

# SERVICING & STORMWATER MANAGEMENT REPORT

## 254 LAKE AVENUE WEST



Project No.: CCO-22-1448

City File No.:

Escape Homes Consulting  
115 Blackberry Way  
Dunrobin, ON  
K0A 1T0

Prepared by:

McIntosh Perry Consulting Engineers Ltd.  
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April 23, 2024

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## 1.0 PROJECT DESCRIPTION

### 1.1 Purpose

McIntosh Perry (MP) has been retained by Escape Homes to prepare this Servicing and Stormwater Management Report in support of the Site Plan Control process for the proposed residential development, located at 254 Lake Avenue West in the Town of Carleton Place.

The main purpose of this report is to present a servicing and stormwater management design for the development in accordance with the recommendations and guidelines provided by the City of Ottawa (City), the Mississippi Valley Conservation Authority (MVCA), and the Ministry of the Environment, Conservation and Parks (MECP). This report will address the water, sanitary and storm sewer servicing for the development, ensuring that existing and available services will adequately service the proposed development.

This report should be read in conjunction with the following drawings:

- CCO-22-1448, C101 – Lot Grading and Drainage Plan
- CCO-22-1448, C102 – Servicing Plan
- CCO-22-1448, C103 – Sediment and Erosion Control Plan
- CCO-22-1448, PRE – Pre-Development Drainage Area Plan (*Appendix 'E'*)
- CCO-22-1448, POST – Post-Development Drainage Area Plan (*Appendix 'F'*)

### 1.2 Site Description

The property is located at 254 Lake Avenue West within the Town of Carleton Place. It is described as Part of Lots 12 and 13, Concession 11, Geographic Township of Beckwith, and in the County of Lanark. The land in question covers approximately *0.49 ha* and is located south-west of the Mississippi Road and Lake Avenue West intersection. Development is proposed over the full *0.49 ha* of the site. See Site Location Plan in *Appendix A* and topographic survey in *Appendix B* for more details.

### 1.3 Proposed Development and Statistics

The proposed development consists of four *197.8 m<sup>2</sup>* residential quadplex units, two *135.4 m<sup>2</sup>* two-storey detached residences, and a *282.5 m<sup>2</sup>* two storey semi-detached residence. New parking and drive aisles will be provided with access from Lake Avenue West. Refer to *Site Plan* prepared by Stantec Consulting Ltd and included in *Appendix B* for further details.

### 1.4 Existing Conditions and Infrastructures

The existing site is currently developed with a two-storey detached dwelling and includes an asphalt driveway. The existing building is proposed to be demolished and the *0.49 ha* site being subdivided into 7 parcels of land to support the seven dwelling structures identified in Section 1.3.

Sewer and watermain mapping collected from the Town of Carleton Place indicate that the following services exist across the property frontages within the adjacent municipal rights-of-way(s):

❖ Water Servicing

- Based on Town of Carleton Place as-builts prepared by Stantec Consulting (Project No. 160401129), a 300 mm diameter watermain was installed along Lake Avenue West to support the Bodnar Lands subdivision.
- In addition, two municipal fire hydrants have been installed along Lake Avenue West to support the Bodnar Lands subdivision.

❖ Wastewater Servicing

- Based on coordination with Town staff, a 200 mm diameter sanitary stub is proposed to be installed within Lyndhurst Street and will be available to service the development. Refer to Town drawing LYNDHURST -2022 drawing PW2-2022-8 for further details.

❖ Stormwater Servicing

- A catchbasin system exists within Lake Avenue West. Based on coordination with Town staff, this storm sewer system often surcharges and overflows into the park.
- The site currently directs stormwater overland towards the shallow roadside ditch along the south side of Lake Avenue.

## 2.0 BACKGROUND STUDIES

### 2.1 Background Reports / Reference Information

As-built drawings of existing services, provided by the Town of Carleton Place, within the vicinity of the proposed site were reviewed in order to identify infrastructure available to service the proposed development.

A topographic survey (17446-21) of the site was completed by Annis, O'Sullivan, Vollebekk Ltd and dated June 30<sup>th</sup>, 2021.

The Site Plan (L100) was prepared by Stantec Consulting Ltd and dated January 27<sup>th</sup>, 2023 (*Site Plan*).

### 2.2 Applicable Guidelines and Standards

City of Ottawa:

- ◆ Ottawa Sewer Design Guidelines, City of Ottawa, SDG002, October 2012. (*Ottawa Sewer Guidelines*)
  - Technical Bulletin ISTB-2014-01 City of Ottawa, February 2014. (*ISTB-2014-01*)
  - Technical Bulletin PIEDTB-2016-01 City of Ottawa, September 2016. (*PIEDTB-2016-01*)
  - Technical Bulletin ISTB-2018-01 City of Ottawa, January 2018. (*ISTB-2018-01*)
  - Technical Bulletin ISTB-2018-03 City of Ottawa, March 2018. (*ISTB-2018-03*)
  - Technical Bulletin ISTB-2019-01 City of Ottawa, January 2019. (*ISTB-2019-01*)
  - Technical Bulletin ISTB-2019-02 City of Ottawa, February 2019. (*ISTB-2019-02*)
- ◆ Ottawa Design Guidelines – Water Distribution City of Ottawa, July 2010. (*Ottawa Water Guidelines*)
  - Technical Bulletin ISD-2010-2 City of Ottawa, December 15, 2010. (*ISD-2010-2*)
  - Technical Bulletin ISDTB-2014-02 City of Ottawa, May 2014. (*ISDTB-2014-02*)
  - Technical Bulletin ISTB-2018-02 City of Ottawa, March 2018. (*ISTB-2018-02*)

Ministry of Environment, Conservation and Parks:

- ◆ Stormwater Planning and Design Manual, Ministry of the Environment, March 2003. (*MECP Stormwater Design Manual*)
- ◆ Design Guidelines for Sewage Works, Ministry of the Environment, 2008. (*MECP Sewer Design Guidelines*)

## 3.0 WATERMAIN

### 3.1 Existing Watermain

There is an existing 300 mm diameter watermain within Lake Avenue West available to service the proposed development. As noted in Section 1.4, there are two fire hydrants fronting the site and installed to service the Bodnar Lands subdivision.

### 3.2 Proposed Watermain

A new 38 mm diameter water service is proposed to be connected to the existing 300 mm watermain within Lake Avenue West for each of the proposed quadplex buildings. A 19 mm diameter water service is proposed for the detached home from the Lake Avenue West watermain. Each water service contains a water valve located at the property line. The water services have been designed to have a minimum of 2.4 m of cover. Refer to drawing C102 for a detailed servicing layout.

The Fire Underwriters Survey 1999 (FUS) method was utilized to estimate the required fire flow for the site. Fire flow requirements were calculated per City of Ottawa Technical Bulletin *ISTB-2018-02*. The following parameters were assumed.

- ❖ Type of construction – Wood Frame Construction
- ❖ Occupancy Type – Limited Combustibility
- ❖ Sprinkler Protection – No Sprinkler System

Table 1, below, summarizes the proposed fire flow demands based on the FUS method.

Table 1: Fire Flow Demands

Building	Fire Flow Demand	Fire Flow Demand
	(L/min)	(L/s)
Detached Home (Lot 1 - western)	6,000	100
Quadplex (Lot 2)	8,000	133.33
Quadplex (Lot 3)	8,000	133.33
Quadplex (Lot 4)	8,000	133.33
Quadplex (Lot 5)	8,000	133.33
Semi-Detached Home (Lot 6/7)	7,000	116.66
Detached Home (Lot 8 – eastern)	5,000	83.33

The water demands for the proposed buildings have been calculated to adhere to the *Ottawa Design Guidelines – Water Distribution* manual and can be found in *Appendix 'C'*. The criteria and corresponding results have been summarized in *Table 2*, below:

Table 2: Water Demands

Design Parameter	Value
Site Area	0.49 ha
Detached Homes	3.4 persons/unit
Average Apartment (Quadplex)	1.8 persons/unit
Residential Peaking Factor (Day)	9.5 x avg. day
Residential Peaking Factor (Hour)	14.3 x avg. day
Average Day Demand	0.14 L/s
Maximum Daily Demand	1.32 L/s
Peak Hourly Demand	1.99 L/s

To confirm the adequacy of fire flow to protect the proposed development, public fire hydrants within 150 m of the site were accounted for per City of Ottawa Technical Bulletin *ISTB 2018-02 Appendix I*. Results can be seen in *Table 3*, below.

Table 3: Fire Protection Confirmation

Buildings	Fire Flow Demand (L/min.)	Fire Hydrant(s) within 75m (5,700 L/min)	Fire Hydrant(s) within 150m (3,800 L/min)	Combined Fire Flow (L/min.)
Lot 1-3	8,000 L/min (max)	1 public	2 public	12,900
Lot 4-5	8,000 L/min (max)	2 public	-	11,400
Lot 6-8	7,000 L/min (max)	1 public	1 public	9,500

Based on *Table 3*, above, there is enough hydrant coverage to support the calculated fire flow demand of 8,000 L/min. Therefore, additional private hydrants are not anticipated to be required.

The Town provided the static HGL and pressures for the municipal watermain within Lake Avenue West. The results have been summarized in *Table 4*, below. Based on the modelling results, the municipal watermain has sufficient pressures during normal operating scenarios to support development. Refer to *Appendix C* for pressure results provided by Stantec.

Table 4: Watermain Pressures

Scenario	Static HGL at Nearest Junction (m)	Pressure (psi)	Pressure (kPa)
Average Day Demand	184.5	66	437
Peak Hour Demand	182.4	63	458



## 4.0 SANITARY DESIGN

### 4.1 Existing Sanitary Sewers

There is an existing 200 mm diameter sanitary sewer located within Lyndhurst Street available to service the development. As noted in Section 1.4, a 200 mm diameter sanitary sewer replacement and extension is proposed. A 200 mm diameter sanitary stub will be available in the boulevard north of Lyndhurst Street to accommodate sanitary servicing from the proposed development.

### 4.2 Proposed Sanitary Sewer

135 mm diameter sanitary services are proposed to provide servicing to each building. The sanitary services will connect to a new 200 mm diameter gravity sanitary sewer located within the site along the north property line and east side of the existing building lot. The proposed sanitary sewer will lead to a E/One W-series pump station (or equivalent product) at the southeast corner of the site. From the pump station, a sanitary forcemain will then discharge to the 200 mm diameter sanitary stub located in the boulevard north of Lyndhurst Street (forcemain and pump station design by others). Refer to drawing C102 for a detailed sanitary sewer layout.

Table 5, below, summarizes the wastewater design criteria identified by the *Ottawa Sewer Guidelines*.

Table 5: Sanitary Design Criteria

Design Parameter	Value
Average Apartment	1.8 persons/unit
Single Family Home	3.4 persons/unit
Average Daily Demand	280 L/day/person
Residential Peaking Factor	3.68
Extraneous Flow Allowances	0.33 L/s/ha

Table 6, below, summarizes the estimated wastewater flow from the proposed development. Refer to Appendix D for detailed calculations.

Table 6: Summary of Estimated Sanitary Flow

Design Parameter	Total Flow (L/S)
Total Estimated Average Dry Weather Flow	0.16
Total Estimated Peak Dry Weather Flow	0.53
Total Estimated Peak Wet Weather Flow	0.67

The full flowing capacity of a 200 mm sanitary service at a 0.32% slope is estimated to be 19.36 L/s. Per Table 6, above, a peak wet weather flow of 0.67 L/s will be conveyed within the 200 mm diameter service, therefore the proposed system is sufficient sized for the development. See *Sanitary Sewer Design Sheet* in Appendix D of this report for more details.

## 5.0 STORM SEWER DESIGN

### 5.1 Existing Storm Sewers

There is an existing catchbasin system along Lake Avenue. Based on coordination with Town staff, this storm sewer system often surcharges and overflows into the park. In addition, a shallow roadside ditch exists north of the site and south of Lake Avenue. Site drainage currently infiltrates and flows overland towards the roadside ditch at the north-west corner of the site.

### 5.2 Proposed Storm Sewers

The roadside ditch along the south side of Lake Avenue is proposed to be deepened to allow for development, starting approximately 40.8 m west of the site and ending at the Mississippi Road intersection. Deepening the roadside ditch allows for a perimeter drainage system, which will direct site drainage towards the roadside ditch per existing conditions. The perimeter system will contain a layer of riverstone at the surface and a subdrain beneath surrounded in a clear stone trench. The subdrain system will promote drainage of the perimeter drain in shallow graded areas and during snow melt periods. In a large storm event, water will back up through the downstream catchbasin, directing stormwater towards the roadside ditch.

In order to control stormwater to pre-development conditions, two depressed stormwater areas are required. Stormwater will be controlled by the culvert outlets sending stormwater towards the Lake Ave roadside ditch.

Buildings are proposed to be slab on grade. Foundation drainage will need a sump pumped towards landscaped areas of the respective lots and will ultimately discharge to the roadside ditch system. Sump pump system to be designed by others.

