER CONSTRUCTION DOCUMENTS PREPARED BY LRL ASSOCIATES LTD. (LRL) WITHOUT OBTAINING LRL'S PRIOR WRITTEN CONSENT, THE CLIENT SHALL ASSUME FULL RESPONSIBILITY FOR THE RESULTS OF SUCH CHANGES, THEREFORE THE CLIENT AGREES TO WAIVE ANY CLAIM AGAINST LRL AND TO RELEASE LRL FROM ANY LIABILITY ARISING DIRECTLY OR INDIRECTLY FROM SUCH UNAUTHORIZED CHANGES.

IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS LRL FROM ANY DAMAGES, LIABILITIES OR COST, INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.

IN ADDITION, THE CLIENT AGREES TO INCLUDE IN ANY CONTRACTS FOR CONSTRUCTION APPROPRIATE LANGUAGE THAT PROHIBITS THE CONTRACTOR OR ANY SUBCONTRACTORS OF ANY TIER FROM MAKING ANY CHANGES OR MODIFICATIONS TO LRL'S CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF LRL AND THAT FURTHER REQUIRES THE CONTRACTOR TO INDEMNIFY BOTH LRL AND THE CLIENT FROM ANY LIABILITY OR COST ARISING FROM SUCH CHANGES MADE WITHOUT SUCH PROPER AUTHORIZATION.

GENERAL NOTES:

EXISTING SERVICES AND UTILITIES SHOWN ON THESE DRAWINGS ARE TAKEN FROM THE BEST AVAILABLE RECORDS, BUT MAY NOT BE COMPLETE OR TO DATE. CONTRACTOR SHALL VERIFY IN FIELD FOR LOCATION AND ELEVATION OF PIPES AND CHECK WITH THE UTILITY COMPANIES BEFORE DIGGING OR PERFORMING WORK.

CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

2m 0.5 0 2 4m
SCALE: 1:100

NOT FOR CONSTRUCTION TENDER OR PERMIT

No.	REVISIONS	BY	DATE
02	ISSUED FOR APPROVAL	A.S.	29 SEP 2020
01	ISSUED FOR APPROVAL	A.S.	31 JUL 2020

LICENSED PROFESSIONAL ENGINEER M. BASNET 100501996 2020/09/29 PROVINCE OF ONTARIO

NOT AUTHENTIC UNLESS SIGNED AND DATED

LRL
ENGINEERING I INGÉNIERIE
5430 Canotek Road I Ottawa, ON, K1J 9G2
www.lrl.ca I (613) 842-3434

CLIENT
PRAVEEN MUPPALLA
450 Creekview Way
Ottawa, ON, K1Y 1L5

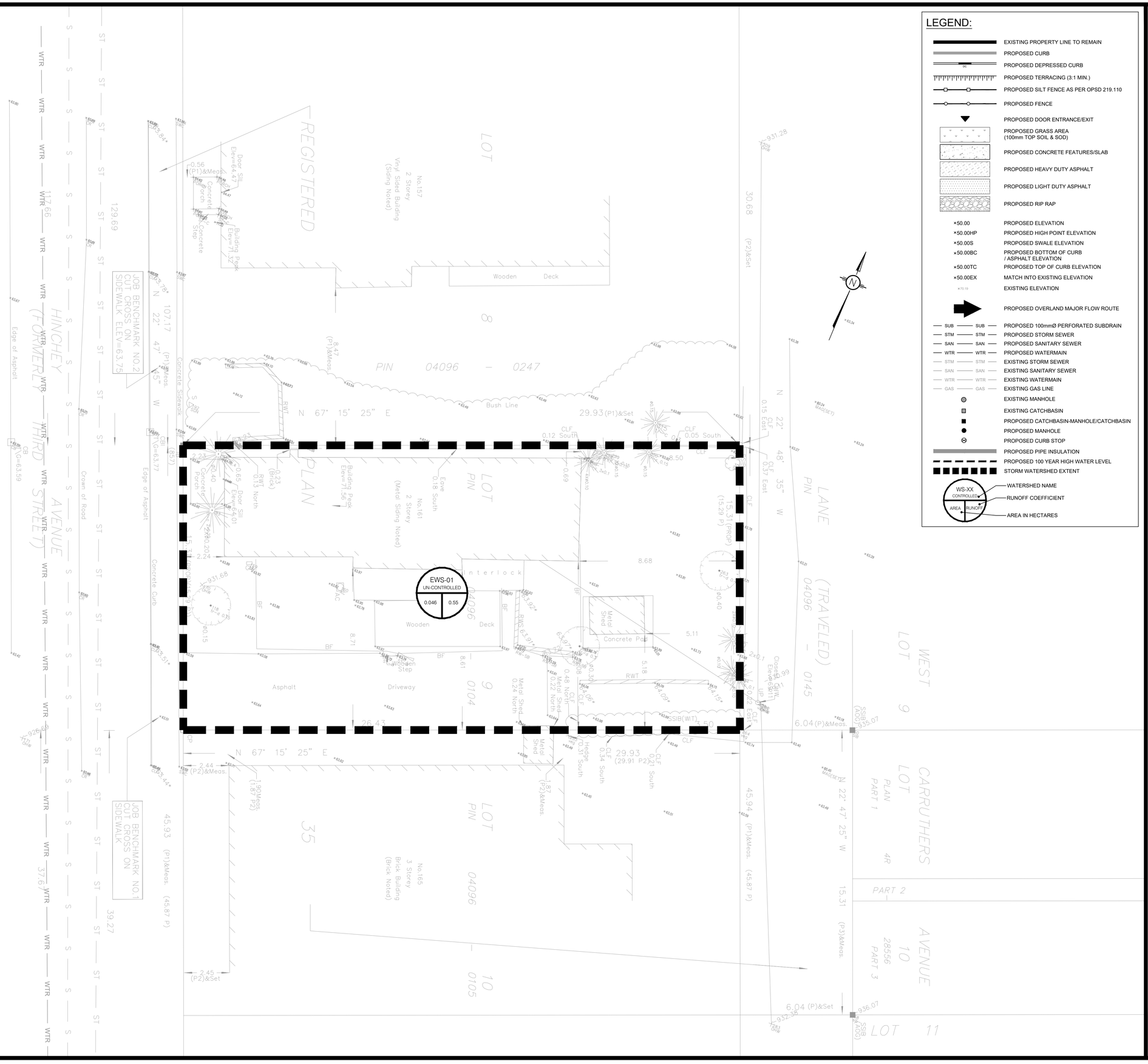
DESIGNED BY:	DRAWN BY:	APPROVED BY:
A.S.	A.S.	M.B.

PROJECT
APARTMENT BUILDING
161 HINCHEY AVENUE

DRAWING TITLE
STORMWATER MANAGEMENT PLAN

PROJECT NO. 200295
DATE JULY 2020

C601



LEGEND:

▬	EXISTING PROPERTY LINE TO REMAIN
═	PROPOSED CURB
DC	PROPOSED DEPRESSED CURB
	PROPOSED TERRACING (3:1 MIN.)
	PROPOSED SILT FENCE AS PER OPSD 219.110
	PROPOSED FENCE
▼	PROPOSED DOOR ENTRANCE/EXIT
	PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
	PROPOSED CONCRETE FEATURES/SLAB
	PROPOSED HEAVY DUTY ASPHALT
	PROPOSED LIGHT DUTY ASPHALT
	PROPOSED RIP RAP
×50.00	PROPOSED ELEVATION
×50.00HP	PROPOSED HIGH POINT ELEVATION
×50.00S	PROPOSED SWALE ELEVATION
×50.00BC	PROPOSED BOTTOM OF CURB / ASPHALT ELEVATION
×50.00TC	PROPOSED TOP OF CURB ELEVATION
×50.00EX	MATCH INTO EXISTING ELEVATION
×70.15	EXISTING ELEVATION
➡	PROPOSED OVERLAND MAJOR FLOW ROUTE
SUB — SUB	PROPOSED 100mmØ PERFORATED SUBDRAIN
STM — STM	PROPOSED STORM SEWER
SAN — SAN	PROPOSED SANITARY SEWER
WTR — WTR	PROPOSED WATERMAIN
STM — STM	EXISTING STORM SEWER
SAN — SAN	EXISTING SANITARY SEWER
WTR — WTR	EXISTING WATERMAIN
GAS — GAS	EXISTING GAS LINE
●	EXISTING MANHOLE
■	EXISTING CATCHBASIN
■	PROPOSED CATCHBASIN-MANHOLE/CATCHBASIN
●	PROPOSED MANHOLE
⊖	PROPOSED CURB STOP
▬	PROPOSED PIPE INSULATION
- - -	PROPOSED 100 YEAR HIGH WATER LEVEL
■ ■ ■	STORM WATERSHED EXTENT
WS-XX	WATERSHED NAME
CONTROLLED	
RUNOFF	RUNOFF COEFFICIENT
AREA	AREA IN HECTARES

USE AND INTERPRETATION OF DRAWINGS

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION ARE PART OF THE CONTRACT DOCUMENTS AND DESCRIBE USE AND INTENT OF THE DRAWING. THE CONTRACT DOCUMENTS INCLUDE NOT ONLY THE DRAWINGS, BUT ALSO THE OWNER-CONTRACTOR AGREEMENTS, CONDITIONS OF THE CONTRACT, THE SPECIFICATIONS, ADDENDA, AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT. THESE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ANY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. WORK NOT COMPLETELY DELINEATED HEREON SHALL BE CONSTRUCTED OF THE SAME MATERIALS AND DETAILED SIMILARLY AS WORK SHOWN MORE COMPLETELY ELSEWHERE IN THE CONTRACT DOCUMENTS.

BY USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER CONFIRMS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS. THE CONTRACTOR CONFIRMS THAT HE HAS VISITED THE SITE, FAMILIARIZED HIMSELF WITH THE LOCAL CONDITIONS, VERIFIED FIELD DIMENSIONS AND CORRELATED HIS OBSERVATIONS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

AS INSTRUMENTS OF SERVICE, ALL DRAWINGS, SPECIFICATIONS, CADD FILES OR OTHER ELECTRONIC MEDIA AND COPIED THERE OF FURNISHED BY THE ENGINEER ARE HIS PROPERTY. THEY ARE TO BE USED ONLY FOR THIS PROJECT AND ARE NOT TO BE USED ON ANY OTHER PROJECT, INCLUDING REPEATS OF THE PROJECT. CHANGES TO THE DRAWINGS MAY ONLY BE MADE BY THE ENGINEER.

UNLESS THE REVISION TITLE IS "ISSUED FOR CONSTRUCTION", THESE DRAWINGS SHALL BE CONSIDERED PRELIMINARY AND SHALL NOT BE USED AS A CONSTRUCTION DOCUMENT.

THESE DRAWINGS ILLUSTRATES THE WORK TO BE DONE. THE ENGINEER IS NOT RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES USED TO DO THE WORK, OR THE SAFETY ASPECTS OF CONSTRUCTION, AND NOTHING ON THESE DRAWINGS EXPRESSED OR IMPLIED CHANGES THIS CONDITION. CONTRACTOR SHALL DETERMINE ALL CONDITIONS AT THE SITE AND SHALL BE RESPONSIBLE FOR KNOWING HOW THEY AFFECT THE WORK. SUBMITTAL OF A BID TO PERFORM THIS WORK IS ACKNOWLEDGEMENT OF THE RESPONSIBILITIES, AND THAT THEY HAVE BEEN FULLY CONSIDERED IN PLANNING OF THE WORK, AND THE BID PRICE. NO CLAIMS FOR EXTRA CHARGES DUE TO THESE CONDITIONS WILL BE FORTHCOMING.

UNAUTHORIZED CHANGES:

IN THE EVENT THE CLIENT, THE CLIENT'S CONTRACTORS OR SUBCONTRACTORS, OR ANYONE FOR WHOM THE CLIENT IS LEGALLY LIABLE MAKES OR PERMITS TO BE MADE ANY CHANGES TO ANY REPORTS, PLANS, SPECIFICATIONS OR OTHER CONSTRUCTION DOCUMENTS PREPARED BY LRL ASSOCIATES LTD. (LRL) WITHOUT OBTAINING LRL'S PRIOR WRITTEN CONSENT, THE CLIENT SHALL ASSUME FULL RESPONSIBILITY FOR THE RESULTS OF SUCH CHANGES. THEREFORE THE CLIENT AGREES TO WAIVE ANY CLAIM AGAINST LRL AND TO RELEASE LRL FROM ANY LIABILITY ARISING DIRECTLY OR INDIRECTLY FROM SUCH UNAUTHORIZED CHANGES.

IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS LRL FROM ANY DAMAGES, LIABILITIES OR COST, INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.

IN ADDITION, THE CLIENT AGREES TO INCLUDE IN ANY CONTRACTS FOR CONSTRUCTION APPROPRIATE LANGUAGE THAT PROHIBITS THE CONTRACTOR OR ANY SUBCONTRACTORS OF ANY TIER FROM MAKING ANY CHANGES OR MODIFICATIONS TO LRL'S CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF LRL AND THAT FURTHER REQUIRES THE CONTRACTOR TO INDEMNIFY BOTH LRL AND THE CLIENT FROM ANY LIABILITY OR COST ARISING FROM SUCH CHANGES MADE WITHOUT SUCH PROPER AUTHORIZATION.

GENERAL NOTES:

EXISTING SERVICES AND UTILITIES SHOWN ON THESE DRAWINGS ARE TAKEN FROM THE BEST AVAILABLE RECORDS, BUT MAY NOT BE COMPLETE OR TO DATE. CONTRACTOR SHALL VERIFY IN FIELD FOR LOCATION AND ELEVATION OF PIPES AND CHECK WITH THE UTILITY COMPANIES BEFORE DIGGING OR PERFORMING WORK.

CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

2m 0.5 0 2 4m

SCALE: 1:100

NOT FOR CONSTRUCTION TENDER OR PERMIT

No.	REVISIONS	BY	DATE
02	ISSUED FOR APPROVAL	A.S.	29 SEP 2020
01	ISSUED FOR APPROVAL	A.S.	31 JUL 2020

LICENSED PROFESSIONAL ENGINEER
M. BASNET
100501996
2020/09/29
PROVINCE OF ONTARIO

NOT AUTHENTIC UNLESS SIGNED AND DATED

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434

CLIENT
PRAVEEN MUPPALLA
450 Creekview Way
Ottawa, ON, K1Y 1L5

DESIGNED BY:	DRAWN BY:	APPROVED BY:
A.S.	A.S.	M.B.

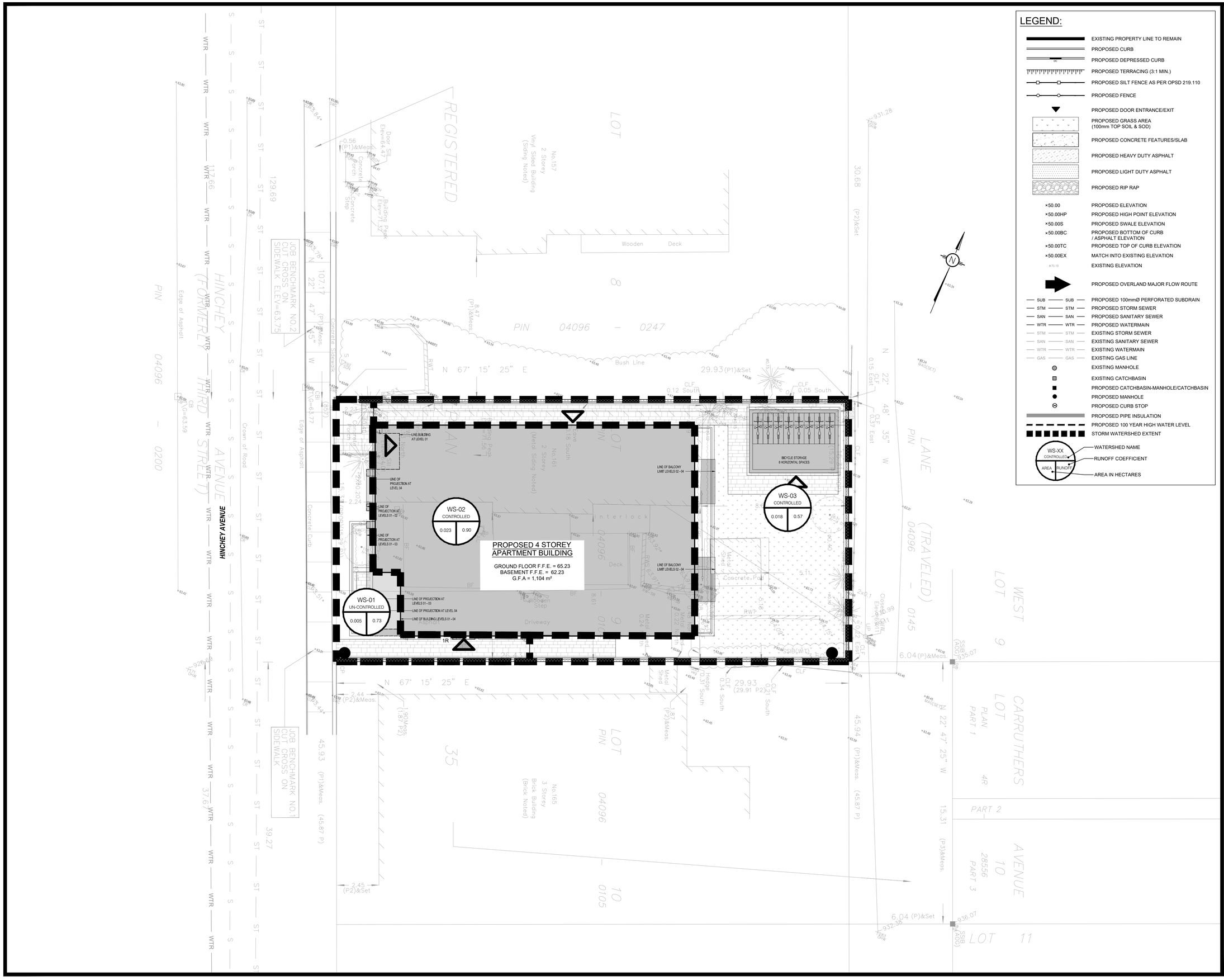
PROJECT
APARTMENT BUILDING
161 HINCHEY AVENUE

DRAWING TITLE
PRE-DEVELOPMENT
WATERSHED PLAN

PROJECT NO.
200295

DATE
JULY 2020

C701



LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
- PROPOSED CURB
- PROPOSED DEPRESSED CURB
- PROPOSED TERRACING (3:1 MIN.)
- PROPOSED SILT FENCE AS PER OPSD 219.110
- PROPOSED FENCE
- ▼ PROPOSED DOOR ENTRANCE/EXIT
- PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
- PROPOSED CONCRETE FEATURES/SLAB
- PROPOSED HEAVY DUTY ASPHALT
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED RIP RAP
- ×50.00 PROPOSED ELEVATION
- ×50.00HP PROPOSED HIGH POINT ELEVATION
- ×50.00S PROPOSED SWALE ELEVATION
- ×50.00BC PROPOSED BOTTOM OF CURB / ASPHALT ELEVATION
- ×50.00TC PROPOSED TOP OF CURB ELEVATION
- ×50.00EX MATCH INTO EXISTING ELEVATION
- EXISTING ELEVATION
- ➡ PROPOSED OVERLAND MAJOR FLOW ROUTE
- SUB — SUB PROPOSED 100mmØ PERFORATED SUBDRAIN
- STM — STM PROPOSED STORM SEWER
- SAN — SAN PROPOSED SANITARY SEWER
- WTR — WTR PROPOSED WATERMAIN
- STM — STM EXISTING STORM SEWER
- SAN — SAN EXISTING SANITARY SEWER
- WTR — WTR EXISTING WATERMAIN
- GAS — GAS EXISTING GAS LINE
- ○ EXISTING MANHOLE
- □ EXISTING CATCHBASIN
- ■ PROPOSED CATCHBASIN-MANHOLE/CATCHBASIN
- ● PROPOSED MANHOLE
- ⊖ PROPOSED CURB STOP
- PROPOSED PIPE INSULATION
- PROPOSED 100 YEAR HIGH WATER LEVEL
- STORM WATERSHED EXTENT
- WS-XX CONTROLLED — WATERSHED NAME
- RUNOFF — RUNOFF COEFFICIENT
- AREA — AREA IN HECTARES

USE AND INTERPRETATION OF DRAWINGS

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION ARE PART OF THE CONTRACT DOCUMENTS AND DESCRIBE USE AND INTENT OF THE DRAWING. THE CONTRACT DOCUMENTS INCLUDE NOT ONLY THE DRAWINGS, BUT ALSO THE OWNER-CONTRACTOR AGREEMENTS, CONDITIONS OF THE CONTRACT, THE SPECIFICATIONS, ADDENDA, AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT. THESE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ANY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. WORK NOT COMPLETELY DELINEATED HEREON SHALL BE CONSTRUCTED OF THE SAME MATERIALS AND DETAILED SIMILARLY AS WORK SHOWN MORE COMPLETELY ELSEWHERE IN THE CONTRACT DOCUMENTS.

BY USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER CONFIRMS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS. THE CONTRACTOR CONFIRMS THAT HE HAS VISITED THE SITE, FAMILIARIZED HIMSELF WITH THE LOCAL CONDITIONS, VERIFIED FIELD DIMENSIONS AND CORRELATED HIS OBSERVATIONS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

AS INSTRUMENTS OF SERVICE, ALL DRAWINGS, SPECIFICATIONS, CADD FILES OR OTHER ELECTRONIC MEDIA AND COPIED THERE OF FURNISHED BY THE ENGINEER ARE HIS PROPERTY. THEY ARE TO BE USED ONLY FOR THIS PROJECT AND ARE NOT TO BE USED ON ANY OTHER PROJECT, INCLUDING REPEATS OF THE PROJECT. CHANGES TO THE DRAWINGS MAY ONLY BE MADE BY THE ENGINEER.

UNLESS THE REVISION TITLE IS "ISSUED FOR CONSTRUCTION", THESE DRAWINGS SHALL BE CONSIDERED PRELIMINARY AND SHALL NOT BE USED AS A CONSTRUCTION DOCUMENT.

THESE DRAWINGS ILLUSTRATES THE WORK TO BE DONE. THE ENGINEER IS NOT RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES USED TO DO THE WORK, OR THE SAFETY ASPECTS OF CONSTRUCTION, AND NOTHING ON THESE DRAWINGS EXPRESSED OR IMPLIED CHANGES THIS CONDITION. CONTRACTOR SHALL DETERMINE ALL CONDITIONS AT THE SITE AND SHALL BE RESPONSIBLE FOR KNOWING HOW THEY AFFECT THE WORK. SUBMITTAL OF A BID TO PERFORM THIS WORK IS ACKNOWLEDGEMENT OF THE RESPONSIBILITIES, AND THAT THEY HAVE BEEN FULLY CONSIDERED IN PLANNING OF THE WORK, AND THE BID PRICE. NO CLAIMS FOR EXTRA CHARGES DUE TO THESE CONDITIONS WILL BE FORTHCOMING.

UNAUTHORIZED CHANGES:

IN THE EVENT THE CLIENT, THE CLIENT'S CONTRACTORS OR SUBCONTRACTORS, OR ANYONE FOR WHOM THE CLIENT IS LEGALLY LIABLE MAKES OR PERMITS TO BE MADE ANY CHANGES TO ANY REPORTS, PLANS, SPECIFICATIONS OR OTHER CONSTRUCTION DOCUMENTS PREPARED BY LRL ASSOCIATES LTD. (LRL) WITHOUT OBTAINING LRL'S PRIOR WRITTEN CONSENT, THE CLIENT SHALL ASSUME FULL RESPONSIBILITY FOR THE RESULTS OF SUCH CHANGES. THEREFORE THE CLIENT AGREES TO WAIVE ANY CLAIM AGAINST LRL AND TO RELEASE LRL FROM ANY LIABILITY ARISING DIRECTLY OR INDIRECTLY FROM SUCH UNAUTHORIZED CHANGES.

IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS LRL FROM ANY DAMAGES, LIABILITIES OR COST, INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.

IN ADDITION, THE CLIENT AGREES TO INCLUDE IN ANY CONTRACTS FOR CONSTRUCTION APPROPRIATE LANGUAGE THAT PROHIBITS THE CONTRACTOR OR ANY SUBCONTRACTORS OF ANY TIER FROM MAKING ANY CHANGES OR MODIFICATIONS TO LRL'S CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF LRL AND THAT FURTHER REQUIRES THE CONTRACTOR TO INDEMNIFY BOTH LRL AND THE CLIENT FROM ANY LIABILITY OR COST ARISING FROM SUCH CHANGES MADE WITHOUT SUCH PROPER AUTHORIZATION.

GENERAL NOTES:

EXISTING SERVICES AND UTILITIES SHOWN ON THESE DRAWINGS ARE TAKEN FROM THE BEST AVAILABLE RECORDS, BUT MAY NOT BE COMPLETE OR TO DATE. CONTRACTOR SHALL VERIFY IN FIELD FOR LOCATION AND ELEVATION OF PIPES AND CHECK WITH THE UTILITY COMPANIES BEFORE DIGGING OR PERFORMING WORK.

CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

2m 0.5 0 2 4m

SCALE: 1:100

NOT FOR CONSTRUCTION TENDER OR PERMIT

No.	REVISIONS	BY	DATE
02	ISSUED FOR APPROVAL	A.S.	29 SEP 2020
01	ISSUED FOR APPROVAL	A.S.	31 JUL 2020

M. BASNET
100501996
2020/09/29

NOT AUTHENTIC UNLESS SIGNED AND DATED

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434

CLIENT
PRAVEEN MUPPALLA
450 Creekview Way
Ottawa, ON, K1Y 1L5

DESIGNED BY:	DRAWN BY:	APPROVED BY:
A.S.	A.S.	M.B.