Runoff collected on the roofs of the proposed quadplexes will be stored and controlled internally using one roof drain per rooftop. The roof drain(s) will be used to limit the flow from the roof to the specified allowable release rate. For calculation purposes a Watts Accutrol roof drain was used estimate a reasonable roof flow. Other products may be specified at detailed building design so long as release rates and storage volumes are respected.

See CCO-22-1448 - *POST and Storm Sewer Design Sheet* in *Appendix 'F'* of this report for more details. The Stormwater Management design for the subject property will be outlined in Section 6.0.

## 6.0 PROPOSED STORMWATER MANAGEMENT

### 6.1 Design Criteria and Methodology

Stormwater management for the proposed site will be maintained through positive drainage away from the proposed buildings and into the re-defined roadside ditch along the south side of Lake Avenue West. On-site swales will capture runoff from the roof (Lot 1, 6-8), parking lot, and landscaped areas. Depressed stormwater areas are proposed to restrict stormwater and provide the necessary storage to meet pre-development flow rates. The site has been designed such that the site will overtop the top of slope of the depressed stormwater area an emergency situation prior to backing up towards the building. Stormwater collected on the rooftops of the quadplexes will be controlled before discharging to the roadside ditch. The quantitative and qualitative properties of the storm runoff for both the pre & post development flows are further detailed below.

In summary, the following design criteria have been employed in developing the stormwater management design for the site as directed by the Town:

#### Quantity Control

- Post-development flow 5/100-year flow is be restricted to match the 5 and 100-year pre-development flow.

### 6.2 Runoff Calculations

Runoff calculations presented in this report are derived using the Rational Method, given as:

$$Q = 2.78CIA \text{ (L/s)}$$

Where	C	= Runoff coefficient
	I	= Rainfall intensity in mm/hr (City of Ottawa IDF curves)
	A	= Drainage area in hectares

It is recognized that the Rational Method tends to overestimate runoff rates. As a result, the conservative calculation of runoff ensures that any SWM facility sized using this method is expected to function as intended.

The following coefficients were used to develop an average C for each area:

Roofs/Concrete/Asphalt	0.90
Gravel	0.60
Undeveloped and Grass	0.20

As per the *City of Ottawa - Sewer Design Guidelines*, the 5-year balanced 'C' value must be increased by 25% for a 100-year storm event to a maximum of 1.0.

### 6.3 Pre-Development Drainage

The existing site drainage limits are demonstrated on the Pre-Development Drainage Area Plan. A summary of the Pre-Development Runoff Calculations can be found below.

Table 7: Pre-Development Runoff Summary

Drainage Area	Area (ha)	Runoff Coefficient (5-Year)	Runoff Coefficient (100-Year)	5-year Peak Flow (L/s)	100-year Peak Flow (L/s)
A1	0.49	0.34	0.40	48.24	97.31
Total	0.49			48.24	97.31

See CCO-22-1448 - PRE in *Appendix E* and *Appendix G* for calculations.

### 6.4 Post-Development Drainage

To meet the stormwater objectives the development will contain rooftop and surface storage controls.

The proposed site drainage limits are demonstrated on the Post-Development Drainage Area Plan. See CCO-22-1448 - POST in *Appendix F* of this report for more details. A summary of the Post-Development Runoff Calculations can be found below. See *Appendix G* for detailed calculations.

Table 8: Post-Development Runoff Summary

Drainage Area	Area (ha)	Runoff Coefficient (5-Year)	Runoff Coefficient (100-Year)	Unrestricted 5-year Peak Flow (L/s)	Unrestricted 100-year Peak Flow (L/s)
B1	0.02	0.90	1.00	5.16	9.82
B2	0.02	0.90	1.00	5.16	9.82
B3	0.02	0.90	1.00	5.16	9.82
B4	0.02	0.90	1.00	5.16	9.82
B5	0.15	0.41	0.47	17.14	34.06
B6	0.08	0.55	0.62	12.54	24.43
B7	0.04	0.53	0.61	6.80	13.26
B8	0.08	0.48	0.55	11.46	22.49
B9	0.06	0.39	0.45	6.55	13.05
Total	0.49			75.11	146.56

## 6.5 Quantity Control

After discussing the stormwater management criteria for the site with Town staff, the total post-development runoff for this site has been restricted to match the 5 and 100 year pre-development flow rates. These values result in the following allowable release rates for the development.

Table 9: Allowable Release Rate Summary

Drainage Area	Area (ha)	Runoff Coefficient 5-Year	Runoff Coefficient 100-Year	Required Restricted Flow *5-Year* (L/s)	Required Restricted Flow 100-Year (L/s)
A1	0.49	0.34	0.40	48.24	97.31

Reducing site flows will be achieved using a flow restriction on rooftops and within the depressed stormwater area, creating the need for onsite storage.

Table 10: Post-Development Restricted Runoff Summary

Drainage Area	Post Development Restricted Flow (L/s)		Post Development Storage Requirement (m <sup>3</sup> )	
	5-Year	100-Year	5-Year	100-Year
B1	0.42	0.72	4.3	8.5
B2	0.42	0.72	4.3	8.5
B3	0.42	0.72	4.3	8.5
B4	0.42	0.72	4.3	8.5
B5	17.14	34.06	-	-
B6	4.67	7.53	4.7	10.7
B7	2.95	5.11	2.3	4.9
B8	11.46	22.49	-	-
B9	6.55	13.05	-	-
Total	44.45	85.12	24.4	49.5

Runoff for area B1-B4 will be stored on the roofs of the proposed quadplex buildings and restricted using one Watts Accutrol roof drain (or equivalent product) per building to a maximum release rate of 0.72 L/s and will provide up to 8.5 m<sup>3</sup> of storage.

Runoff from area B5 is proposed to be unrestricted and will be compensated for by areas with flow attenuation.

Runoff for area B6 will be controlled by a depressed storage area with 100 mm outlet culvert. The storage area proposed to contain up to  $10.7 m^3$  of surface storage up to a maximum release rate of  $7.53 L/s$ . Stormwater will be collected by the perimeter swale system and conveyed to the redefined roadside ditch.

Runoff for area B7 will be controlled by a depressed storage area with 100 mm outlet culvert. The storage area proposed to contain up to  $4.9 m^3$  of surface storage up to a maximum release rate of  $5.11 L/s$ . Stormwater will be collected by the perimeter swale system and conveyed to the redefined roadside ditch.

Buildings are proposed to be slab on grade. Foundation drainage will need a sump pumped towards the roadside ditch system. Sump pump system to be designed by others.

## 7.0 EROSION AND SEDIMENT CONTROL

### 7.1 Temporary Measures

Before construction begins, temporary silt fence, straw bale or rock flow check dams will be installed at all natural runoff outlets from the property. It is crucial that these controls be maintained throughout construction and inspection of sediment and erosion control will be facilitated by the Contractor or Contract Administration staff throughout the construction period.

Silt fences will be installed where shown on the final engineering plans, specifically along the downstream property limits. The Contractor, at their discretion or at the instruction of the City, Conservation Authority or the Contract Administrator shall increase the quantity of sediment and erosion controls on-site to ensure that the site is operating as intended and no additional sediment finds its way off site. The rock flow, straw bale & silt fence check dams and barriers shall be inspected weekly and after rainfall events. Care shall be taken to properly remove sediment from the fences and check dams as required. Fibre roll barriers are to be installed at all existing curb inlet catchbasins and filter fabric is to be placed under the grates of all existing catchbasins and manholes along the frontage of the site and any new structures immediately upon installation. The measures for the existing/proposed structures is to be removed only after all areas have been paved. Care shall be taken at the removal stage to ensure that any silt that has accumulated is properly handled and disposed of. Removal of silt fences without prior removal of the sediments shall not be permitted.

Although not anticipated, work through winter months shall be closely monitored for erosion along sloped areas. Should erosion be noted, the Contractor shall be alerted and shall take all necessary steps to rectify the situation. Should the Contractor's efforts fail at remediating the eroded areas, the Contractor shall contact the City and/or Conservation Authority to review the site conditions and determine the appropriate course of action. As the ground begins to thaw, the Contractor shall place silt fencing at all required locations as soon as ground conditions warrant. Please see the *Site Grading, Drainage and Sediment & Erosion Control Plan* for additional details regarding the temporary measures to be installed and their appropriate OPSD references.

### 7.2 Permanent Measures

It is expected that the Contractor will promptly ensure that all disturbed areas receive topsoil and seed/sod and that grass be established as soon as possible. Any areas of excess fill shall be removed or levelled as soon

as possible and must be located a sufficient distance from any watercourse to ensure that no sediment is washed out into the watercourse. As the vegetation growth within the site provides a key component to the control of sediment for the site, it must be properly maintained once established. Once the construction is complete, it will be up to the landowner to maintain the vegetation and ensure that the vegetation is not overgrown or impeded by foreign objects.

## 8.0 SUMMARY

- A new detached home and four quadplexes are proposed to be constructed at 254 Lake Avenue West.
- A new water service is proposed to service each building from the existing 300 mm diameter watermain within Lake Avenue West.
- A new 200 mm internal sanitary sewer and pump station is proposed to service the buildings. Each new building will be serviced by a 135 mm sanitary service.
- The Lake Avenue West roadside ditch is proposed to be deepened to support a stormwater management system at 254 Lake Avenue West. Stormwater management controls are proposed to be provided via surface storage and rooftop storage.

## 9.0 RECOMMENDATION

Based on the information presented in this report, we recommend that Town of Carleton Place approve this Servicing and Stormwater Management Report in support of the proposed development at 254 Lake Avenue West.

This report is respectfully being submitted for approval.

Regards,

McIntosh Perry Consulting Engineers Ltd.

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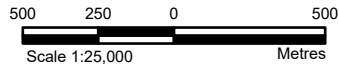
## 10.0 STATEMENT OF LIMITATIONS

This report was produced for the exclusive use of Escape Homes. The purpose of the report is to assess the existing stormwater management system and provide recommendations and designs for the post-construction scenario that are in compliance with the guidelines and standards from the Ministry of the Environment, Conservation and Parks, City of Ottawa and local approval agencies. McIntosh Perry reviewed the site information and background documents listed in Section 2.0 of this report. While the previous data was reviewed by McIntosh Perry and site visits were performed, no field verification/measures of any information were conducted.

Any use of this review by a third party, or any reliance on decisions made based on it, without a reliance report is the responsibility of such third parties. McIntosh Perry accepts no responsibility for damages, if any, suffered by any third party as a result of decisions or actions made based on this review.

The findings, conclusions and/or recommendations of this report are only valid as of the date of this report. No assurance is made regarding any changes in conditions subsequent to this date. If additional information is discovered or becomes available at a future date, McIntosh Perry should be requested to re-evaluate the conclusions presented in this report, and provide amendments, if required.

**APPENDIX A  
KEY PLAN**



**LEGEND**

- Site Location
- Local Road
- Major Road
- Watercourse
- Waterbody
- Wooded Area

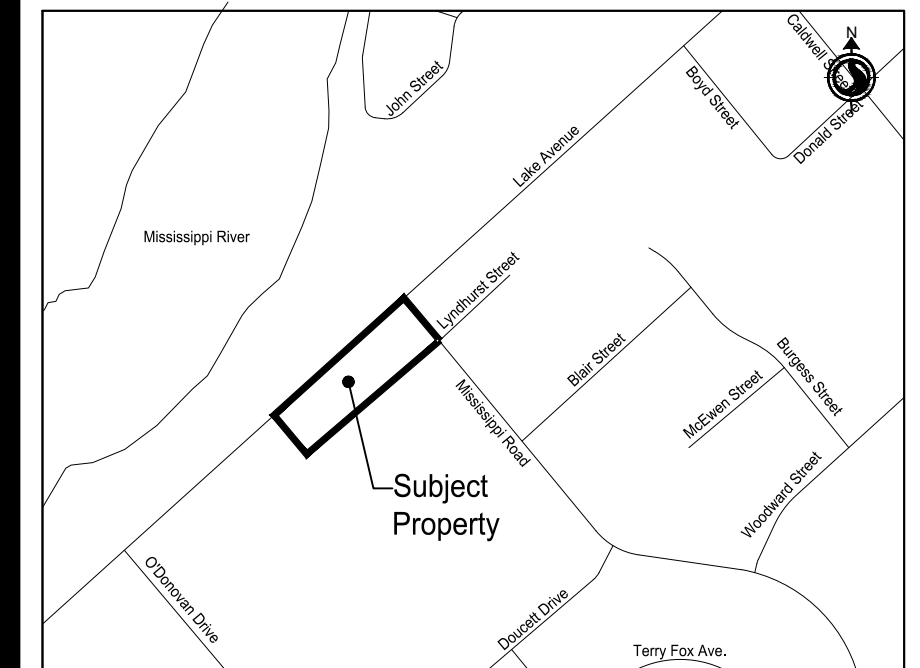
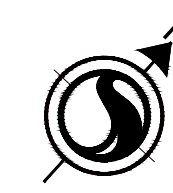
**REFERENCE**

GIS data provided by the Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry, 2022.