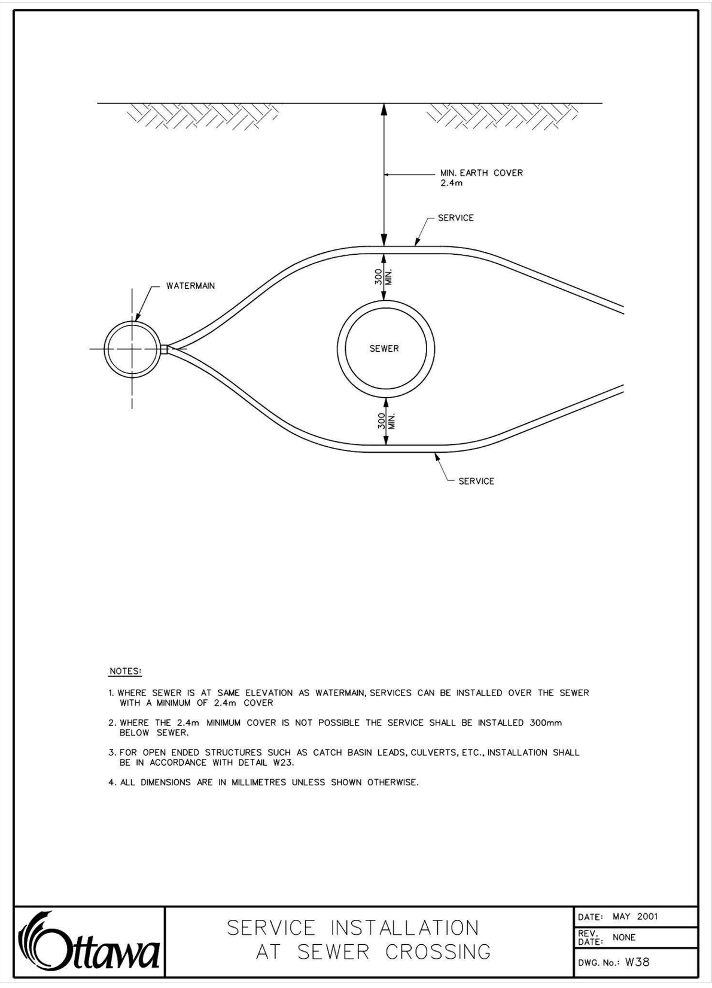
PROJECT
APARTMENT BUILDING
161 HINCHEY AVENUE

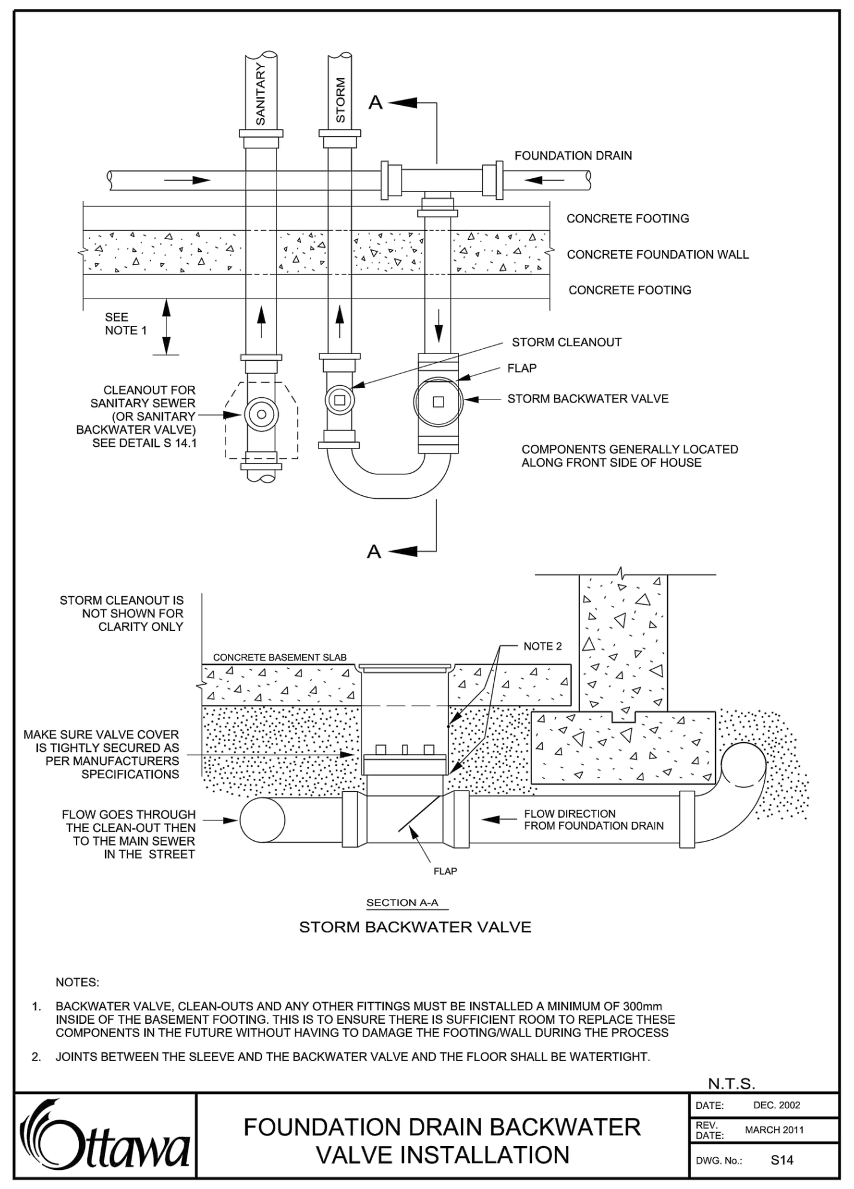
DRAWING TITLE
POST-DEVELOPMENT
WATERSHED PLAN

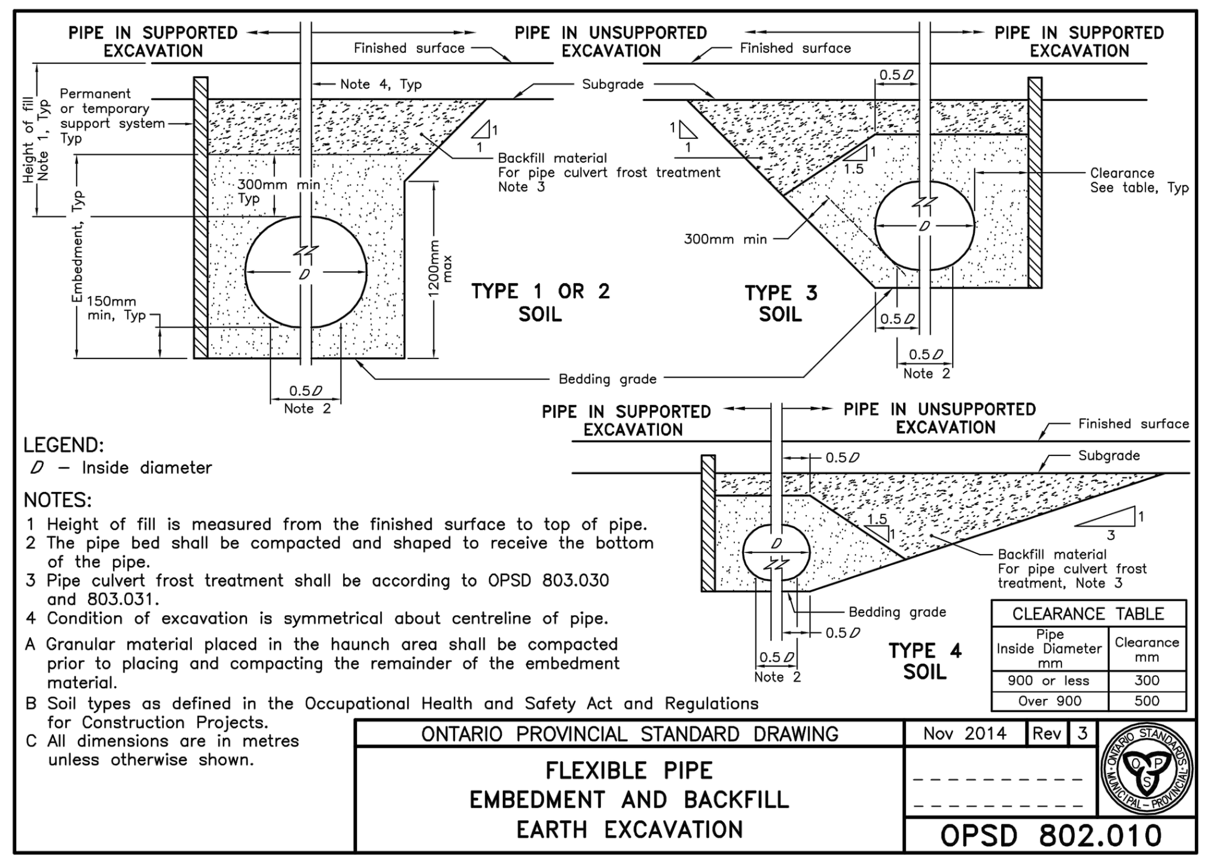
PROJECT NO.
200295

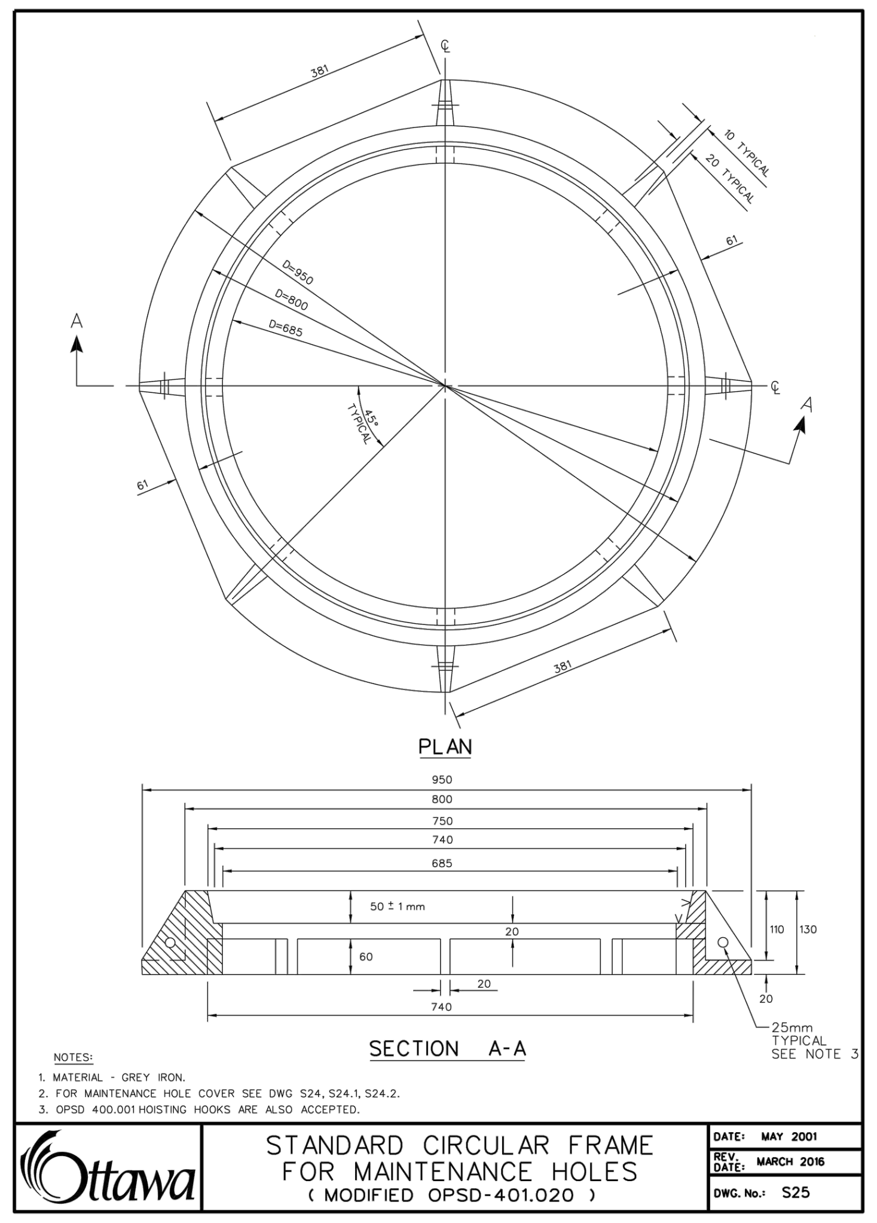
DATE
JULY 2020

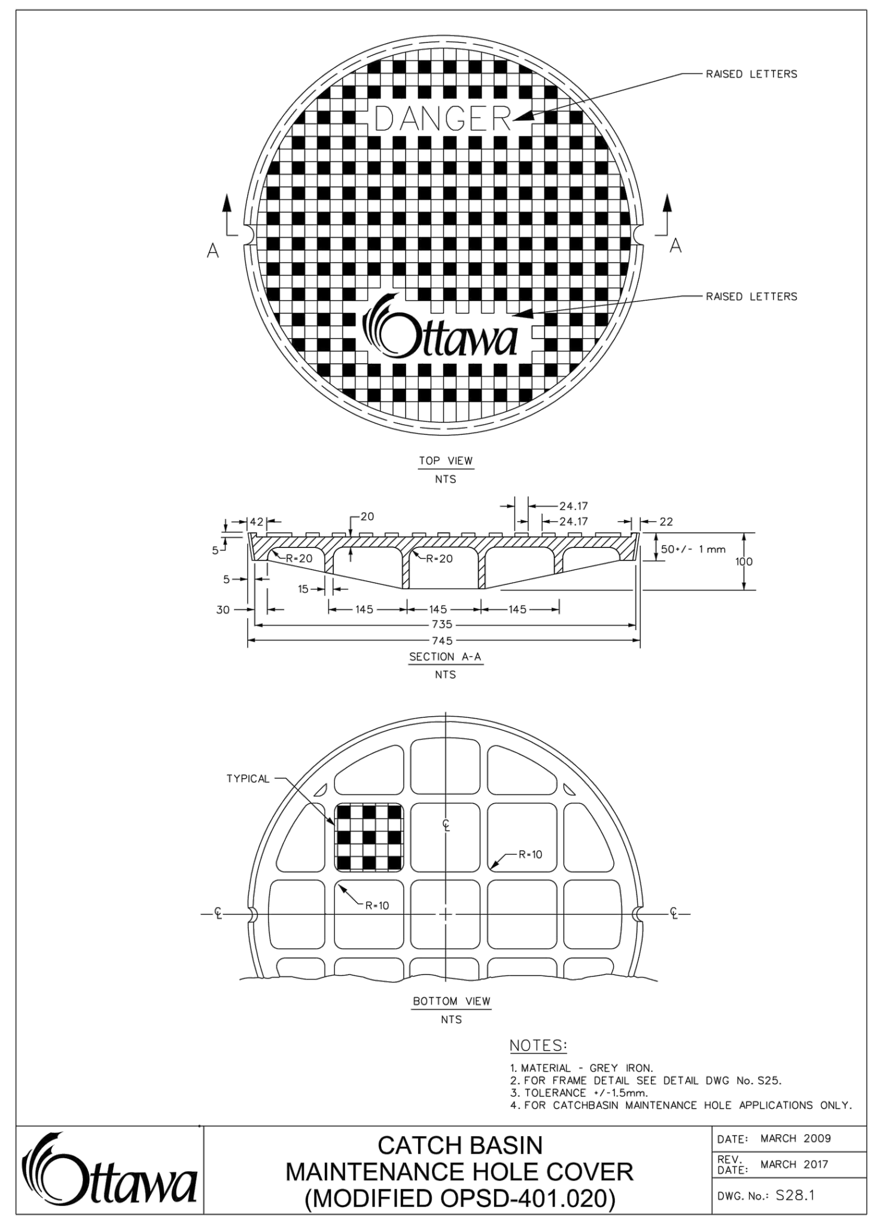
C702

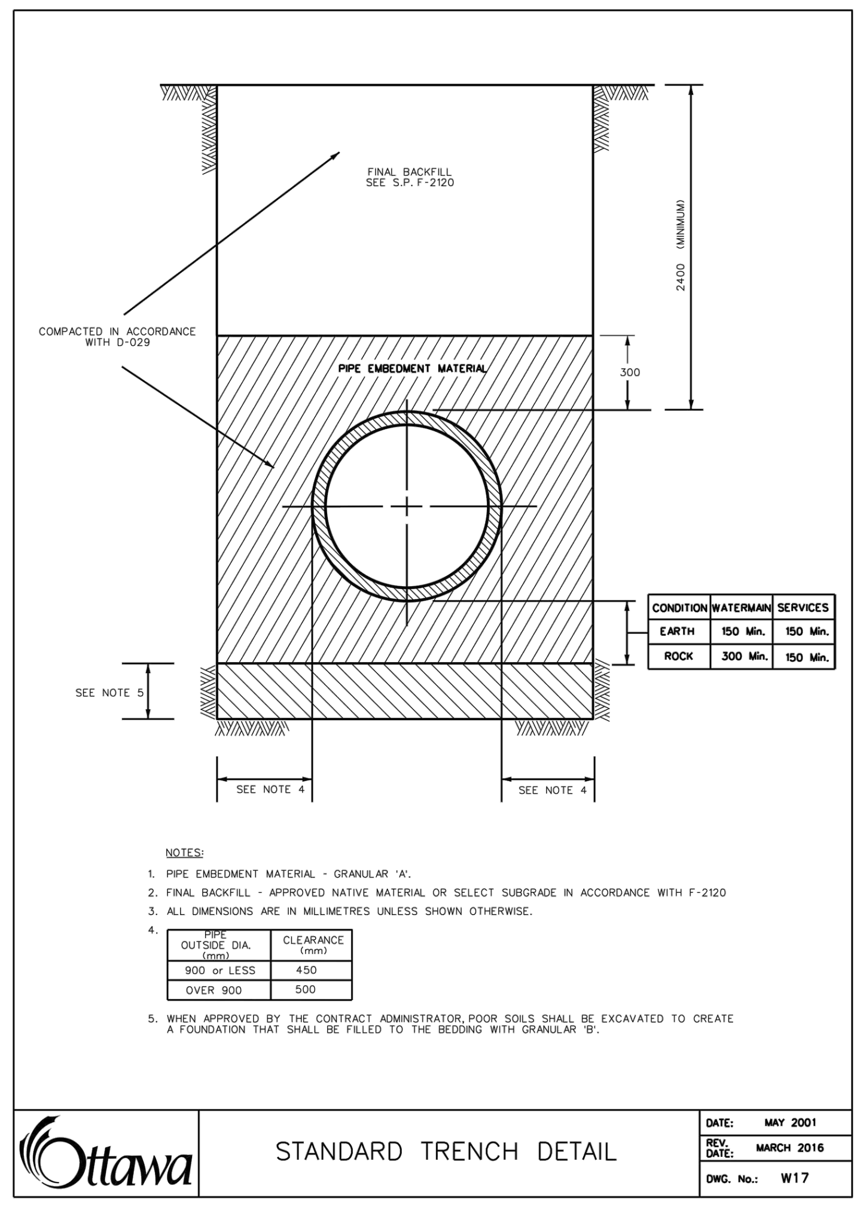


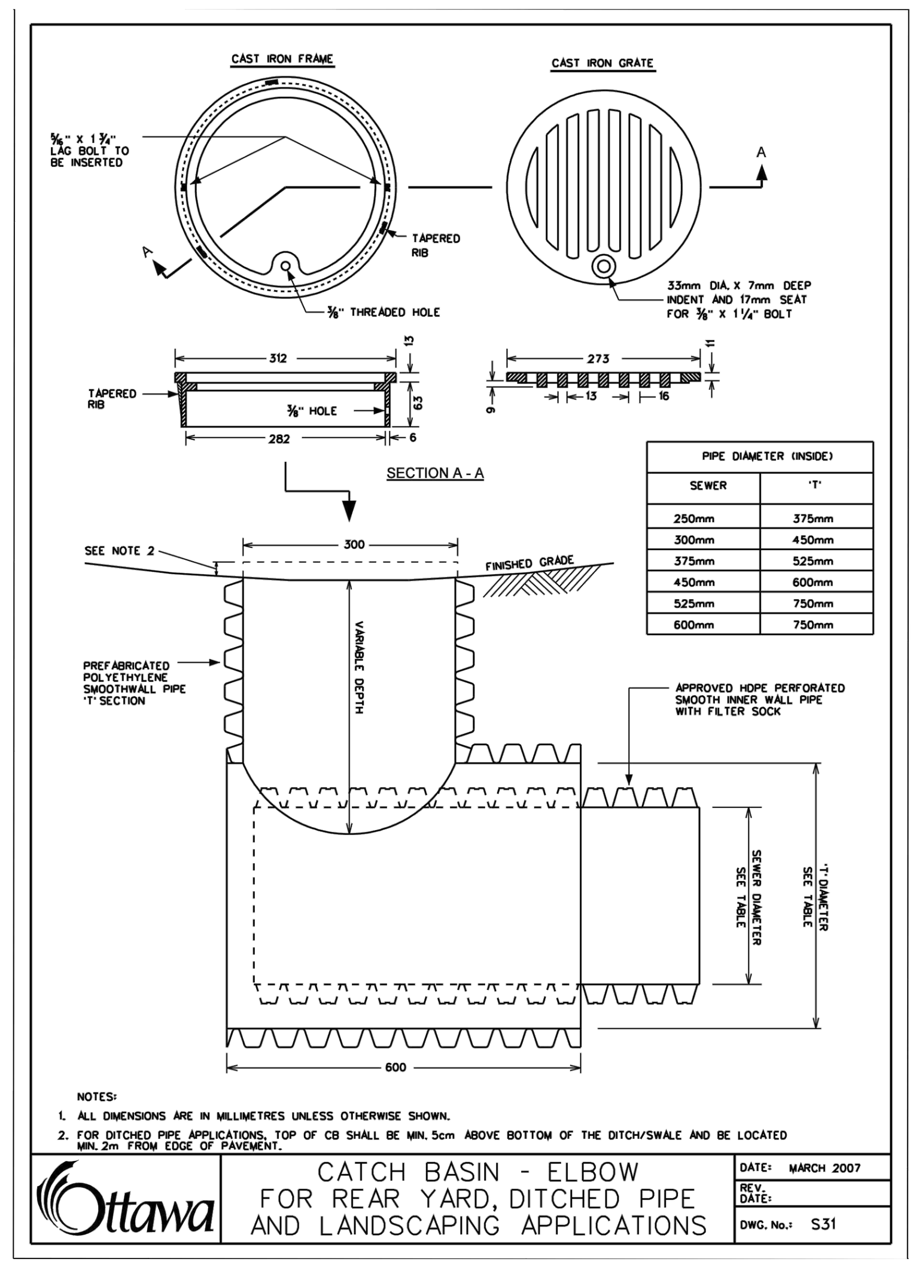


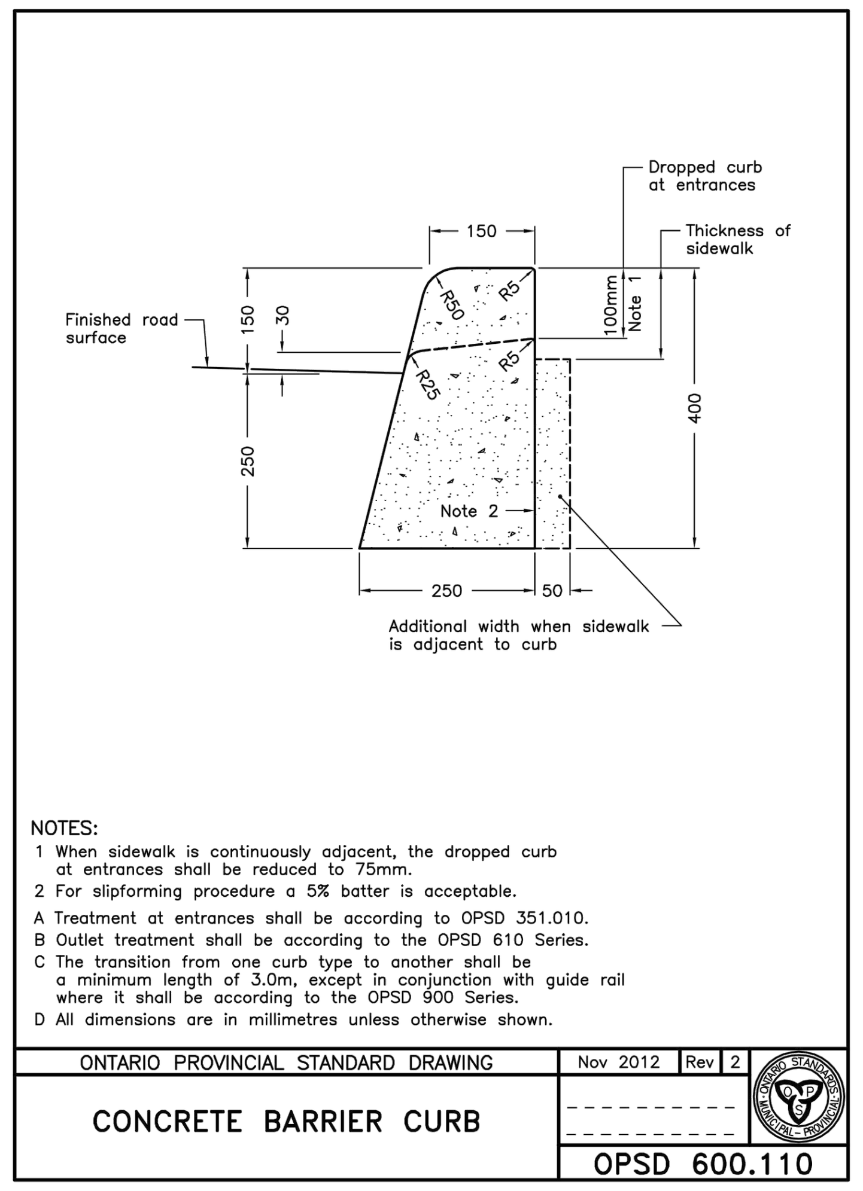


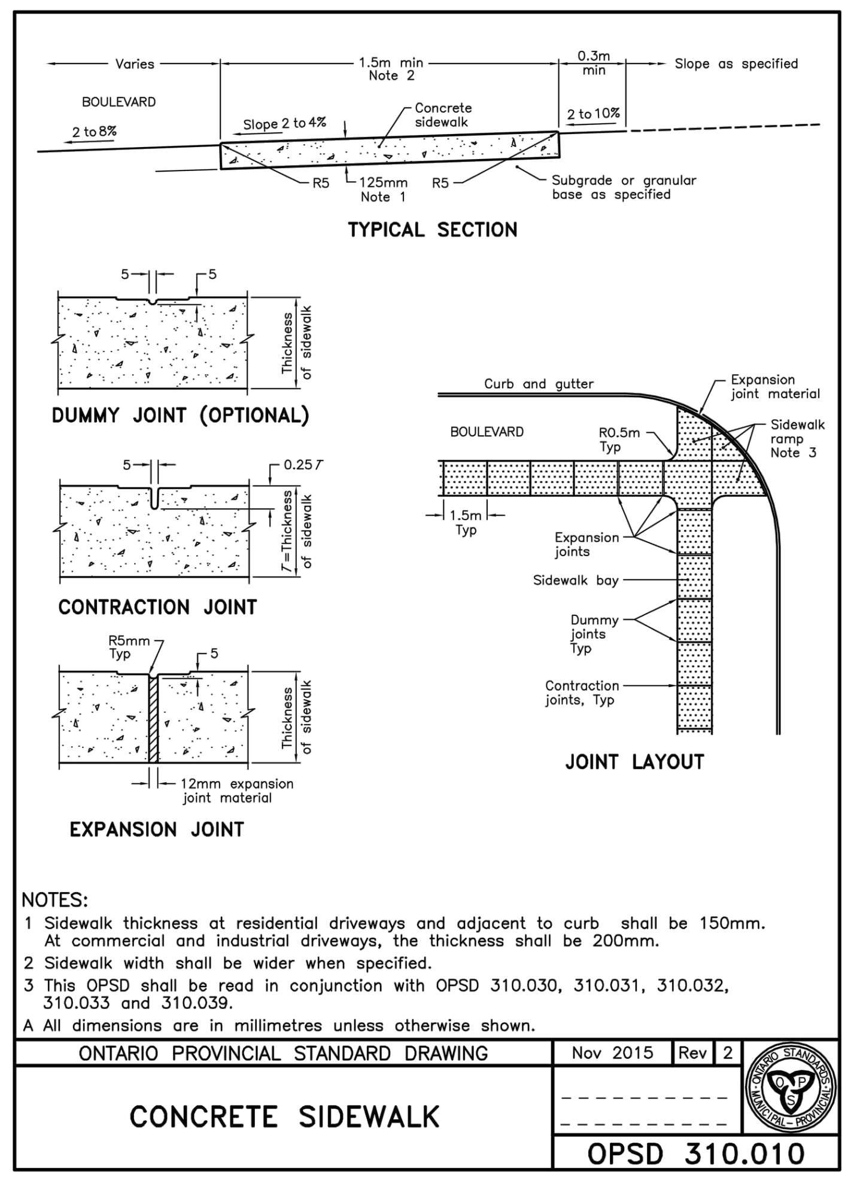


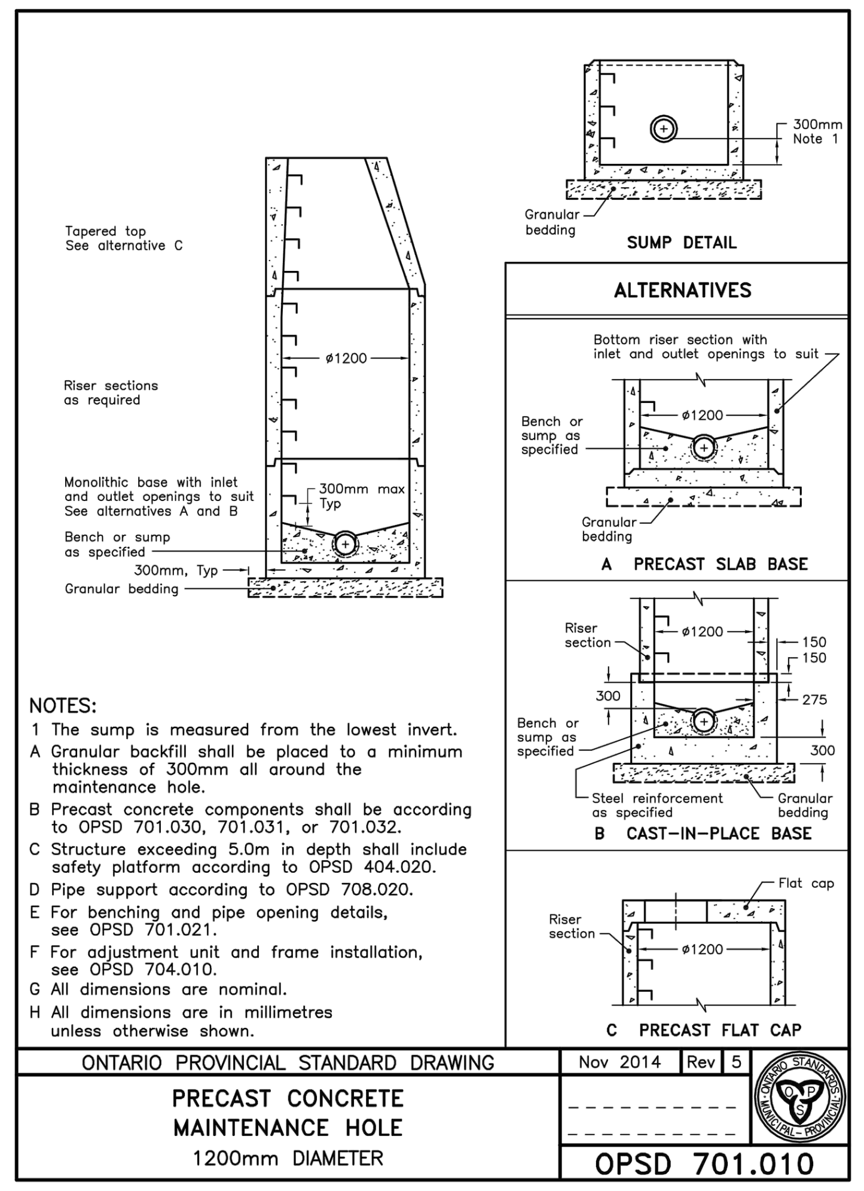


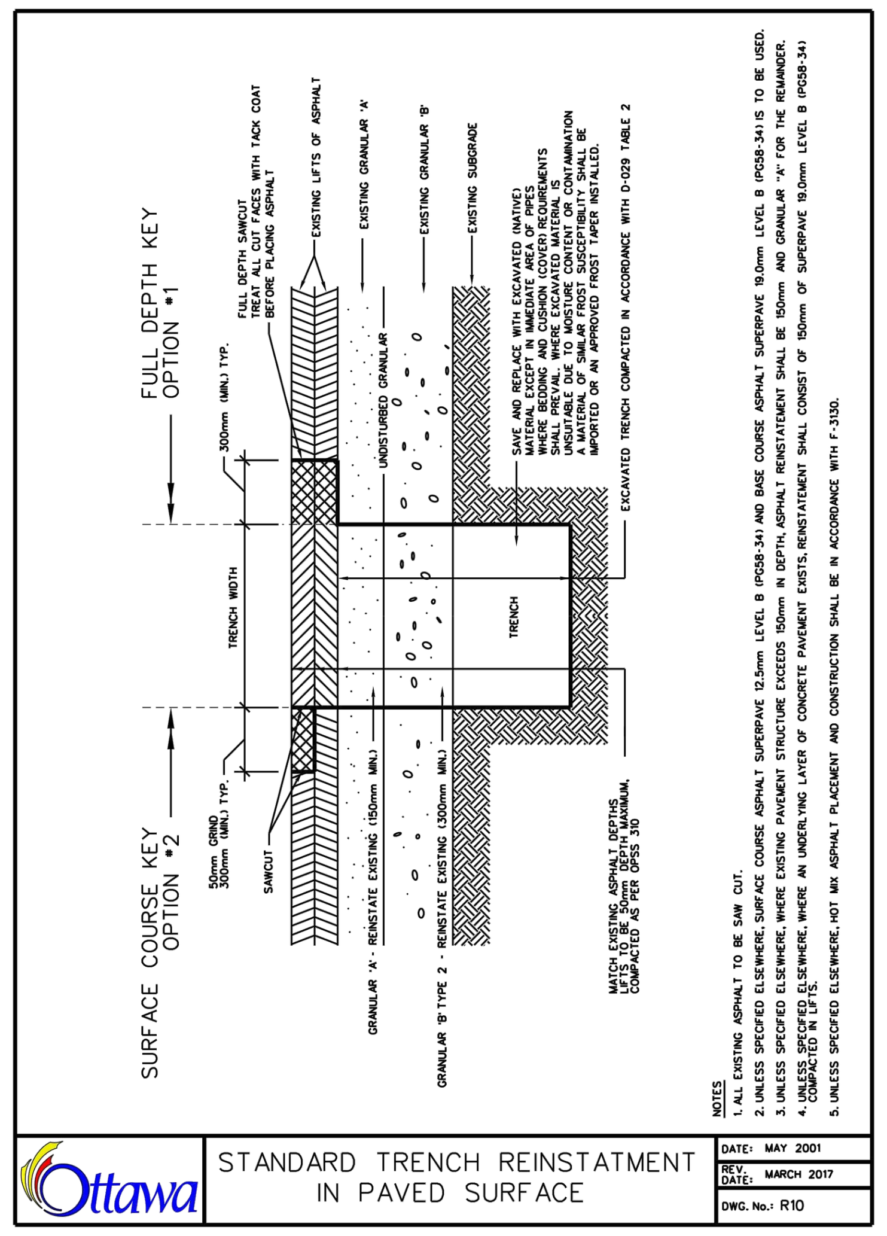


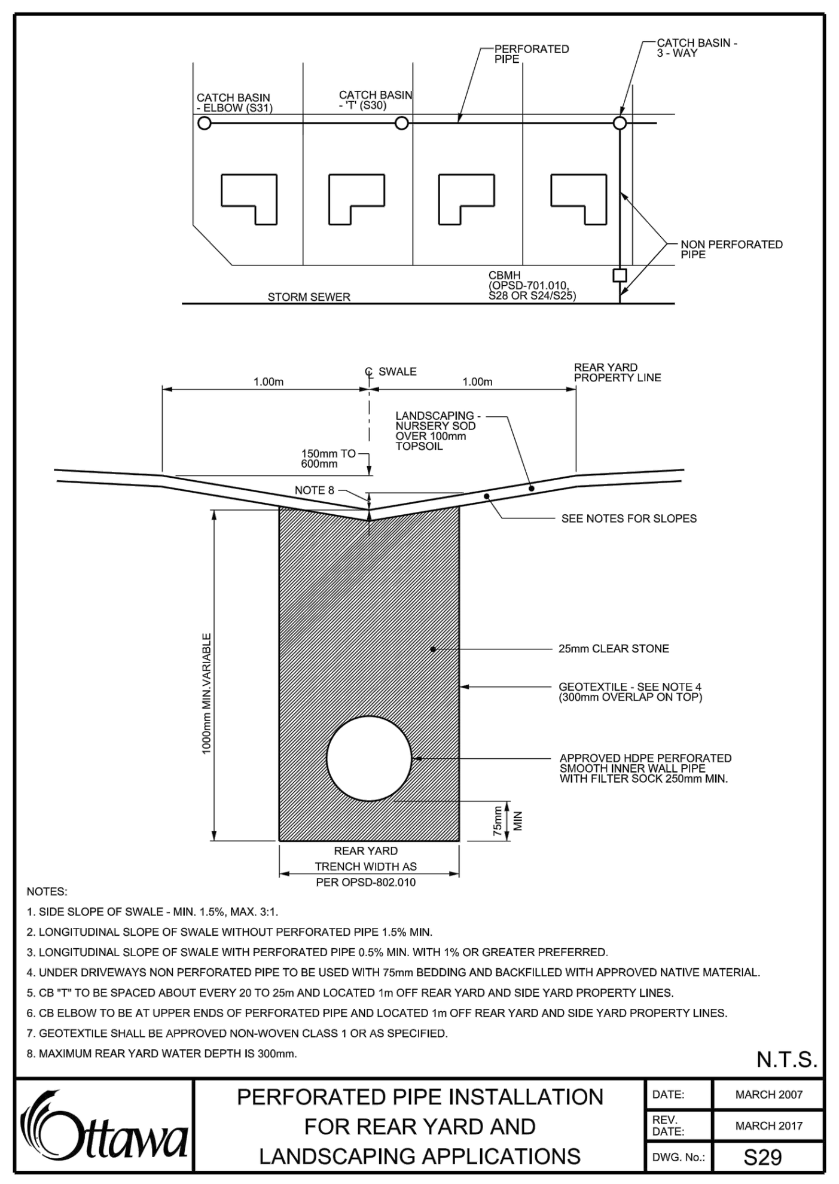


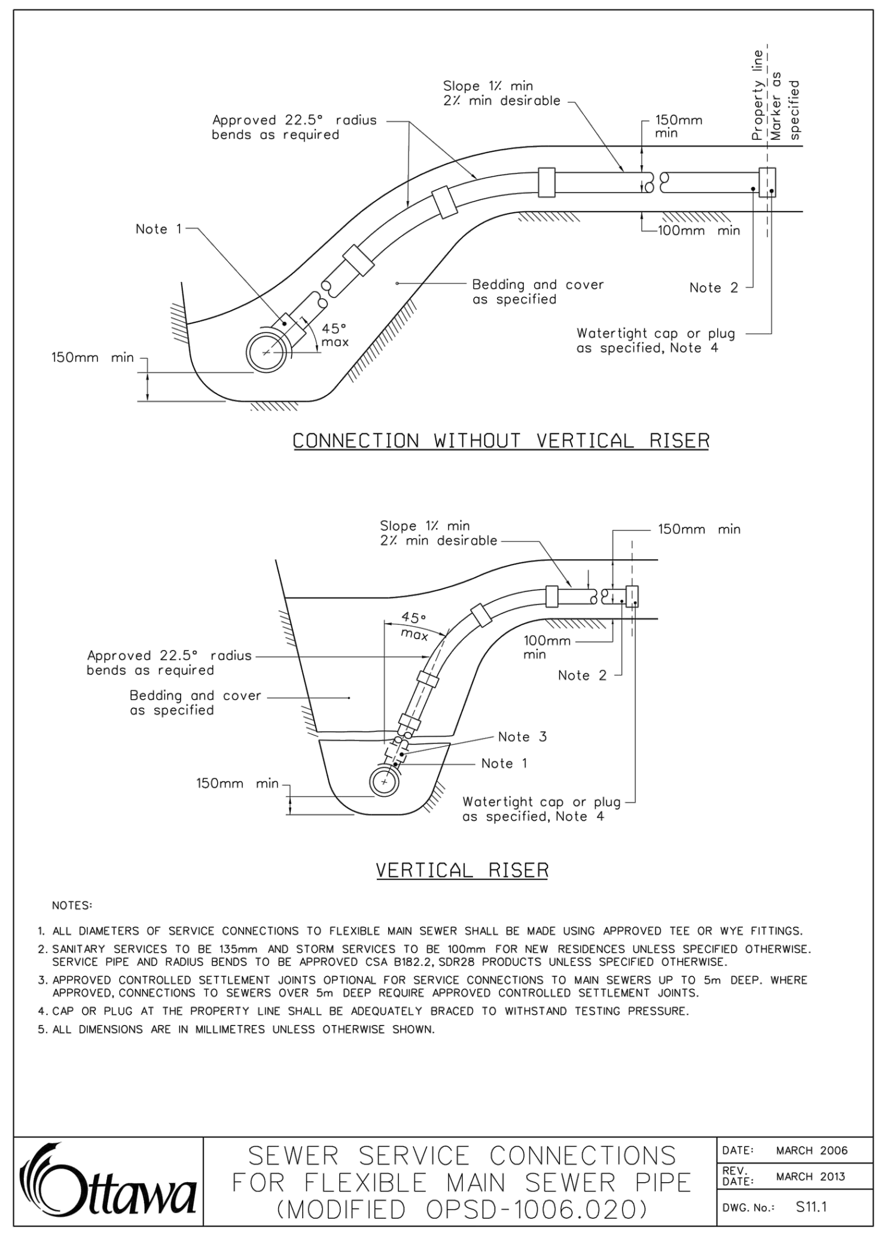


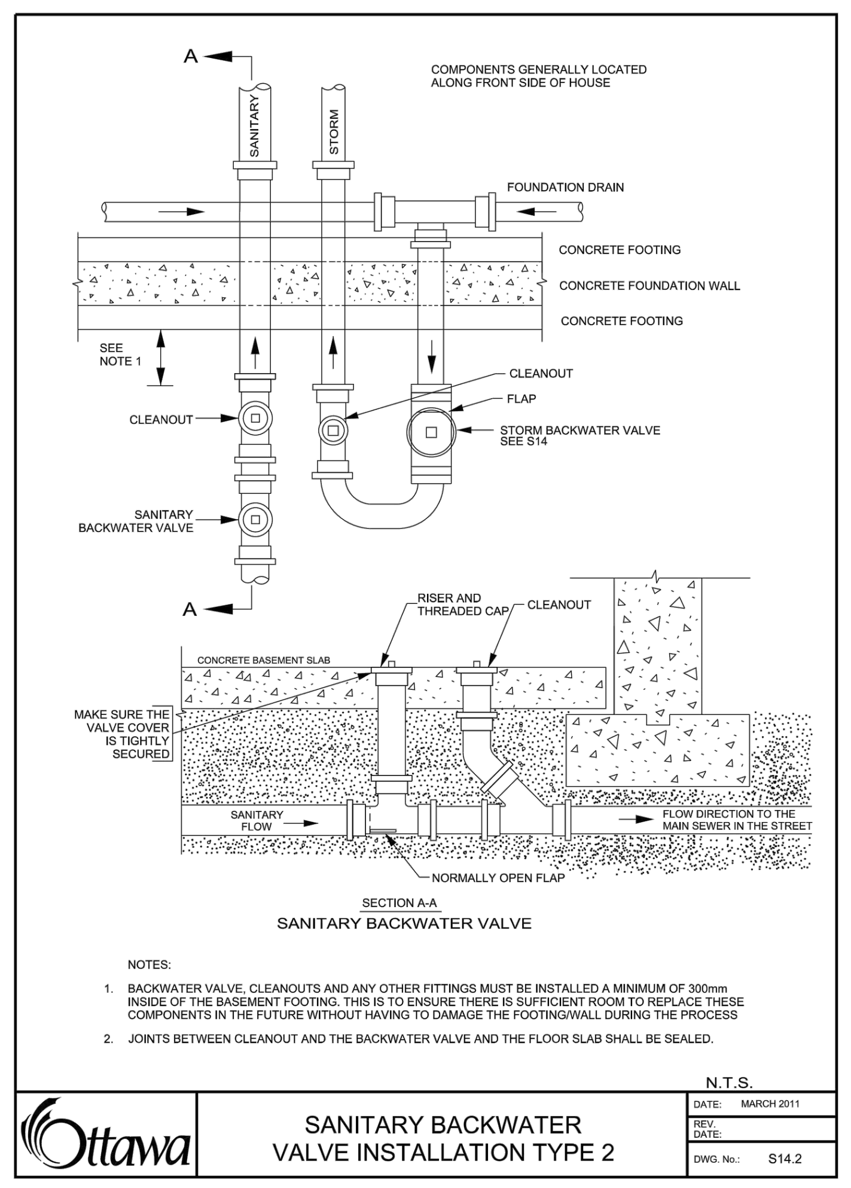


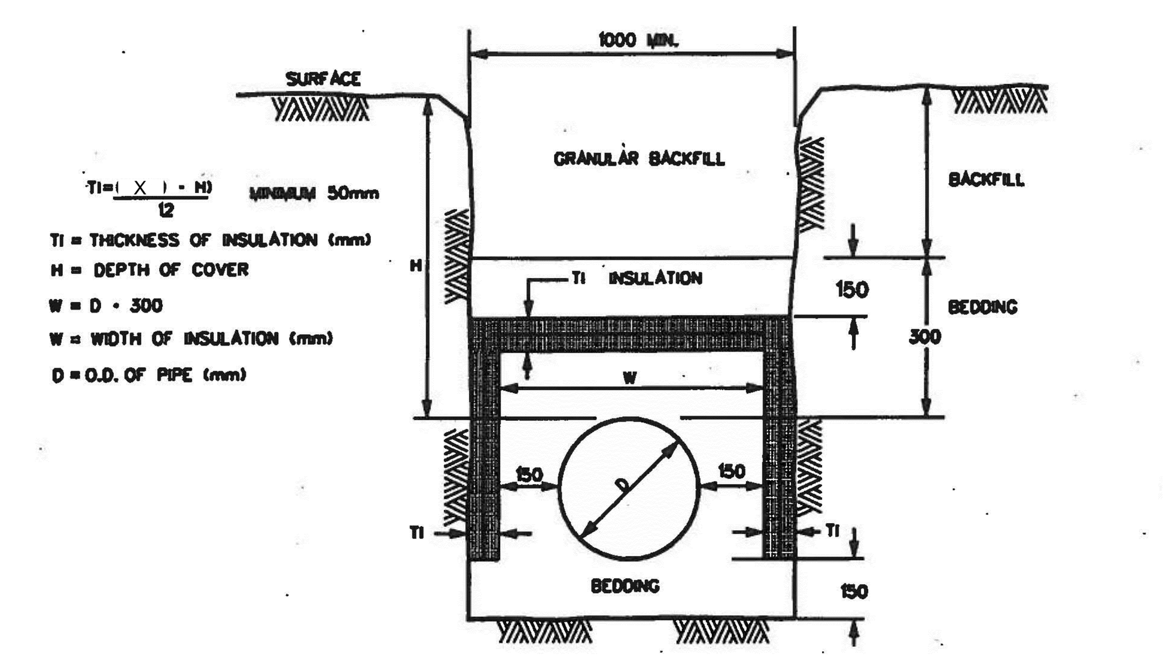












NOTES:
-FOR STORM INSULATION USE AN X VALUE OF 2000 IN THE ABOVE "TI" EQUATION.
-FOR SANITARY INSULATION USE AN X VALUE OF 2500 IN THE ABOVE "TI" EQUATION.