CLIENT:		<b>ESCAPE HOMES</b>	
PROJECT:		<b>254 LAKE AVE, CARLETON PLACE</b>	
TITLE:		<b>SITE LOCATION PLAN</b>	
PROJECT NO: CCO-22-1448		FIGURE:	
Date	Mar., 24, 2022	<b>1</b>	
GIS	SK		
Checked By	AG		

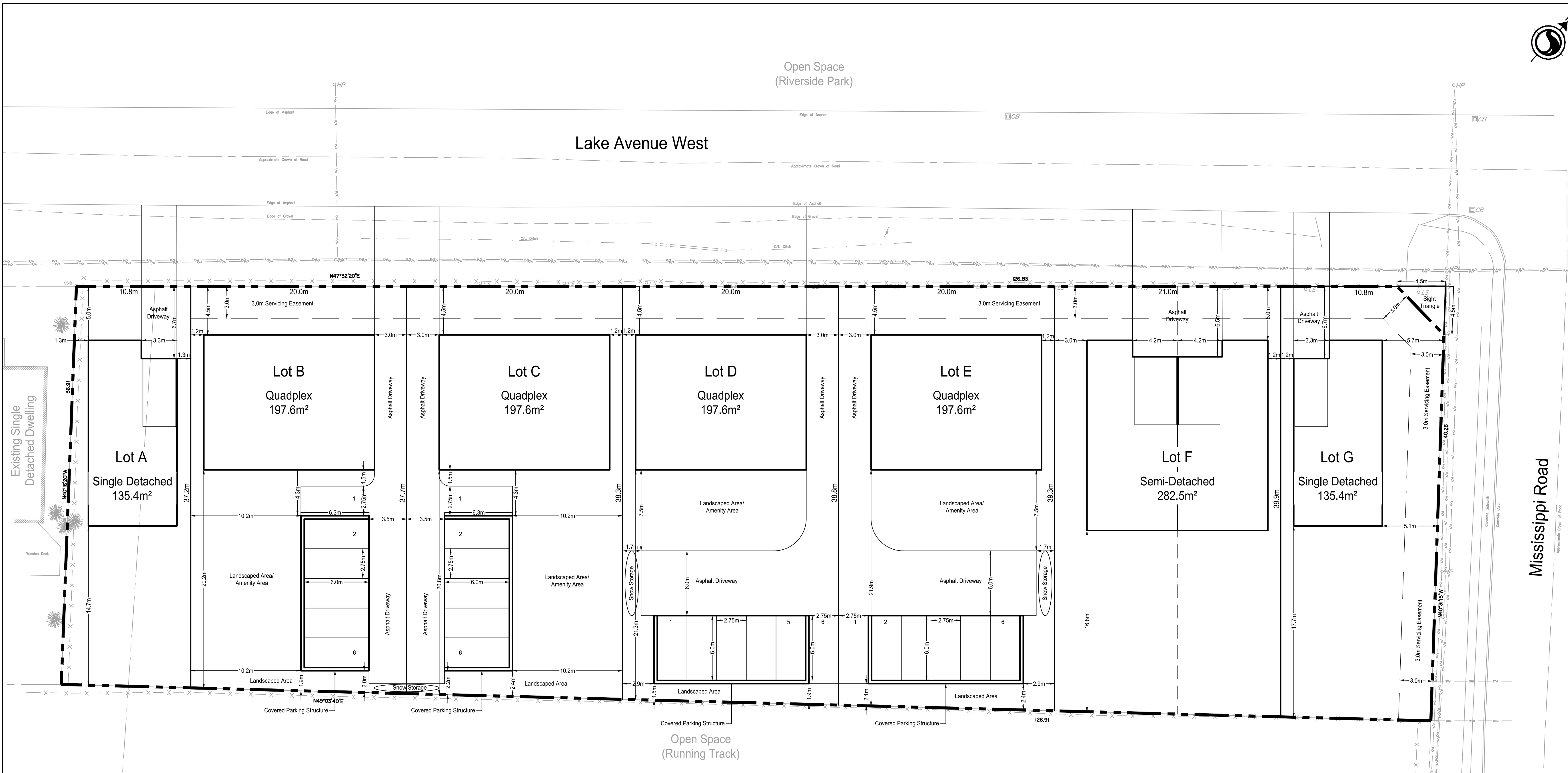
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**APPENDIX B  
BACKGROUND DOCUMENTS**



Legal Description

Part of Lots 12 and 13,  
Concession 11,  
Town of Carleton Place,  
County of Lanark



Details of Development

SITE DETAILS	REQUIRED	LOT A - PROVIDED	LOT G - PROVIDED
ZONING	RESIDENTIAL DISTRICT - SINGLE DETACHED DWELLING		
MINIMUM LOT AREA	NIL	418.6m²	574.2m²
MAXIMUM LOT COVERAGE	60.0%	32.3%	23.5%
MINIMUM LOT FRONTAGE	10.6m	10.8m	15.1m
FRONT YARD BUILD WITHIN AREA	MINIMUM = 4.5m MAXIMUM = 7.5m	5.0m	5.0m
EXTERIOR SIDE YARD BUILD WITHIN AREA	MINIMUM = 4.5m MAXIMUM = 7.5m	N/A	5.1m
MINIMUM INTERIOR SIDE YARD	1.2m	1.3m & 1.3m	1.2m
MINIMUM REAR YARD DEPTH	7.5m	14.7m	17.7m
MINIMUM USABLE LANDSCAPED OPEN SPACE IN THE REAR YARD	50.0m²	173.9m²	253.8m²
MAXIMUM BUILDING HEIGHT	11.0m	<11.0m	<11.0m
MINIMUM DWELLING UNIT AREA	92.9m²	135.4m²	135.4m²
NO ENCROACHMENT AREA FROM FRONT OR EXTERIOR SIDE LOT LINE	2.5m	2.5m	2.5m
PARKING SPACE	2 SPACES	2 SPACES	2 SPACES
MAXIMUM GARAGE WIDTH	50.0% OF LOT FRONTAGE	27.8%	21.8%
MINIMUM MAIN GARAGE FOUNDATION SETBACK	6.0m	6.7m	6.7m

Parking Calculation

SINGLE DETACHED DWELLING:  
2 SPACES PER UNIT  
1 UNIT x 2 SPACES = 2 SPACES

Details of Development

SITE DETAILS	REQUIRED	LOT B - PROVIDED	LOT C - PROVIDED	LOT D - PROVIDED	LOT E - PROVIDED
ZONING	RESIDENTIAL DISTRICT - QUADPLEX				
MINIMUM LOT AREA	NIL	749.2m²	759.8m²	770.5m²	781.1m²
MAXIMUM LOT COVERAGE	60.0%	26.4%	26.0%	25.6%	25.3%
MINIMUM LOT FRONTAGE	15.0m	20.0m	20.0m	20.0m	20.0m
FRONT YARD BUILD WITHIN AREA	MINIMUM = 4.5m MAXIMUM = 7.5m	4.5m	4.5m	4.5m	4.5m
EXTERIOR SIDE YARD BUILD WITHIN AREA	MINIMUM = 4.5m MAXIMUM = 7.5m	N/A	N/A	N/A	N/A
MINIMUM INTERIOR SIDE YARD	1.2m	1.2m & 3.0m	1.2m & 3.0m	1.2m & 3.0m	1.2m & 3.0m
MINIMUM REAR YARD DEPTH	9.0m	20.2m	20.8m	21.3m	21.9m
MINIMUM USABLE LANDSCAPED OPEN SPACE IN THE REAR YARD	30.0m²	107.9m²	107.9m²	125.5m²	125.5m²
MAXIMUM BUILDING HEIGHT	14.0m	<14.0m	<14.0m	<14.0m	<14.0m
NO ENCROACHMENT AREA FROM FRONT OR EXTERIOR SIDE LOT LINE	2.5m	2.5m	2.5m	2.5m	2.5m
PARKING SPACE	6 SPACES	6 SPACES	6 SPACES	6 SPACES	6 SPACES
VISITOR PARKING SPACE	1 SPACES	1 SPACES	1 SPACES	1 SPACES	1 SPACES

Parking Calculation

QUADPLEX:  
1.25 SPACES PER UNIT  
4 UNITS x 1.25 SPACES = 5 SPACES  
VISITOR PARKING:  
0.25 SPACE PER UNIT  
4 UNITS x 0.25 SPACES = 1 SPACE

Details of Development

SITE DETAILS	REQUIRED	LOT F - PROVIDED
ZONING	RESIDENTIAL DISTRICT - SEMI-DETACHED	
MINIMUM LOT AREA	NIL	829.7m²
MAXIMUM LOT COVERAGE	60.0%	34.0%
MINIMUM LOT FRONTAGE	15.0m (7.5m/UNIT)	21.0m
FRONT YARD BUILD WITHIN AREA	MINIMUM = 4.5m MAXIMUM = 7.5m	5.0m
EXTERIOR SIDE YARD BUILD WITHIN AREA	MINIMUM = 4.5m MAXIMUM = 7.5m	N/A
MINIMUM INTERIOR SIDE YARD	1.2m	3.0m & 1.2m
MINIMUM REAR YARD DEPTH	7.5m	16.8m
MINIMUM USABLE LANDSCAPED OPEN SPACE IN THE REAR YARD	40.0m²	355.6m²
MAXIMUM BUILDING HEIGHT	11.0m	<11.0m
MINIMUM DWELLING UNIT AREA	92.9m²	282.5m²
NO ENCROACHMENT AREA FROM FRONT OR EXTERIOR SIDE LOT LINE	2.5m	2.5m
PARKING SPACE	2 SPACES	2 SPACES
MAXIMUM GARAGE WIDTH		40.0%
MINIMUM MAIN GARAGE FOUNDATION SETBACK		6.5m

Parking Calculation

SINGLE DETACHED DWELLING:  
2 SPACES PER UNIT  
1 UNIT x 2 SPACES = 2 SPACES

2. REVISED AS PER CLIENT COMMENTS	JJ	EB	2023.01.27
1. REVISED AS PER CLIENT COMMENTS	JJ	EB	2022.09.19
ISSUED FOR CLIENT REVIEW	JJ	EB	2022.08.30
Revision	By	Appd	YYYY.MM.DD
File Name: 160410347_R-SP	JJ	JJ	EB
	Dwn.	Dsgn.	Chkd.
			YYYY.MM.DD

Permit-Seal

Client/Project  
ESCAPE HOMES

254 LAKE AVENUE WEST

CARLETON PLACE, ON

Title

SITE PLAN

Project No. 160410347 Scale 1:200

Revision 2 Sheet 1 of 1 Drawing No. SP-1

**SURVEYORS REAL PROPERTY REPORT**  
**PART 1**  
**PART OF LOTS 12 and 13**  
**CONCESSION 11**  
**Geographic Township of Beckwith**  
**TOWN OF CARLETON PLACE**  
**COUNTY OF LANARK**  
 Surveyed by Annis, O'Sullivan, Vollebakk Ltd.

Scale: 1:150  
 Metric  
 CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048  
 Date: June 30, 2021  
 Surveyor: A.S. [Signature]  
 Class: Land Surveyor  
 Address: 100 ...  
 Phone: ...