-FOR WATERMAIN INSULATION USE AN X VALUE OF 2400 IN THE ABOVE "TI" EQUATION.
-INCREMENTS OF INSULATION THICKNESS SHALL BE ADJUSTABLE TO 25mm.
-STAGGER JOINTS OF MULTIPLE SHEETS.
-ALL DIMENSIONS ARE IN MILLIMETERS UNLESS SHOWN OTHERWISE.

TYPICAL STORM AND SANITARYSEWER AND WATERMAIN INSULATION DETAIL
(N.T.S.)

USE AND INTERPRETATION OF DRAWINGS

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION ARE PART OF THE CONTRACT DOCUMENTS AND DESCRIBE USE AND INTENT OF THE DRAWING. THE CONTRACT DOCUMENTS INCLUDE NOT ONLY THE DRAWINGS, BUT ALSO THE OWNER-CONTRACTOR AGREEMENTS, CONDITIONS OF THE CONTRACT, THE SPECIFICATIONS, ADDENDA, AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT. THESE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ANY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. WORK NOT COMPLETELY DELINEATED HEREON SHALL BE CONSTRUCTED OF THE SAME MATERIALS AND DETAILED SIMILARLY AS WORK SHOWN MORE COMPLETELY ELSEWHERE IN THE CONTRACT DOCUMENTS.

BY USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER CONFIRMS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS. THE CONTRACTOR CONFIRMS THAT HE HAS VISITED THE SITE, FAMILIARIZED HIMSELF WITH THE LOCAL CONDITIONS, VERIFIED FIELD DIMENSIONS AND CORRELATED HIS OBSERVATIONS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

AS INSTRUMENTS OF SERVICE, ALL DRAWINGS, SPECIFICATIONS, CADD FILES OR OTHER ELECTRONIC MEDIA AND COPIED THERE OF FURNISHED BY THE ENGINEER ARE HIS PROPERTY. THEY ARE TO BE USED ONLY FOR THIS PROJECT AND ARE NOT TO BE USED ON ANY OTHER PROJECT, INCLUDING REPEATS OF THE PROJECT. CHANGES TO THE DRAWINGS MAY ONLY BE MADE BY THE ENGINEER.

UNLESS THE REVISION TITLE IS "ISSUED FOR CONSTRUCTION", THESE DRAWINGS SHALL BE CONSIDERED PRELIMINARY AND SHALL NOT BE USED AS A CONSTRUCTION DOCUMENT.

THESE DRAWINGS ILLUSTRATES THE WORK TO BE DONE. THE ENGINEER IS NOT RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES USED TO DO THE WORK, OR THE SAFETY ASPECTS OF CONSTRUCTION, AND NOTHING ON THESE DRAWINGS EXPRESSED OR IMPLIED CHANGES THIS CONDITION. CONTRACTOR SHALL DETERMINE ALL CONDITIONS AT THE SITE AND SHALL BE RESPONSIBLE FOR KNOWING HOW THEY AFFECT THE WORK. SUBMITTAL OF A BID TO PERFORM THIS WORK IS ACKNOWLEDGEMENT OF THE RESPONSIBILITIES, AND THAT THEY HAVE BEEN FULLY CONSIDERED IN PLANNING OF THE WORK, AND THE BID PRICE. NO CLAIMS FOR EXTRA CHARGES DUE TO THESE CONDITIONS WILL BE FORTHCOMING.

UNAUTHORIZED CHANGES:

IN THE EVENT THE CLIENT, THE CLIENT'S CONTRACTORS OR SUBCONTRACTORS, OR ANYONE FOR WHOM THE CLIENT IS LEGALLY LIABLE MAKES OR PERMITS TO BE MADE ANY CHANGES TO ANY REPORTS, PLANS, SPECIFICATIONS OR OTHER CONSTRUCTION DOCUMENTS PREPARED BY LRL ASSOCIATES LTD. (LRL) WITHOUT OBTAINING LRL'S PRIOR WRITTEN CONSENT, THE CLIENT SHALL ASSUME FULL RESPONSIBILITY FOR THE RESULTS OF SUCH CHANGES. THEREFORE THE CLIENT AGREES TO WAIVE ANY CLAIM AGAINST LRL AND TO RELEASE LRL FROM ANY LIABILITY ARISING DIRECTLY OR INDIRECTLY FROM SUCH UNAUTHORIZED CHANGES.

IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS LRL FROM ANY DAMAGES, LIABILITIES OR COST, INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.

IN ADDITION, THE CLIENT AGREES TO INCLUDE IN ANY CONTRACTS FOR CONSTRUCTION APPROPRIATE LANGUAGE THAT PROHIBITS THE CONTRACTOR OR ANY SUBCONTRACTORS OF ANY TIER FROM MAKING ANY CHANGES OR MODIFICATIONS TO LRL'S CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF LRL AND THAT FURTHER REQUIRES THE CONTRACTOR TO INDEMNIFY BOTH LRL AND THE CLIENT FROM ANY LIABILITY OR COST ARISING FROM SUCH CHANGES MADE WITHOUT SUCH PROPER AUTHORIZATION.

GENERAL NOTES:

EXISTING SERVICES AND UTILITIES SHOWN ON THESE DRAWINGS ARE TAKEN FROM THE BEST AVAILABLE RECORDS, BUT MAY NOT BE COMPLETE OR TO DATE. CONTRACTOR SHALL VERIFY IN FIELD FOR LOCATION AND ELEVATION OF PIPES AND CHECK WITH THE UTILITY COMPANIES BEFORE DIGGING OR PERFORMING WORK.

CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

NOT FOR CONSTRUCTION TENDER OR PERMIT

No.	REVISIONS	BY	DATE
02	ISSUED FOR APPROVAL	A.S.	29 SEP 2020
01	ISSUED FOR APPROVAL	A.S.	31 JUL 2020

LICENSED PROFESSIONAL ENGINEER
M. BASNET
100501996
2020/09/29
PROVINCE OF ONTARIO

NOT AUTHENTIC UNLESS SIGNED AND DATED

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434

CLIENT
PRAVEEN MUPPALLA
450 Creekview Way
Ottawa, ON, K1Y 1L5

DESIGNED BY:	DRAWN BY:	APPROVED BY:
A.S.	A.S.	M.B.

PROJECT
APARTMENT BUILDING
161 HINCHEY AVENUE

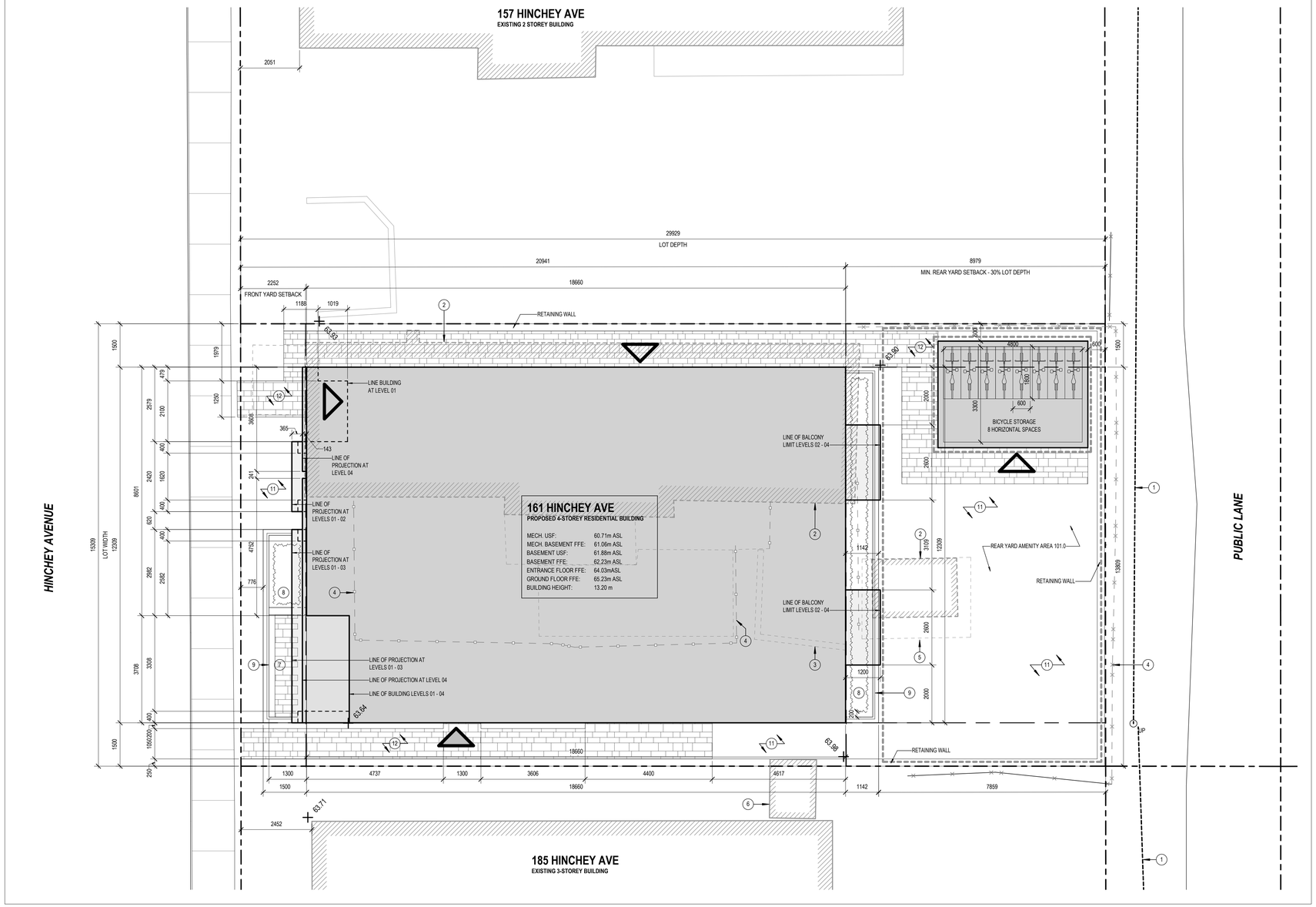
DRAWING TITLE
CONSTRUCTION DETAIL PLAN

PROJECT NO.
200295
DATE
JULY 2020

C901

DRAWINGS/FIGURES

Proposed Site Plan
Legal Survey
As-builts



1 SP-01 SITE PLAN
SCALE: 1 : 75

3 SP-01 LOCATION PLAN
SCALE: NTS

SITE & PROJECT STATISTICS

GENERAL INFORMATION

Zoning:	R4S
Overlay:	Mature Neighbourhood
Min. Lot Width:	15 m
Min. Lot Area:	450 m²
Max. Building Height:	14.5 m
Min. Front Yard:	2.264 m
Min. Rear Yard:	30% Lot Depth (7.482m) and 30% lot area
Min. Int. Side Yard:	3 m with a building wall < 11 m
Min. Landscaped Area:	30% Lot Area

PROJECT STATISTICS

Dwelling Type:	Apartment Dwelling, Low Rise
Lot Width:	15.3 m
Lot Area:	458.19m²
Building Height:	13.20 m
Front Yard:	2.27 m
Rear Yard:	8.94 m
Int. Side Yard:	1.5 m
Number of Proposed Units:	15 units

PARKING CALCULATION

Parking Space Rate Area:	Area Z
As per Section 101	
Required Parking:	0 spaces
0 spaces within Area Z on Schedule 1A - Section 101(2)	
Resident Parking Provided:	0 spaces

VISITOR PARKING CALCULATION

As per Section 102	
Required Visitor Parking:	0 spaces
0 spaces for first 12 units - Section 102(2)	
0.1 spaces/unit for 1 units - Table 102	
Visitor Parking Provided:	0 spaces
Total Parking Provided:	0 spaces

BICYCLE PARKING CALCULATION

As per Table 111A	
Required Parking:	8 spaces
0.5 sp/unit for 15 units[111A(b)(i)]	
Total Parking Provided:	8 spaces

AMENITY AREA CALCULATION

As per Table 137 (3)	
Total Amenity Area Req'd:	162 m²
15 m²/unit for first 8 units	
plus 6 m²/unit for remaining 7 units	
Communal Amenity Req'd:	150 m²
100% of area for first 8 units	
Communal Amenity Provided:	101.01 m²
At Grade - Rear Yard:	*101.01 m²*
Private Amenity Area Provided:	43.02 m²
Basement:	*9.14 m²*
Level 01:	*4.16 m²*
Level 02:	*9.88 m²*
Level 03:	*9.88 m²*
Level 04:	*9.95 m²*
Total Amenity Area Provided:	144.03 m²

2 SP-01 ZONING
SCALE: NTS

TOPOGRAPHIC PLAN OF SURVEY OF
LOT 9
REGISTERED PLAN 35
(EAST HINCHEY AVENUE LOTS)
CITY OF OTTAWA

ANNIS, O'SULLIVAN, VOLLEBEKK LTD. 2020

SURVEY INFO
SCALE: NTS

SITE PLAN SYMBOLS LEGEND

- BUILDING ENTRANCE
- BUILDING EXIT
- BICYCLE PARKING
- UTILITY POLE
- EXISTING ELEVATION
- BOARD FENCE
- CHAIN LINK FENCE

SYMBOLS LEGEND
SCALE: NTS

1. OVERHEAD WIRE
2. EXISTING BUILDING TO BE DEMOLISHED
3. EXISTING RETAINING WALL TO BE REMOVED
4. EXISTING FENCE TO BE REMOVED
5. EXISTING CONCRETE PAD TO BE REMOVED
6. EXISTING SHED
7. SUNKEN TERRACE
8. LANDSCPAED WINDOW WELL
9. CLEAR GLASS GUARD
11. SOFT LANDSCAPING
12. INTERLOCKING CONCRETE PAVERS

KEYNOTE LEGEND
SCALE: N.T.S.

GENERAL ARCHITECTURAL NOTES:
1. This drawing is the property of the Architect and may not be reproduced or used without the expressed consent of the Architect.
2. Drawings are not to be scaled. The Contractor is responsible for checking and verifying all levels and dimensions and shall report all discrepancies to the Architect and obtain clarification prior to commencing work.
3. Upon notice in writing, the Architect will provide written/graphic clarification or supplementary information regarding the intent of the Contract Documents.
4. The Architectural drawings are to be read in conjuction with all other Contract Documents including Project Manuals and the Structural, Mechanical and Electrical Drawings.
5. Positions of exposed or finished Mechanical or Electrical devices, fittings and fixtures are indicated on the Architectural Drawings. Locations shown on the Architectural Drawings shall govern over Mechanical and Electrical Drawings. Mechanical and Electrical items not clearly located will be located as directed by the Architect.
6. These documents are not to be used for construction unless specifically noted for such purpose.