**Notes & Legend**

Survey Monument Found
Survey Monument Found
Survey Monument Found
Short Standard Iron Bar
Iron Bar
Cut Cross
Whitewash
Messaged
Arms, Chisel, Vollebakk Ltd.
Pins 20x1133
Pins 20x1133
Pins 20x1133
Utility Pole
Overhead Wires
T/G
T/P
C/S
M/F
C/L
C/W
C/D
C/L
O/S
Deciduous Tree
Coniferous Tree
Elev.
Diameter
Maintenance Hole (Summary)

**Surveyor's Certificate**  
 I, the undersigned, being a duly qualified and sworn Surveyor, have examined the plan and the monuments shown thereon, and the boundaries of the land therein described, and I certify that the same are correctly shown in accordance with the surveys and the measurements made by me or by others under my supervision.  
 Dated: June 30, 2021  
 Signature: A.S. [Signature]  
 Class: Land Surveyor

**NOTE**  
 THIS PLAN MUST BE READ IN CONJUNCTION WITH  
 PLAN 2021-00005-00000-0001

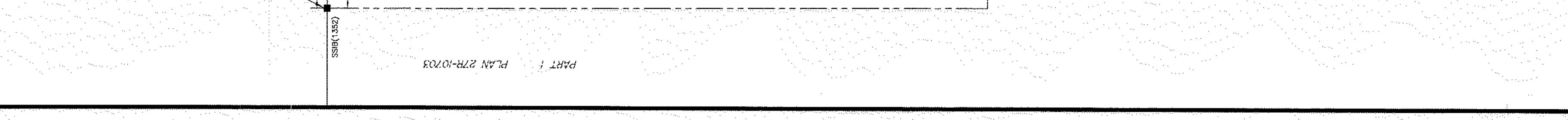
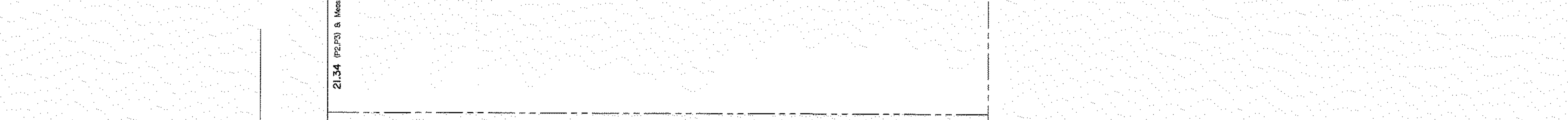
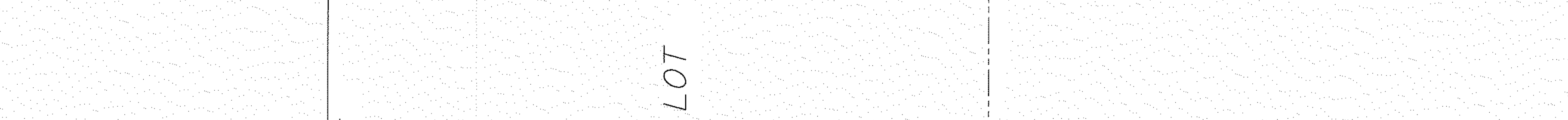
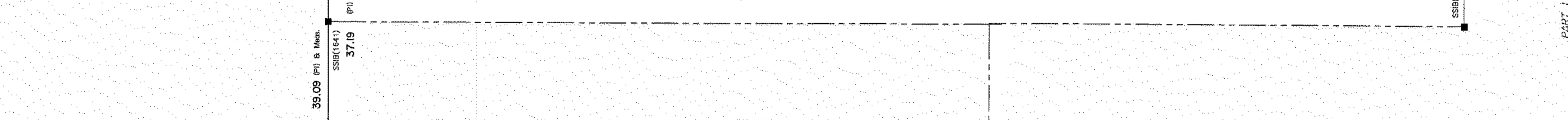
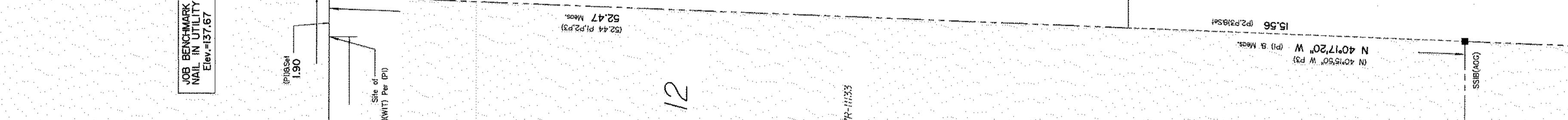
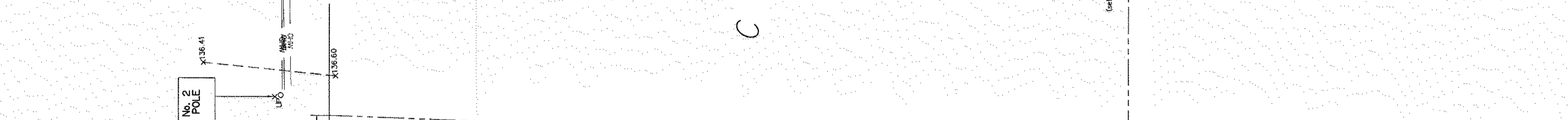
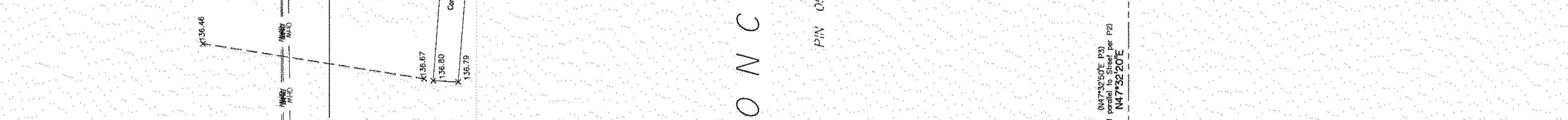
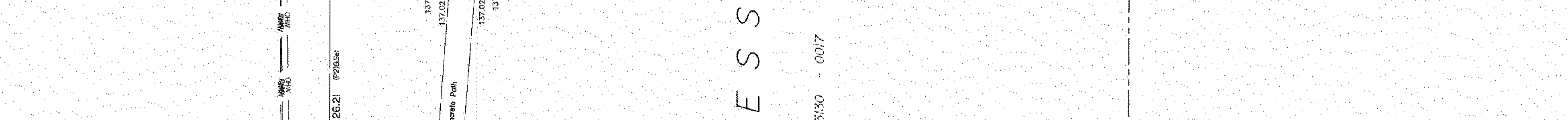
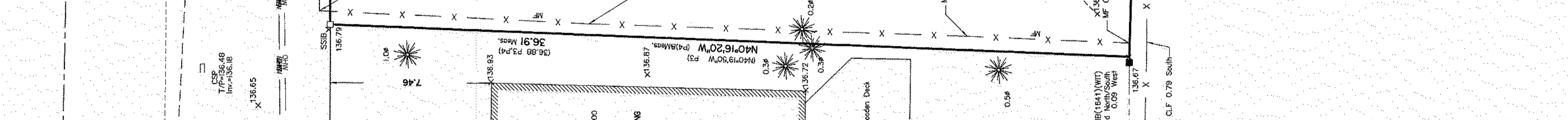
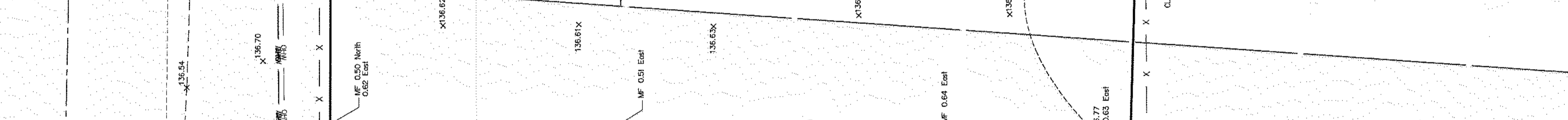
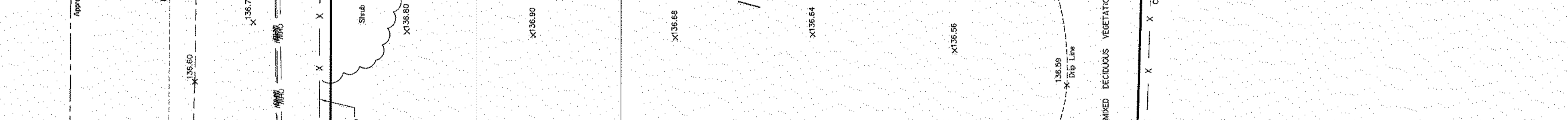
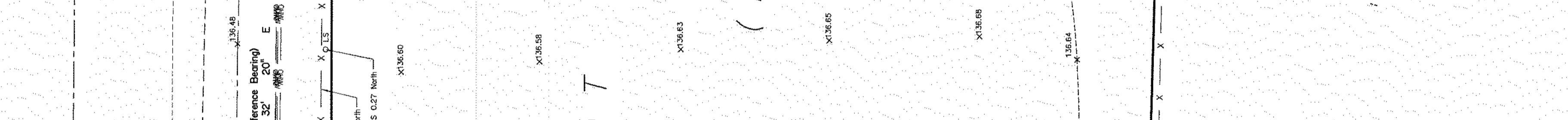
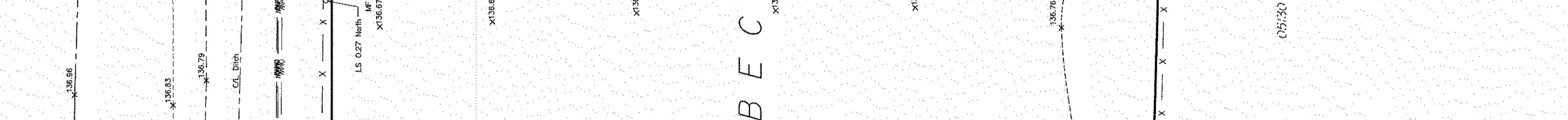
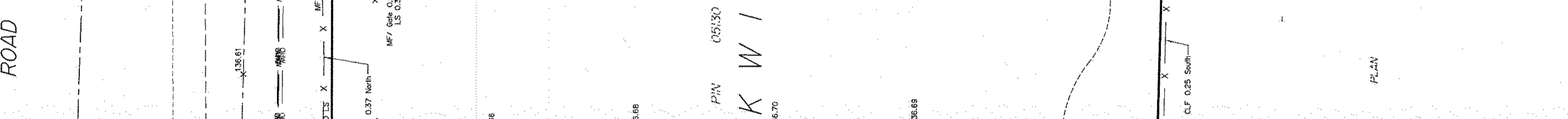
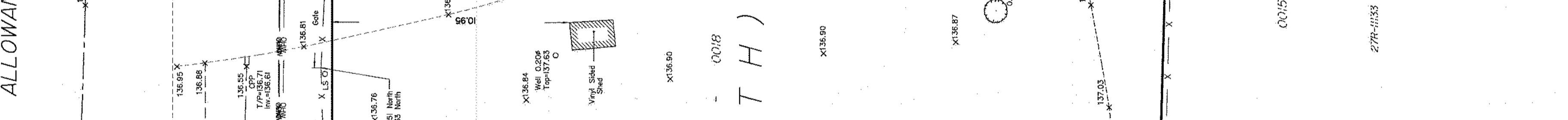
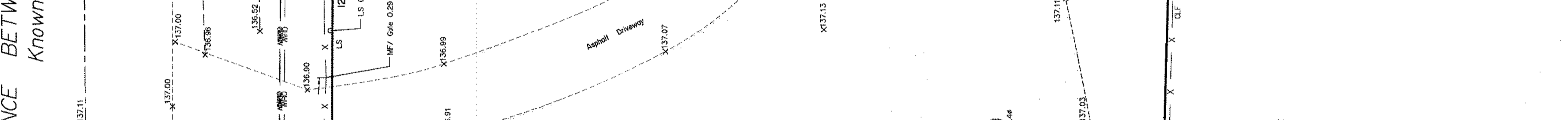
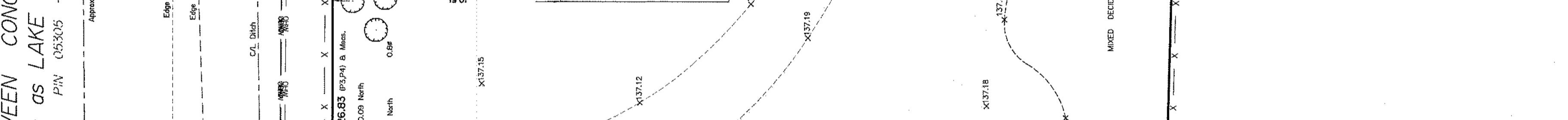
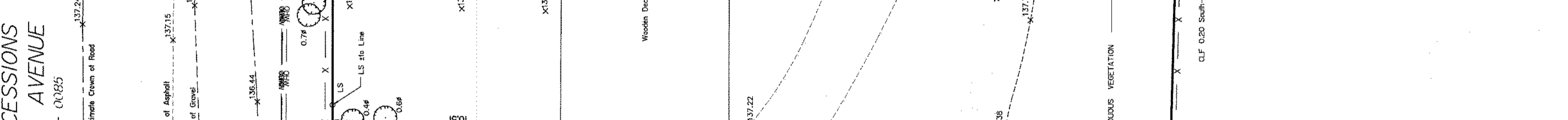
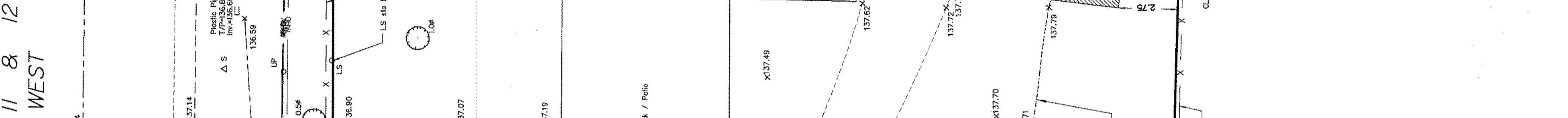
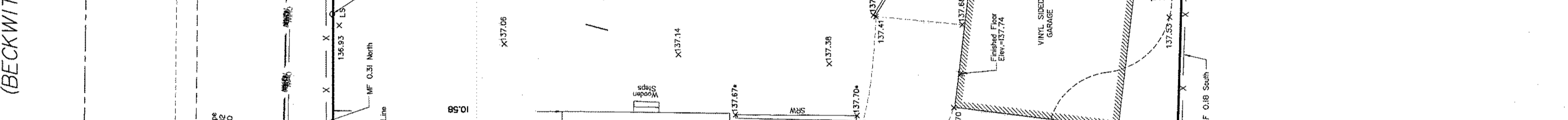
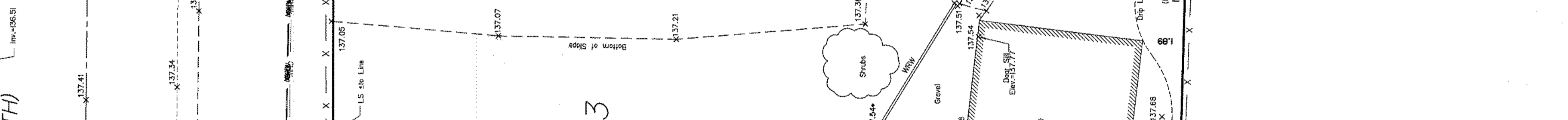
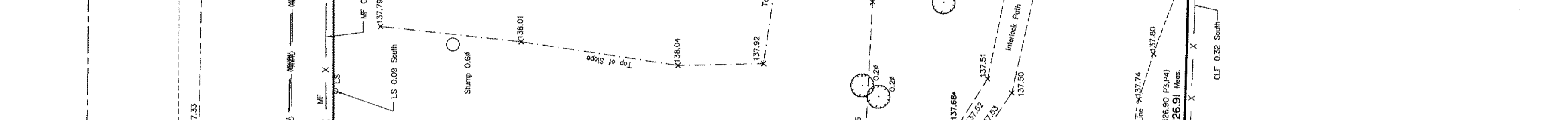
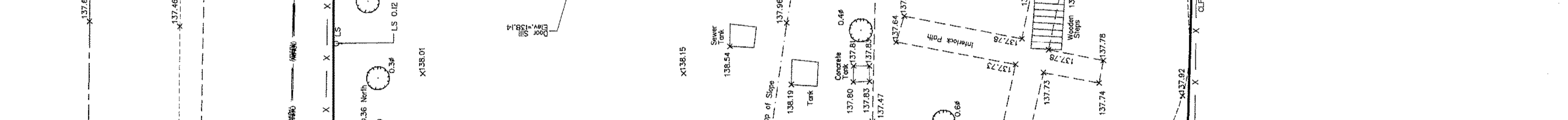
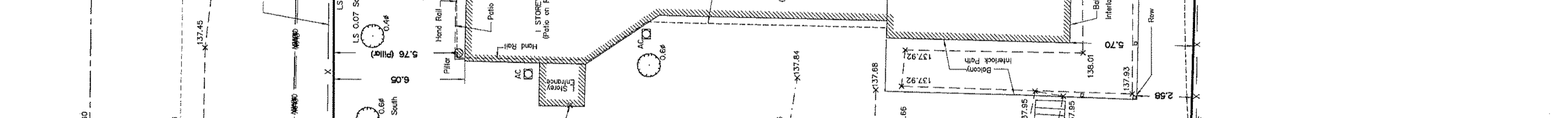
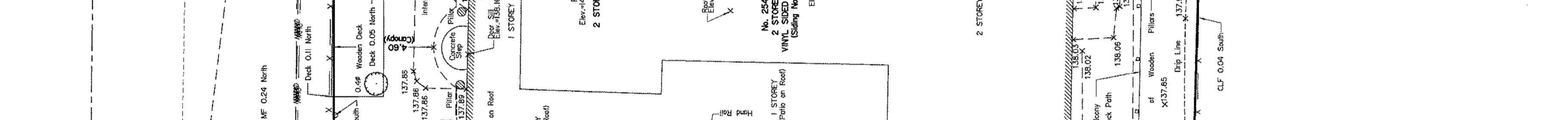
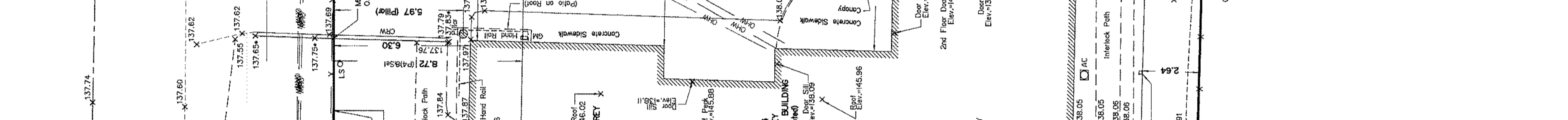
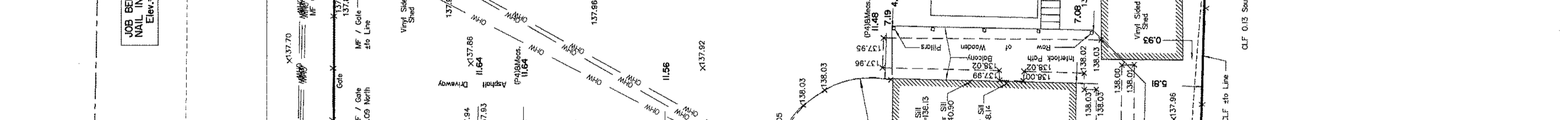
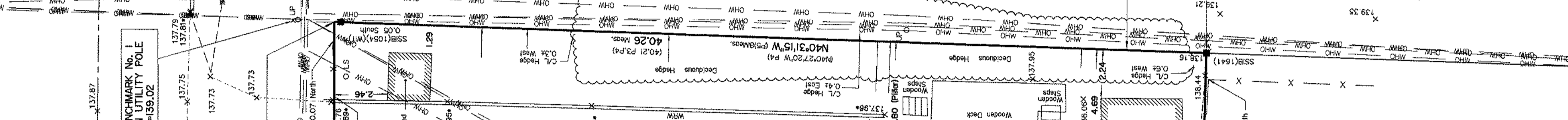
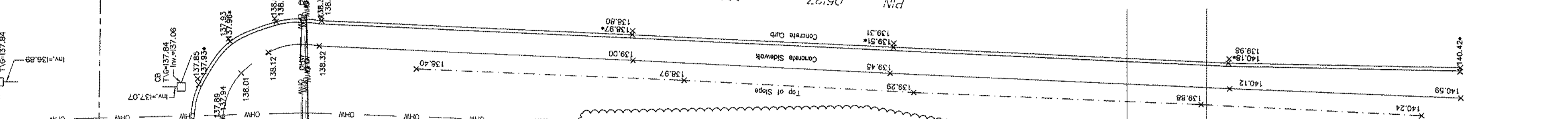
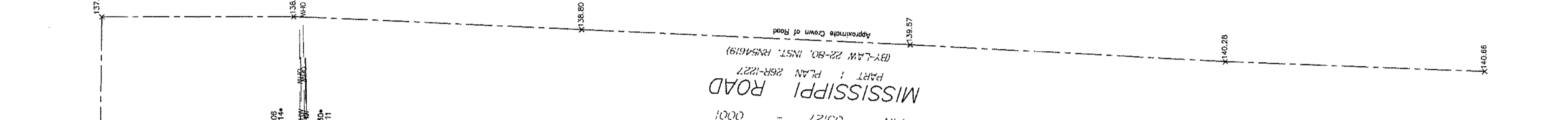
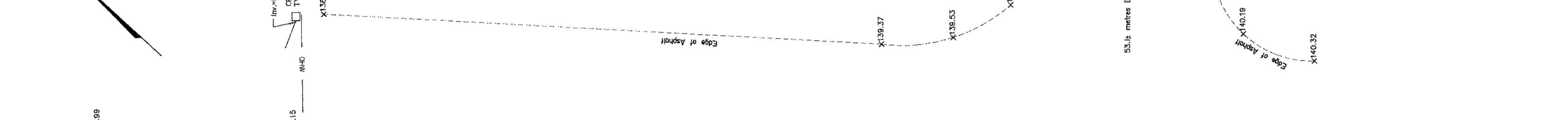
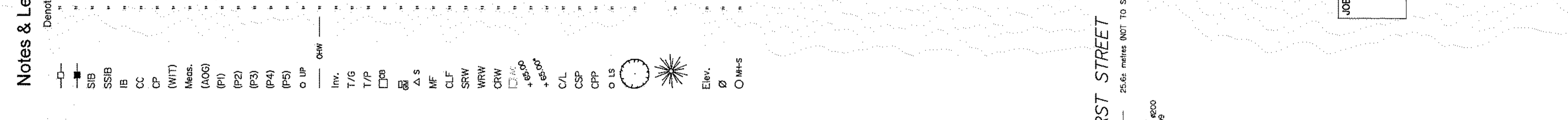
**BEARINGS AND DISTANCES**  
 Bearings are given in feet from the North or South of East or West  
 The North or South of East or West is the bearing of the line  
 The East or West is the bearing of the line  
 The North or South of East or West is the bearing of the line  
 The East or West is the bearing of the line  
 For bearing comparisons, a station of 1983 was used in the bearings on plan P5.  
 0.2325 magnetic declination was applied to bearings on plan P5.