PRINTED: 2020-05-26

3	ISSUED FOR COORDINATION	2020-09-16
1	ISSUED FOR COORDINATION	2020-05-26

ISSUE RECORD

project1 studio
Project1 Studio Incorporated
|613.884.3939 | mail@project1studio.ca

161 HINCHEY

161 Hinchey Avenue
Ottawa, ON

PROJ	SCALE	DRAWN	REVIEWED
1931	NOTED	AP	RMK

SITE PLAN

SP-01

SKETCH OF BENCHMARK LOCATIONS

161 HINCHEY AVENUE
OTTAWA

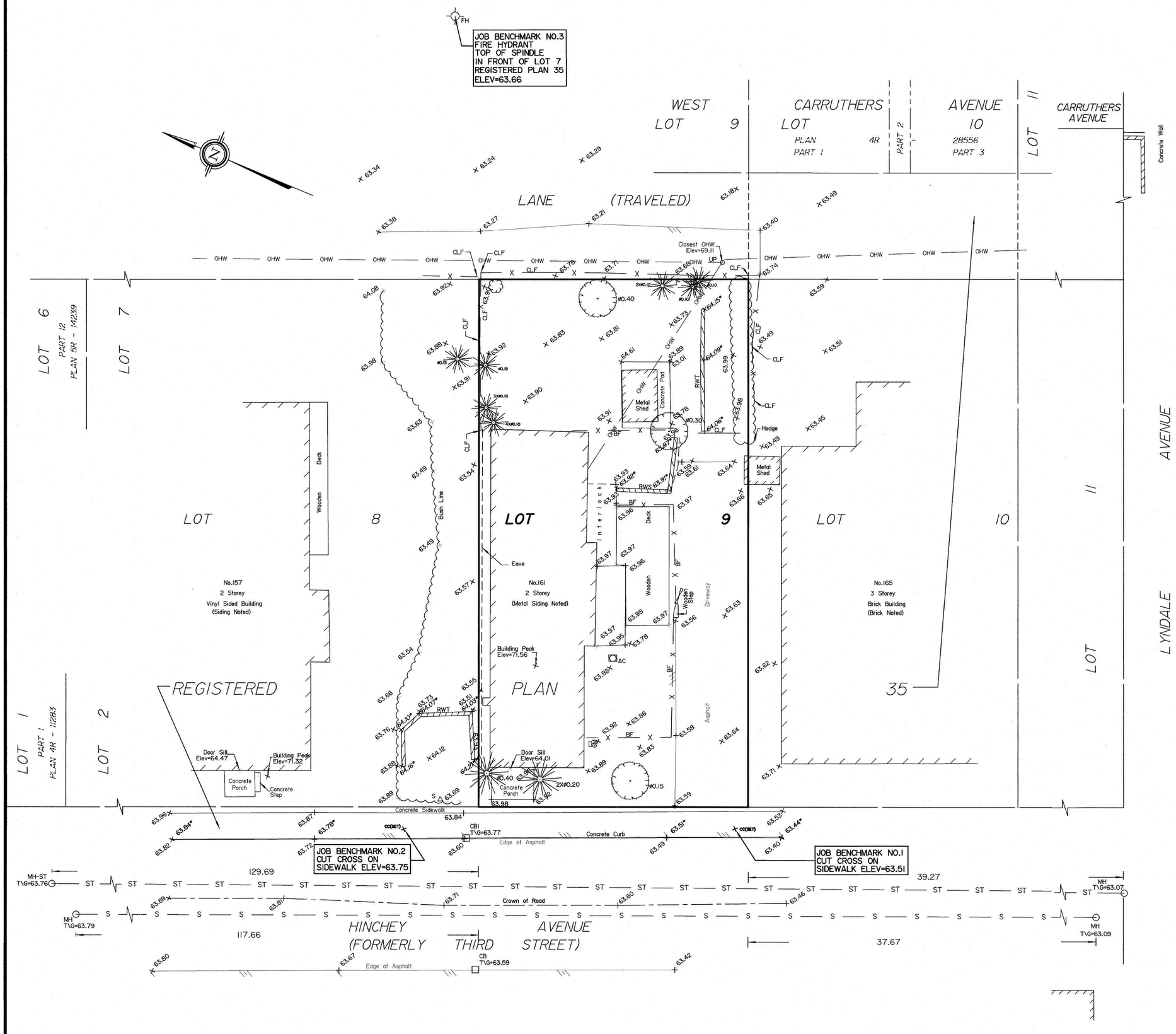
Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

Scale 1 : 150

6 4.5 3.0 1.5 0 3 6 Metres

Metric

DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048



Notes & Legend

	Denotes	
—□—	"	Survey Monument Planted
—■—	"	Survey Monument Found
SSIB	"	Short Standard Iron Bar
IB	"	Iron Bar
CP	"	Concrete Pin
Meas.	"	Measured
(AOG)	"	Annis, O'Sullivan, Vollebekk Ltd.
(P)	"	Registered Plan 35
(P1)	"	(857) Plan August 9, 2010
(P2)	"	(687) Plan November 25,1985
(P3)	"	Plan 4R-28556
RWT	"	Retaining Wall Timber
RWS	"	Retaining Wall Stone
— OHW —	"	Overhead Wires
UP	"	Utility Pole
CB	"	Catch Basin
CB-I	"	Catch Basin Inlet
FH	"	Fire Hydrant
GM	"	Gas Meter
S	"	Sign
CLF	"	Chain Link Fence
BF	"	Board Fence
	"	Gate
AC	"	Air Conditioner
	"	Shrub
	"	Deciduous Tree
	"	Coniferous Tree
MH-ST	"	Maintenance Hole (Storm Sewer)
MH-S	"	Maintenance Hole (Sanitary)
— ST —	"	Underground Storm Sewer
— S —	"	Underground Sanitary Sewer
Ø	"	Diameter
+ 65.00	"	Location of Elevation
+ 65.00*	"	Top of Concrete Curb Elevation
+ 65.00*	"	Top of Retaining Wall Elevation
C/L	"	Centreline
	"	Property Line

UTILITY NOTES

1. This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
2. Only visible surface utilities were located.
3. Underground utility data derived from City of Ottawa utility sheet reference
4. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.

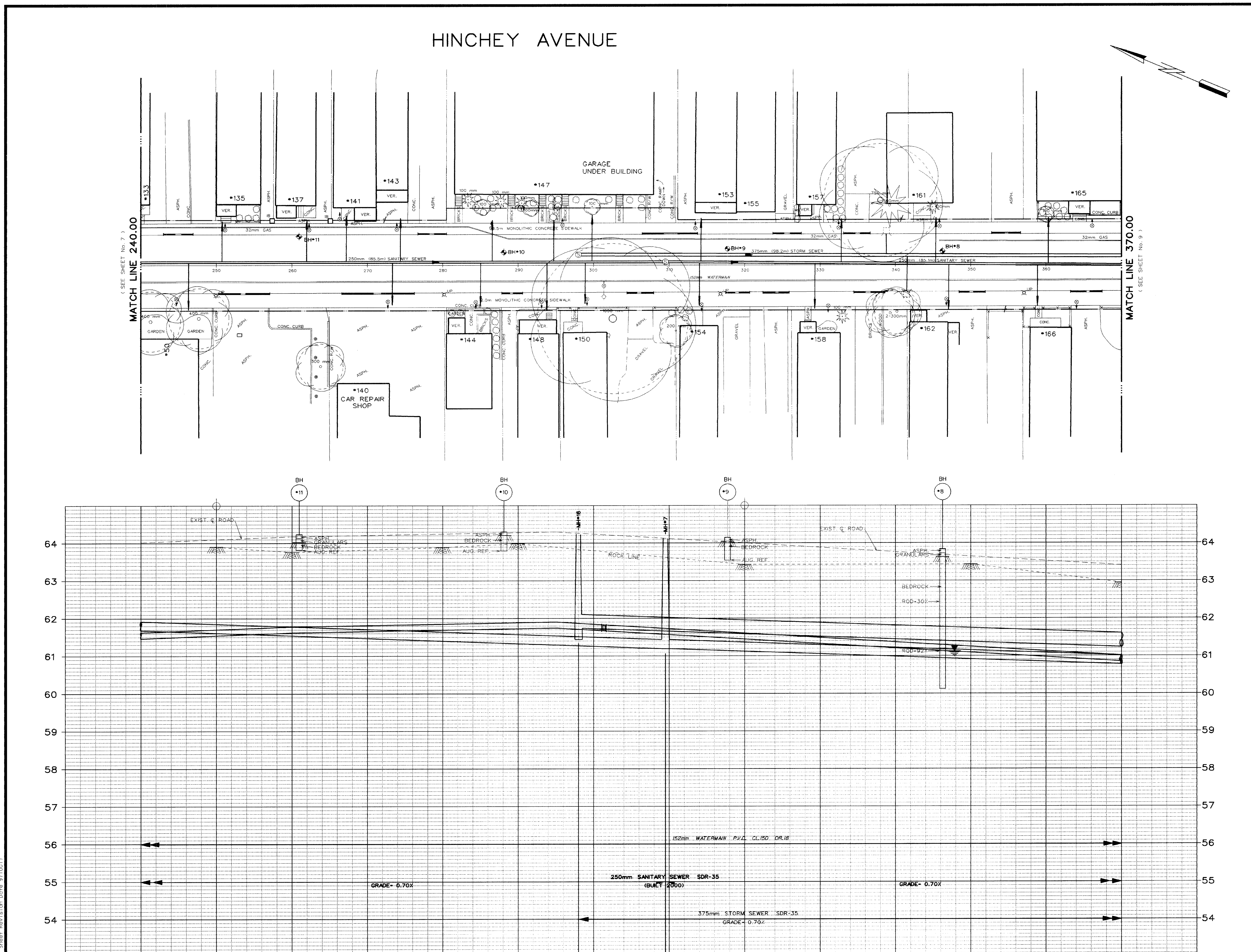
ELEVATION NOTES

1. Elevations shown are geodetic and are referred to the CGVD28 geodetic datum.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 Concourse Gate, Suite 500
Nepean, Ont. K2E 7S6
Phone: (613) 727-0850 / Fax: (613) 727-1079
Email: Nepean@aovltd.com
Ontario Land Surveyors

Job No. 20365-19 Canada Inc-bm Sketch ST

3266 (8) HINCHEY AVENUE



Elevations																		
Existing Surface	64.028	64.103	64.178	64.213	64.248	64.283	64.301		64.241			64.121	64.001	63.881	63.761	63.641	63.521	63.401
East Gutter	63.914	63.989	64.064	64.099	64.134	64.169	64.187		64.127			64.007	63.887	63.767	63.647	63.527	63.407	63.287
West Gutter	63.914	63.989	64.064	64.099	64.134	64.169	64.187		64.127			64.007	63.887	63.767	63.647	63.527	63.407	63.287
Top of Watermain																		
Sewer Type & Diameter								375 ST.		HYDRANT/VALVE & BOX	250 SAN.							
Sewer Inverts Existing &								61.740			61.195							
Stations	240.00	250.00	260.00	270.00	280.00	290.00		298.00	300.00	300.40	309.50	310.00	320.00	330.00	340.00	350.00	360.00	370.00

This drawing was created using MicroStation 95 v.5.05.01.65 (Contract Sheet Revision Date 971001)

Revisions:

No.	Date	Description	Drawn By	Approved By

Design:

Designed By: REG REHBEIN	Date: JAN/00	Checked By	Date
Survey Detail By: JOHN FRANCE	Date: JUN/99	Field Checked By: GUY QUIROUETTE	Date: OCT/99
Drafting By: GUY QUIROUETTE	Date: FEB/00	Checked By	Date

Chief Design & Construction Engineer
H. V. Pascoe, P.Eng.

Final Measurements:

Construction Type: WATER/SEWERS/ROAD-REHAB.	Inspector: D. BROWN
Work Commenced: JUNE/00	Project Manager: REG REHBEIN
Work Completed: JUNE/01	Field Book #
Contractor: MALONEY	Date: JAN./05
Drafting Revisions: D. BROWN — Date: DEC./04	Checked By: D. BROWN

As Built Notes:

1. Soil information shown is not guaranteed and contractors are advised to collect additional soils information as deemed necessary.
2. Soil information taken from : OMM TROW #MA13549A
3. This plan supercedes (in whole or in part) plan #J-10
4. While illustrations and utilities shown are taken from the best available information, they cannot be guaranteed.
5. The actual rock line was recorded during construction of the existing sanitary sewer.
6. Boreholes prior to construction.
7. See typical cross sections for road structure material depths.
8. All Water information and locations cannot be guaranteed. Please contact the Region of Ottawa Carleton, Environmental Section.

Legal Survey Notes:

Boundary information shown hereon has been compiled and calculated from Teranet data and not based on an actual survey.

Distances shown to survey monuments are for reference purposes only, survey monuments may not define property boundaries.

THIS IS NOT A PLAN OF SURVEY

This plan was compiled from plans and documents recorded in the Land Registry System and has been prepared for property indexing purposes only.

City of / Ville d' **Ottawa**

Department of Urban Planning & Public Works
Engineering Branch
Design And Construction Division
111 SUSSEX DRIVE, SUSSEX PAVILION, 7TH FLOOR, OTTAWA, ONTARIO. K1N 5A1

E.M. Robinson — Commissioner
W.R. Cole, P.Eng. — Branch Director

HINCHEY AVENUE

FROM STATION 240.00 TO STATION 370.00

Contract No:	Survey Books:	Scales: (See note)	Plan No:
00C3266		HOR. 1:250 VERT. 1:50	3266 Sheet 8 of 11

Filename: 3266s5.dgn
Reference: Ottebdr.dgn
3266pph.dgn
3266b.dgn