**ELEVATION NOTES**  
 1. Elevations shown are in meters above mean sea level (AMSL).  
 2. Elevation points are shown by a circle with a cross in the center.  
 3. A field location of unknown point by the person fully authorized to be the responsible person is to be indicated on the plan with a circle containing an 'X'.  
 4. A field location of unknown point by the person fully authorized to be the responsible person is to be indicated on the plan with a circle containing an 'X'.

**UTILITY NOTES**  
 1. The location of underground utilities is shown by a dashed line with the appropriate symbol.  
 2. The location of overhead utilities is shown by a solid line with the appropriate symbol.  
 3. A field location of unknown point by the person fully authorized to be the responsible person is to be indicated on the plan with a circle containing an 'X'.  
 4. A field location of unknown point by the person fully authorized to be the responsible person is to be indicated on the plan with a circle containing an 'X'.

**ASSOCIATION OF ONTARIO LAND SURVEYORS**  
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 416-886-5503  
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 416-886-5520

**NOTES**  
 1. The plan shall be read in conjunction with the other plans and reports referred to in the plan.  
 2. The plan shall be read in conjunction with the other plans and reports referred to in the plan.  
 3. The plan shall be read in conjunction with the other plans and reports referred to in the plan.  
 4. The plan shall be read in conjunction with the other plans and reports referred to in the plan.



**APPENDIX C**  
**WATERMAIN CALCULATIONS**

# McINTOSH PERRY

## CO-22-1448 - 254 Lake Avenue West - Water Demands

Project:	254 Lake Avenue West
Project No.:	CO-22-1448
Designed By:	FV
Checked By:	AG
Date:	February 8, 2023
Site Area:	0.49 gross ha

<b>Residential</b>	<b>NUMBER OF UNITS</b>	<b>UNIT RATE</b>	
Single Family	<b>4 homes</b>	3.4	persons/unit
Average Apartment	<b>16 units</b>	1.8	persons/unit
<b>Total Population</b>	<b>43 persons</b>		

### AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	
Residential	280	L/c/d	
Industrial - Light	35,000	L/gross ha/d	
Industrial - Heavy	55,000	L/gross ha/d	
Shopping Centres	2,500	L/(1000m <sup>2</sup> /d	
Hospital	900	L/(bed/day)	
Schools	70	L/(Student/d)	
Trailer Park with no Hook-Ups	340	L/(space/d)	
Trailer Park with Hook-Ups	800	L/(space/d)	
Campgrounds	225	L/(campsite/d)	
Mobile Home Parks	1,000	L/(Space/d)	
Motels	150	L/(bed-space/d)	
Hotels	225	L/(bed-space/d)	
Tourist Commercial	28,000	L/gross ha/d	
Other Commercial	28,000	L/gross ha/d	
<b>AVERAGE DAILY DEMAND</b>	<b>Residential</b>	<b>0.14</b>	<b>L/s</b>
	<b>Commerical/Industrial/Institutional</b>	<b>0.00</b>	<b>L/s</b>



# McINTOSH PERRY

## MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	9.5	x avg. day	L/c/d
Industrial	1.5	x avg. day	L/gross ha/d
Commercial	1.5	x avg. day	L/gross ha/d
Institutional	1.5	x avg. day	L/gross ha/d
MAXIMUM DAILY DEMAND	Residential	1.32	L/s
	Commerical/Industrial/ Institutional	0.00	L/s

## MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	14.3	x avg. day	L/c/d
Industrial	1.8	x max. day	L/gross ha/d
Commercial	1.8	x max. day	L/gross ha/d
Institutional	1.8	x max. day	L/gross ha/d
MAXIMUM HOUR DEMAND	Residential	1.99	L/s
	Commerical/Industrial/ Institutional	0.00	L/s

WATER DEMAND DESIGN FLOWS PER UNIT COUNT  
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	0.14	L/s
MAXIMUM DAILY DEMAND	1.32	L/s
MAXIMUM HOUR DEMAND	1.99	L/s

# McINTOSH PERRY

## CO-22-1448 - 254 Lake Avenue West - Detached Lot 1 - Fire Underwriters Survey

Project: 254 Lake Avenue West - Detached Lot 1  
 Project No.: CO-22-1448  
 Designed By: FV  
 Checked By: AG  
 Date: February 8, 2023

### From the Fire Underwriters Survey (1999)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:  
 Updated per City of Ottawa Technical Bulletin ISTB-2018-02

#### A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where: F = Required fire flow in liters per minute  
 C = Coefficient related to the type of construction.  
 A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type **Wood Frame**

C 1.5 A 270.8 m<sup>2</sup>

Calculated Fire Flow 5,430.5 L/min  
 5,000.0 L/min

#### B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From note 2, Page 18 of the Fire Underwriter Survey:  
 Limited Combustible -15%

Fire Flow 4,250.0 L/min

#### C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Non-Sprinklered 0%

Reduction 0.0 L/min

#### D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	Length-Height Factor	
Exposure 1	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 2	0 to 3	Wood frame	12.5	2	25.0	22%
Exposure 3	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 4	3.1 to 10	Wood frame	14.49	2	29.0	17%
% Increase*						39%

Increase\* 1,657.5 L/min

#### E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow 5,907.5 L/min  
 Fire Flow Required\*\* 6,000.0 L/min

\*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%

\*\*In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min

# McINTOSH PERRY

## CO-22-1448 - 254 Lake Avenue West - Quadplex Lot 2 - Fire Underwriters Survey

Project: 254 Lake Avenue West - Quadplex Lot 2  
 Project No.: CO-22-1448  
 Designed By: FV  
 Checked By: AG  
 Date: February 8, 2023

### From the Fire Underwriters Survey (1999)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:  
 Updated per City of Ottawa Technical Bulletin ISTB-2018-02

#### A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where: F = Required fire flow in liters per minute  
 C = Coefficient related to the type of construction.  
 A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type **Wood Frame**

C 1.5 A 395.6 m<sup>2</sup>

**Calculated Fire Flow** 6,563.6 L/min  
 7,000.0 L/min

#### B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From note 2, Page 18 of the Fire Underwriter Survey:  
 Limited Combustible -15%

**Fire Flow** 5,950.0 L/min

#### C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Non-Sprinklered 0%

**Reduction** 0.0 L/min

#### D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	Length-Height Factor	
Exposure 1	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 2	3.1 to 10	Wood frame	12.5	2	25.0	17%
Exposure 3	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 4	0 to 3	Wood frame	15.5	2	31.0	23%
<b>% Increase*</b>						<b>40%</b>

**Increase\*** 2,380.0 L/min

#### E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

**Fire Flow** 8,330.0 L/min  
**Fire Flow Required\*\*** 8,000.0 L/min

\*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%

\*\*In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min

# McINTOSH PERRY

## CO-22-1448 - 254 Lake Avenue West - Quadplex Lot 3 - Fire Underwriters Survey

Project: 254 Lake Avenue West - Quadplex Lot 3  
 Project No.: CO-22-1448  
 Designed By: FV  
 Checked By: AG  
 Date: February 8, 2023

### From the Fire Underwriters Survey (1999)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:  
 Updated per City of Ottawa Technical Bulletin ISTB-2018-02

#### A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where: F = Required fire flow in liters per minute  
 C = Coefficient related to the type of construction.  
 A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type **Wood Frame**

C 1.5 A 395.6 m<sup>2</sup>

Calculated Fire Flow 6,563.6 L/min  
 7,000.0 L/min

#### B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From note 2, Page 18 of the Fire Underwriter Survey:  
 Limited Combustible -15%

Fire Flow 5,950.0 L/min

#### C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Non-Sprinklered 0%

Reduction 0.0 L/min

#### D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	Length-Height Factor	
Exposure 1	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 2	0 to 3	Wood frame	12.5	2	25.0	22%
Exposure 3	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 4	3.1 to 10	Wood frame	12.5	2	25.0	17%
% Increase*						39%

Increase\* 2,320.5 L/min

#### E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow 8,270.5 L/min  
 Fire Flow Required\*\* 8,000.0 L/min

\*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%

\*\*In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min

# McINTOSH PERRY

## CO-22-1448 - 254 Lake Avenue West - Quadplex Lot 4 - Fire Underwriters Survey

Project: 254 Lake Avenue West - Quadplex Lot 4  
 Project No.: CO-22-1448  
 Designed By: FV  
 Checked By: AG  
 Date: February 8, 2023

### From the Fire Underwriters Survey (1999)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:  
 Updated per City of Ottawa Technical Bulletin ISTB-2018-02

#### A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where: F = Required fire flow in liters per minute  
 C = Coefficient related to the type of construction.  
 A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type **Wood Frame**

C 1.5 A 395.6 m<sup>2</sup>

Calculated Fire Flow 6,563.6 L/min  
 7,000.0 L/min

#### B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From note 2, Page 18 of the Fire Underwriter Survey:  
 Limited Combustible -15%

Fire Flow 5,950.0 L/min

#### C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Non-Sprinklered 0%

Reduction 0.0 L/min

#### D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	Length-Height Factor	
Exposure 1	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 2	3.1 to 10	Wood frame	12.5	2	25.0	17%
Exposure 3	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 4	0 to 3	Wood frame	12.5	2	25.0	22%
% Increase*						39%

Increase\* 2,320.5 L/min

#### E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow 8,270.5 L/min  
 Fire Flow Required\*\* 8,000.0 L/min

\*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%

\*\*In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min

# McINTOSH PERRY

## CO-22-1448 - 254 Lake Avenue West - Quadplex Lot 5 - Fire Underwriters Survey

Project: 254 Lake Avenue West - Quadplex Lot 5  
 Project No.: CO-22-1448  
 Designed By: FV  
 Checked By: AG  
 Date: February 8, 2023

### From the Fire Underwriters Survey (1999)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:  
 Updated per City of Ottawa Technical Bulletin ISTB-2018-02

#### A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where: F = Required fire flow in liters per minute  
 C = Coefficient related to the type of construction.  
 A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type **Wood Frame**

C 1.5 A 395.6 m<sup>2</sup>

Calculated Fire Flow 6,563.6 L/min  
 7,000.0 L/min

#### B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From note 2, Page 18 of the Fire Underwriter Survey:  
 Limited Combustible -15%

Fire Flow 5,950.0 L/min

#### C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Non-Sprinklered 0%

Reduction 0.0 L/min

#### D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	Length-Height Factor	
Exposure 1	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 2	3.1 to 10	Wood frame	17.5	2	35.0	18%
Exposure 3	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 4	3.1 to 10	Wood frame	12.5	2	25.0	17%
% Increase*						35%

Increase\* 2,082.5 L/min

#### E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow 8,032.5 L/min  
 Fire Flow Required\*\* 8,000.0 L/min

\*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%

\*\*In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min

# McINTOSH PERRY

## CO-22-1448 - 254 Lake Avenue West - Semi-Detached Lot 6/7 - Fire Underwriters Survey

Project: 254 Lake Avenue West - Semi-Detached Lot 6/7  
 Project No.: CO-22-1448  
 Designed By: FV  
 Checked By: AG  
 Date: February 8, 2023

### From the Fire Underwriters Survey (1999)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:  
 Updated per City of Ottawa Technical Bulletin ISTB-2018-02

#### A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where: F = Required fire flow in liters per minute  
 C = Coefficient related to the type of construction.  
 A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type **Wood Frame**

C 1.5 A 282.5 m<sup>2</sup>

Calculated Fire Flow 5,546.6 L/min  
 6,000.0 L/min

#### B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From note 2, Page 18 of the Fire Underwriter Survey:  
 Limited Combustible -15%

Fire Flow 5,100.0 L/min

#### C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Non-Sprinklered 0%

Reduction 0.0 L/min

#### D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	Length-Height Factor	
Exposure 1	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 2	0 to 3	Wood frame	15.5	2	31.0	23%
Exposure 3	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 4	0 to 3	Wood frame	15.5	2	31.0	23%
% Increase*						46%

Increase\* 2,346.0 L/min

#### E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow 7,446.0 L/min  
 Fire Flow Required\*\* 7,000.0 L/min

\*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%

\*\*In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min

# McINTOSH PERRY

## CO-22-1448 - 254 Lake Avenue West - Single Detached Lot 8 - Fire Underwriters Survey

Project: 254 Lake Avenue West - Single Detached Lot 8  
 Project No.: CO-22-1448  
 Designed By: FV  
 Checked By: AG  
 Date: February 8, 2023

### From the Fire Underwriters Survey (1999)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:  
 Updated per City of Ottawa Technical Bulletin ISTB-2018-02

#### A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where: F = Required fire flow in liters per minute  
 C = Coefficient related to the type of construction.  
 A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type **Wood Frame**

C 1.5 A 270.8 m<sup>2</sup>

Calculated Fire Flow 5,430.5 L/min  
 5,000.0 L/min

#### B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From note 2, Page 18 of the Fire Underwriter Survey:  
 Limited Combustible -15%

Fire Flow 4,250.0 L/min

#### C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Non-Sprinklered 0%

Reduction 0.0 L/min

#### D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	Length-Height Factor	
Exposure 1	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 2	>45	Wood frame	N/A	N/A	-	0%
Exposure 3	>45	Non-Combustible	N/A	N/A	-	0%
Exposure 4	0 to 3	Wood frame	17.5	2	35.0	23%
% Increase*						23%

Increase\* 977.5 L/min

#### E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow 5,227.5 L/min  
 Fire Flow Required\*\* 5,000.0 L/min

\*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%

\*\*In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min



## Alison Gosling

---

**From:** Guy Bourgon <gbourgon@carletonplace.ca>  
**Sent:** November 18, 2021 4:02 PM  
**To:** Alison Gosling  
**Cc:** Niki Dwyer  
**Subject:** FW: 22-1488 - 254 Lake Avenue

**Follow Up Flag:** Follow up  
**Flag Status:** Completed

Hi Alison,

Please see below requested information relating to 254 Lake Avenue West.

Regards,

Guy

---

**From:** Razafimaharo, Christene <Christene.Razafimaharo@stantec.com>  
**Sent:** November 18, 2021 3:59 PM  
**To:** Guy Bourgon <gbourgon@carletonplace.ca>  
**Cc:** Alemany, Kevin <kevin.alemany@stantec.com>; Niki Dwyer <ndwyer@carletonplace.ca>  
**Subject:** RE: 22-1488 - 254 Lake Avenue

Good afternoon Guy,

We have reviewed the model & pressures as requested.

The pressures at 254 Lake Ave W range from 63 psi to 66 psi. The static hydraulic grade lines (HGLs) were obtained from the Town's model for peak hour demand (PHD) conditions (minimum HGL) and average day demand (ADD) conditions (maximum HGL). The ground elevation at the site is approximately 137.8 m, based on the Town's LIDAR digital elevation model.

Property:		254 Lake Ave			
Demand Condition	Static HGL @ nearest Model Junction (m)	Ground Elevation at site (m)	Pressure (m)	Pressure (kPa)	Pressure (psi)
PHD (Min HGL)	182.4	137.8	44.6	437	63
ADD (Max HGL)	184.5		46.7	458	66
HGL extracted from model on:		11/18/2021			
Ground obtained from Town LIDAR on:		11/18/2021			

Please let us know if you have any questions,

Best regards,

Christène

**Christène Razafimaharo** M.Sc., EIT  
Water Resources Engineering Intern

Mobile: 343 996-7086  
Christene.Razafimaharo@stantec.com

---

**From:** Alison Gosling <[a.gosling@mcintoshperry.com](mailto:a.gosling@mcintoshperry.com)>  
**Sent:** November 17, 2021 1:48 PM  
**To:** Niki Dwyer <[ndwyer@carletonplace.ca](mailto:ndwyer@carletonplace.ca)>  
**Subject:** 22-1488 - 254 Lake Avenue

**CAUTION: This email originated from an External Sender. Please do not click links or open attachments unless you verify the source.**

Good afternoon,

Touching base with you regarding the development at 254 Lake Avenue.

One of our inquiries is in relation to the water pressure near the site. Can this be provided via a model or provided by a report?

Please let me know if you have any questions.

Thank you,

**Alison Gosling, P.Eng.**

**Project Engineer, Land Development**  
115 Walgreen Road, Carp, ON, K0A 1L0

T. 613.714.4629

[a.gosling@mcintoshperry.com](mailto:a.gosling@mcintoshperry.com) | [www.mcintoshperry.com](http://www.mcintoshperry.com)

**McINTOSH PERRY**

*Turning Possibilities Into Reality*

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Confidentiality Notice – If this email wasn't intended for you, please return or delete it. Click [here](#) to read all of the legal language around this concept.



Platinum  
member



**APPENDIX D**  
**SANITARY CALCULATIONS**

# McINTOSH PERRY

## CO-22-1448 - 254 Lake Avenue West - Sanitary Demands

Project:	254 Lake Avenue West		
Project No.:	CO-22-1448		
Designed By:	FV		
Checked By:	AG		
Date:	Feb-23		

Site Area	<b>0.49</b>	<b>Gross ha</b>	
Single Family	<b>4</b>	<b>3.40</b>	Persons per unit
Average Apartment	<b>16</b>	<b>1.80</b>	Persons per unit
Total Population	<b>43</b>	<b>Persons</b>	

### DESIGN PARAMETERS

Institutional/Commercial Peaking Factor	1.5	
Residential Peaking Factor	3.66	* Using Harmon Formula = $1 + (14 / (4 + P^{0.5})) * 0.8$ where P = population in thousands, Harmon's Correction Factor = 0.8
Mannings coefficient (n)	0.013	
Demand (per capita)	280	L/day
Infiltration allowance	0.33	L/s/Ha

### EXTRANEOUS FLOW ALLOWANCES

Infiltration / Inflow	Flow (L/s)
Dry	0.02
Wet	0.14
<b>Total</b>	<b>0.16</b>

### AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	POPULATION / AREA	Flow (L/s)
Residential	280	L/c/d	43	0.14
Industrial - Light**	35,000	L/gross ha/d		0
Industrial - Heavy**	55,000	L/gross ha/d		0
Commercial / Amenity	2,800	L/(1000m <sup>2</sup> /d )		0.00
Hospital	900	L/(bed/day)		0
Schools	70	L/(Student/d)		0
Trailer Parks no Hook-Ups	340	L/(space/d)		0
Trailer Park with Hook-Ups	800	L/(space/d)		0
Campgrounds	225	L/(campsite/d)		0
Mobile Home Parks	1,000	L/(Space/d)		0
Motels	150	L/(bed-space/d)		0
Hotels	225	L/(bed-space/d)		0
Office	75	L/7.0m <sup>2</sup> /d		0
Tourist Commercial	28,000	L/gross ha/d		0
Other Commercial	28,000	L/gross ha/d		0

# McINTOSH PERRY

AVERAGE RESIDENTIAL FLOW	0.14	L/s
PEAK RESIDENTIAL FLOW	0.51	L/s
AVERAGE ICI FLOW	0.00	L/s
PEAK INSTITUTIONAL/COMMERCIAL FLOW	0.00	L/s
PEAK INDUSTRIAL FLOW	0.00	L/s
TOTAL PEAK ICI FLOW	0.00	L/s

## TOTAL SANITARY DEMAND

TOTAL ESTIMATED AVERAGE DRY WEATHER FLOW	0.16	L/s
TOTAL ESTIMATED PEAK DRY WEATHER FLOW	0.53	L/s
TOTAL ESTIMATED PEAK WET WEATHER FLOW	0.67	L/s

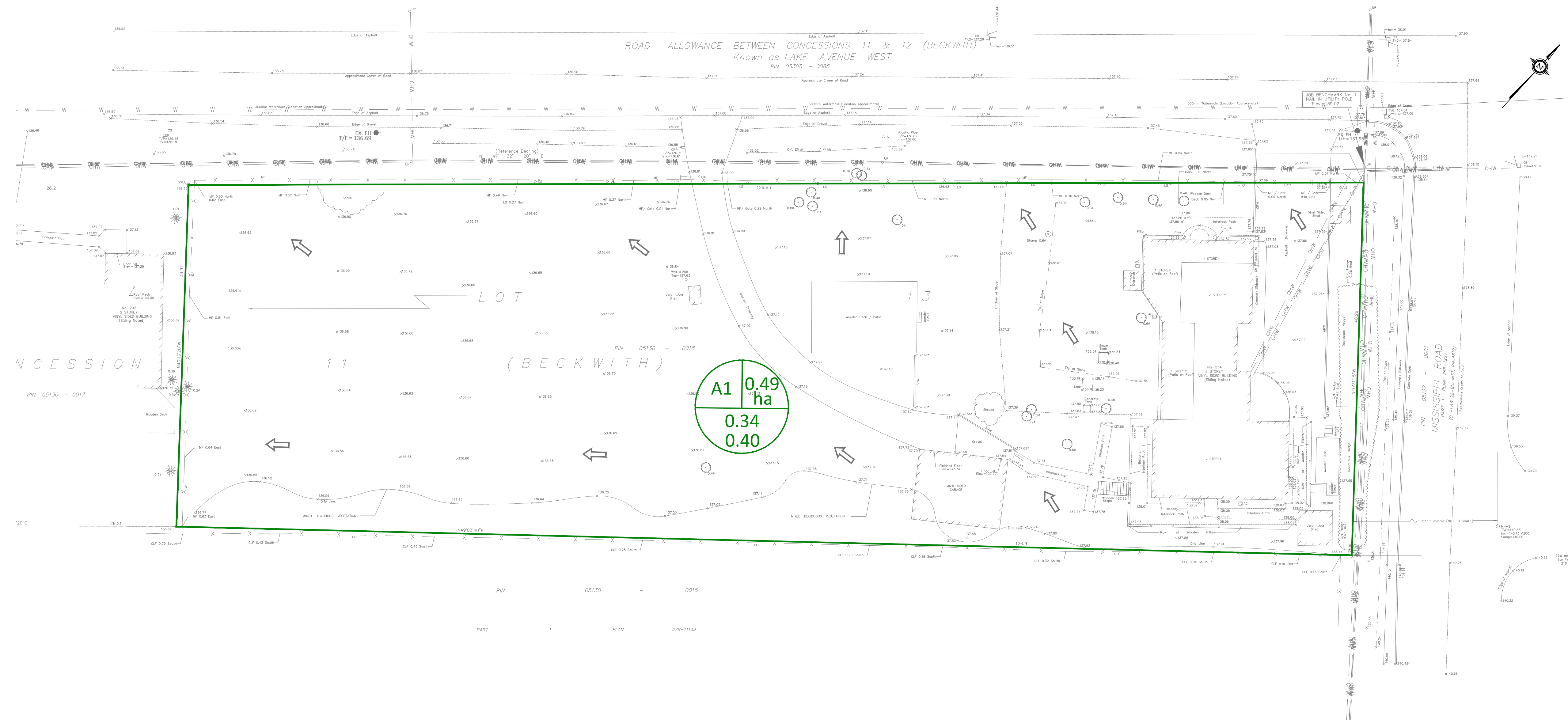
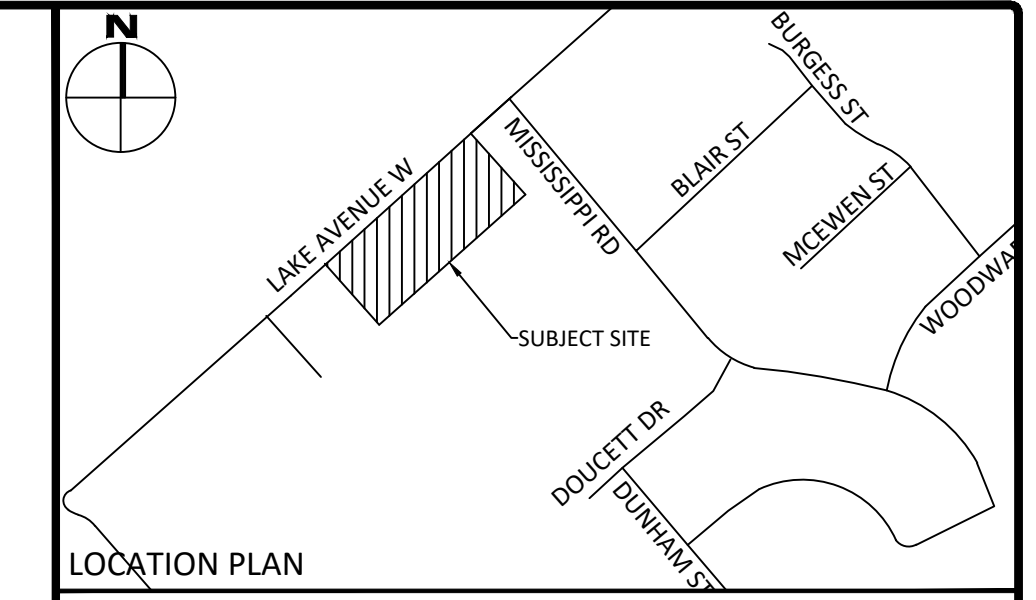
**SANITARY SEWER DESIGN SHEET**

PROJECT: CCO-22-1448  
 LOCATION: 254 Lake Avenue West  
 CLIENT: Escape Homes



LOCATION				RESIDENTIAL								ICI AREAS						INFILTRATION ALLOWANCE			FLOW		SEWER DATA											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31				
STREET	AREA ID	FROM MH	TO MH	UNIT TYPES				AREA (ha)	POPULATION		PEAK FACTOR	PEAK FLOW (L/s)	AREA (ha)						PEAK FLOW (L/s)	AREA (ha)		FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	DIA (mm)	SLOPE (%)	VELOCITY (full) (m/s)	AVAILABLE CAPACITY					
				SF	SD	TH	APT		IND	CUM			INSTITUTIONAL	COMMERCIAL	INDUSTRIAL	IND	CUM	IND		CUM	IND								CUM	IND	CUM	L/s	(%)	L/s
Lake Avenue West		MH1	MH2	1			8	0.25	17.8	17.8	3.71	0.21							0.00	0.00	0.00	0.00	0.25	0.25	0.08	0.29	19.36	52.20	200	0.32	0.597	19.06	98.48	
Lake Avenue West		MH2	MH3	3			8	0.24	24.6	42.4	3.66	0.50							0.00	0.00	0.00	0.00	0.24	0.49	0.16	0.66	19.36	56.59	200	0.32	0.597	18.69	96.56	
		MH3	MH4	0			0	0.00	0.0	42.4	3.66	0.50							0.00	0.00	0.00	0.00	0.00	0.49	0.16	0.66	19.36	6.25	200	0.32	0.597	18.69	96.56	
		MH4	Pump STN					0.00	0.0	42.4	3.66	0.50							0.00	0.00	0.00	0.00	0.00	0.49	0.16	0.66	19.66	32.97	200	0.33	0.606	18.99	96.62	
Design Parameters:				Notes:								Designed: FV						No.			Revision						Date							
Residential				ICI Areas								Checked: AM						1.			Issued for Review						2023-02-08							
SF	3.4	p/p/u																																
TH/SD	2.7	p/p/u		INST	28,000	L/Ha/day						1.5																						
APT	1.8	p/p/u		COM	28,000	L/Ha/day						1.5																						
Other	60	p/p/Ha		IND	35,000	L/Ha/day						MOE Chart																						
				1. Mannings coefficient (n) = 0.013								Project No.: CCO-22-1448															Sheet No:							
				2. Demand (per capita): 280 L/day																	1 of 1													
				3. Infiltration allowance: 0.33 L/s/Ha																														
				4. Residential Peaking Factor: Harmon Formula = 1+(14/(4+P^0.5))*0.8 where P = population in thousands																														

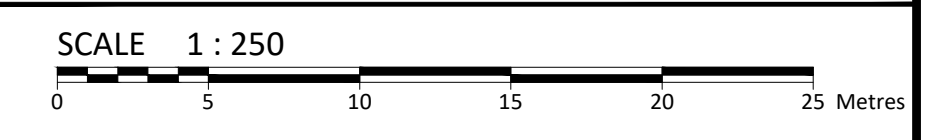
**APPENDIX E**  
**PRE-DEVELOPMENT DRAINAGE PLAN**



**FOR REVIEW ONLY**  
NOT FOR CONSTRUCTION

No.	Revisions	Date
2	REVISED PER COMMENTS	APR. 03, 2024
1	ISSUED FOR REVIEW	FEB. 08, 2023

Check and verify all dimensions before proceeding with the work. Do not scale drawings.



**McINTOSH PERRY**  
115 Walgreen Road, RR3, Carp, ON K0A 1L0  
Tel: 613-836-2184 Fax: 613-836-3742  
www.mcintoshperry.com

Client: **ESCAPE HOMES**  
254 LAKE AVENUE WEST  
CARLETON PLACE, ON K7C 1M4

Project: **254 LAKE AVENUE WEST**

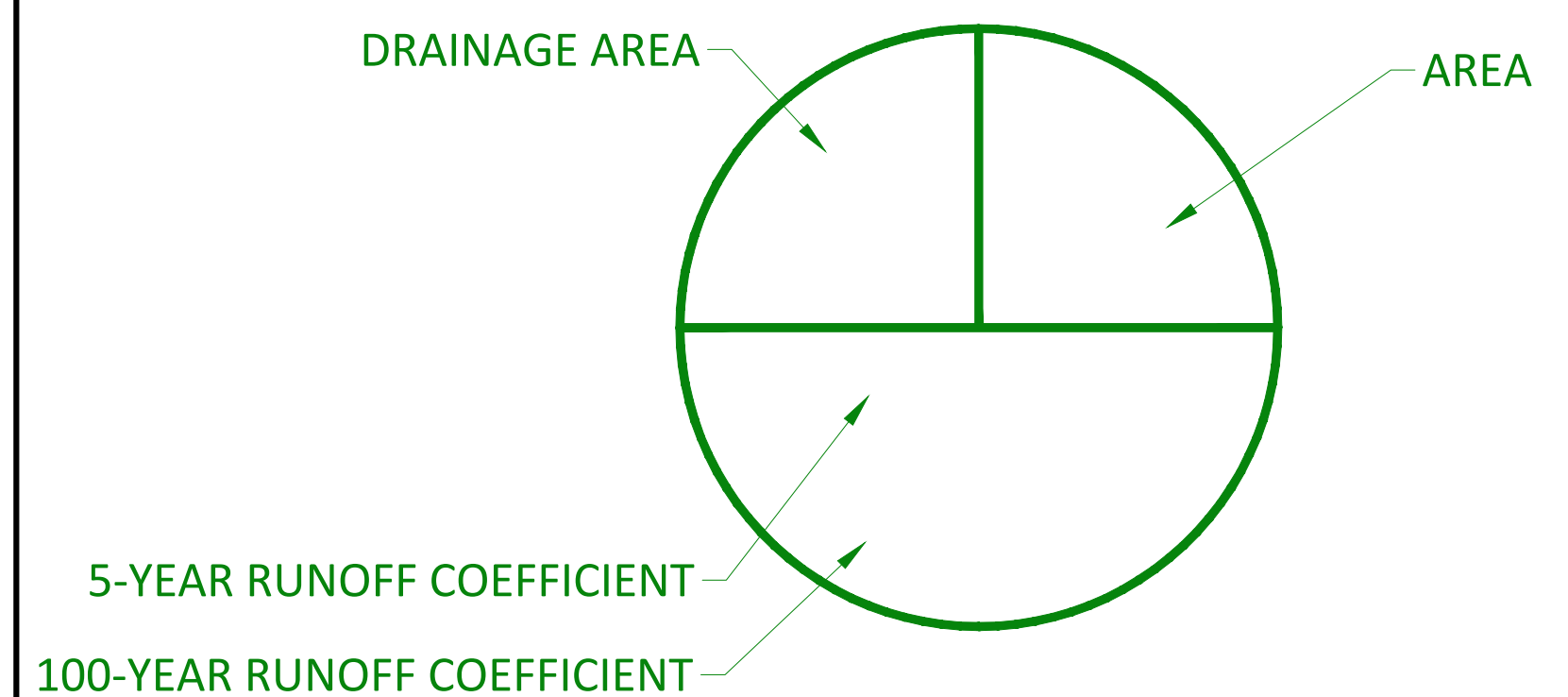
Drawing Title: **PRE-DEVELOPMENT DRAINAGE PLAN**

Scale:	1:250	Project Number:	CO-22-1448
Drawn By:	FV	Checked By:	AM
Designed By:	AG	Drawing Number:	PRE

**GENERAL NOTES**

- THE ORIGINAL TOPOGRAPHY, GROUND ELEVATION AND SURVEY DATA SHOWN ARE SUPPLIED FOR INFORMATION PURPOSES ONLY AND IMPLY NO GUARANTEE OF ACCURACY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL INFORMATION SHOWN.
- THIS PLAN IS NOT A CADASTRAL SURVEY SHOWING LEGAL PROPERTY BOUNDARIES AND EASEMENTS. THE PROPERTY BOUNDARIES SHOWN HEREON HAVE BEEN DERIVED FROM INFORMATION SUPPLIED BY (OR SHOWN ON) ANNIS, OSULLIVAN, VOLLEBEK LTD. DRAWING 17446-21 AND CANNOT BE RELIED UPON TO BE ACCURATE OR COMPLETE. THE PRECISE LOCATION OF THE CURRENT PROPERTY BOUNDARIES AND EASEMENTS CAN ONLY BE DETERMINED BY AN UP-TO-DATE LAND TITLES SEARCH AND A SUBSEQUENT CADASTRAL SURVEY PERFORMED AND CERTIFIED BY AN ONTARIO LAND SURVEYOR.
- THE CONTRACTOR IS TO OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY BEFORE COMMENCING CONSTRUCTION.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT.
- THE CONTRACTOR IS TO DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME ALL RESPONSIBILITY FOR EXISTING UTILITIES WHETHER OR NOT SHOWN ON THESE DRAWINGS. IF THERE IS ANY DISCREPANCY THE CONTRACTOR IS TO NOTIFY THE ENGINEER PROMPTLY.
- RESTORE ALL TRENCHES AND SURFACES OF PUBLIC ROAD ALLOWANCES TO CONDITION EQUAL OR BETTER THAN ORIGINAL CONDITION AND TO THE SATISFACTION OF THE CITY AUTHORITIES.
- EXCAVATE AND DISPOSE OF ALL EXCESS EXCAVATED MATERIAL, SUCH AS ASPHALT, CURBING AND DEBRIS, OFF SITE AS DIRECTED BY THE ENGINEER AND THE CITY.
- TOPSOIL TO BE STRIPPED AND STOCKPILED FOR REHABILITATION. CLEAN FILL TO BE PLACED IN FILL AREAS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.
- ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER UNLESS OTHERWISE SPECIFIED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL AND SAFETY MEASURES DURING THE CONSTRUCTION PERIOD, INCLUDING THE SUPPLY, INSTALLATION, AND REMOVAL OF ALL NECESSARY SIGNAGE, DELINEATORS, MARKERS AND BARRIERS.
- DO NOT ALTER GRADING OF THE SITE WITHOUT PRIOR APPROVAL OF THE ENGINEER/CITY.
- ALL ROADWAY, PARKING LOT, AND GRADING WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH CITY STANDARDS AND SPECIFICATIONS. THE CONTRACTOR IS TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE BUILDING.
- CONTACT THE CITY FOR INSPECTION OF ROUGH GRADING OF PARKING LOTS, ROADWAYS AND LANDSCAPED AREAS PRIOR TO PLACEMENT OF ASPHALT AND TOPSOIL. ALL DEFICIENCIES NOTED SHALL BE RECTIFIED TO THE CITY'S SATISFACTION PRIOR TO PLACEMENT OF ANY ASPHALT, TOPSOIL, SEED & MULCH AND/OR SOD.
- ALL DIMENSIONS AND INVERTS MUST BE VERIFIED PRIOR TO CONSTRUCTION. IF THERE IS ANY DISCREPANCY THE CONTRACTOR IS TO NOTIFY THE ENGINEER PROMPTLY.
- ELECTRICAL, GAS, TELEPHONE AND TELEVISION SERVICE LOCATIONS ARE SUBJECT TO THE INDIVIDUAL AGENCY:
  - ELECTRICAL SERVICE - HYDRO ONE,
  - GAS SERVICE - ENBRIDGE,
  - TELEPHONE SERVICE - BELL CANADA,
  - TELEVISION SERVICE - ROGERS.
- INSTALLATION TO BE IN ACCORDANCE WITH CURRENT CODES AND STANDARDS OF APPROVAL AGENCIES HYDRO ONE, BELL AND THE CITY.
- CONTRACTOR TO ENSURE ALL APPLICABLE OPS SPECIFICATIONS ARE FOLLOWED DURING CONSTRUCTION
- ALL PROPOSED CURB TO BE CONCRETE BARRIER CURB UNLESS OTHERWISE SPECIFIED.

**LEGEND:**



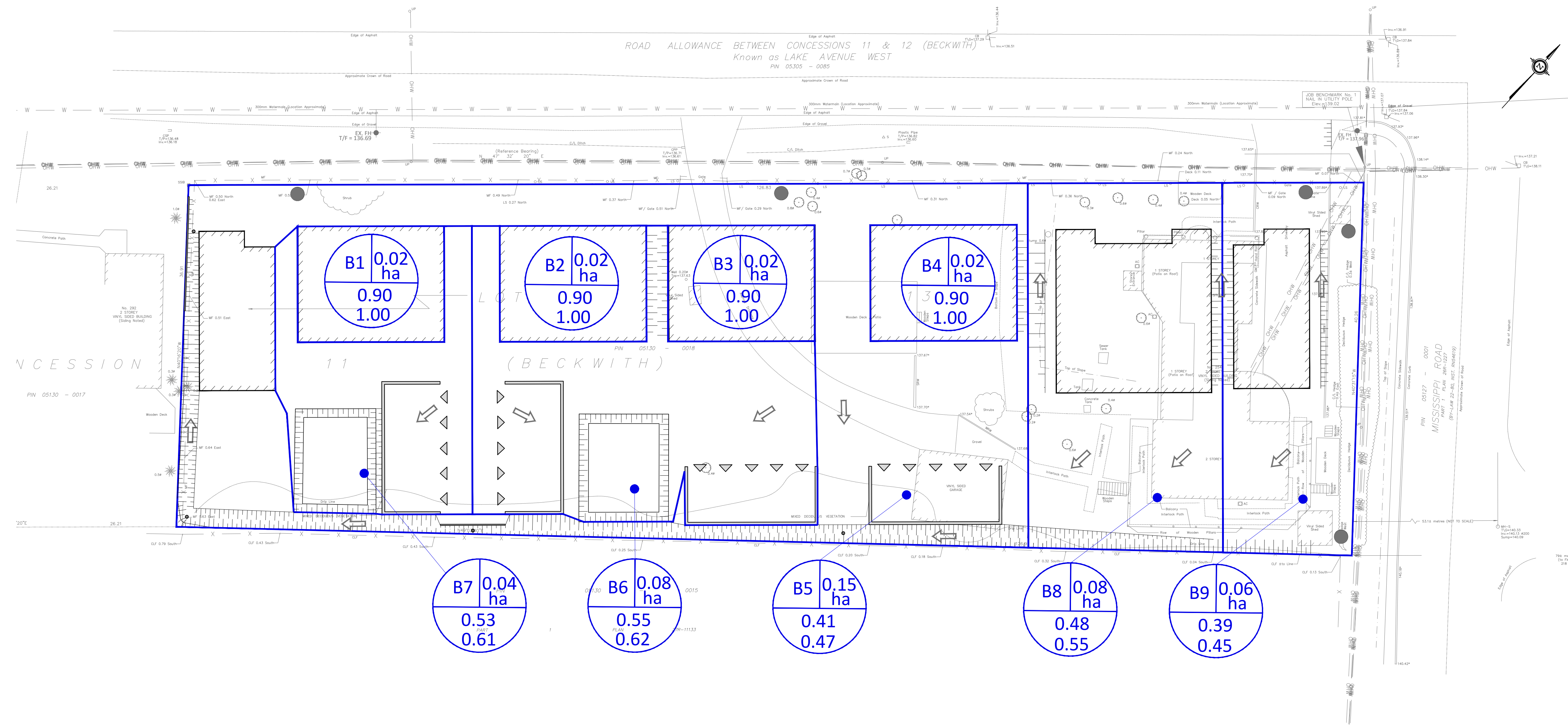
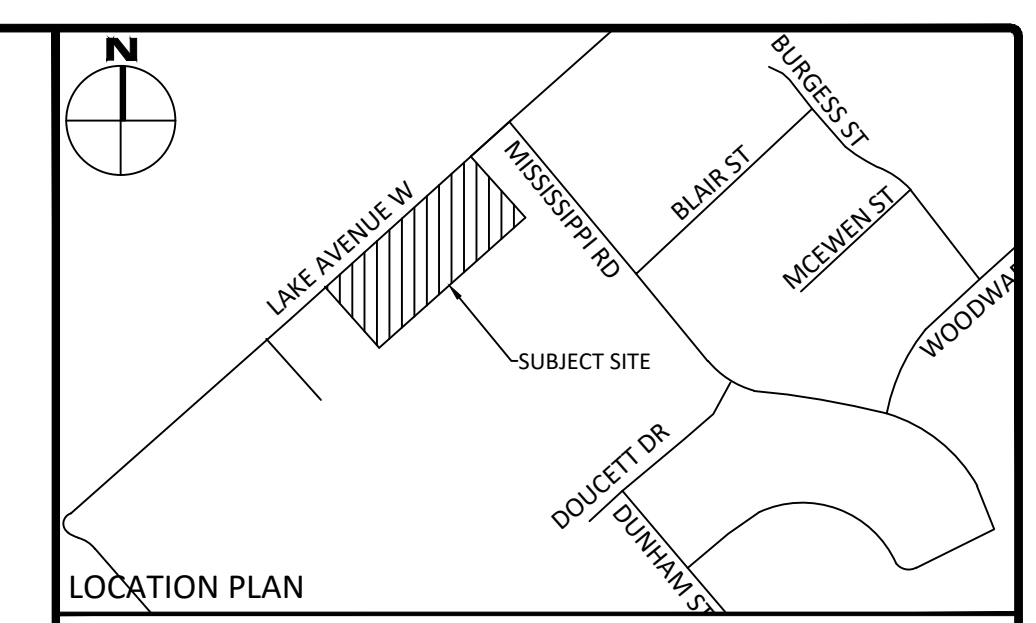
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 USER: JFLOTT  
 PLOT DEVICE: HP DesignJet T1100e

D07-12-XX-XXXX

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**APPENDIX F**  
**POST-DEVELOPMENT DRAINAGE PLAN**

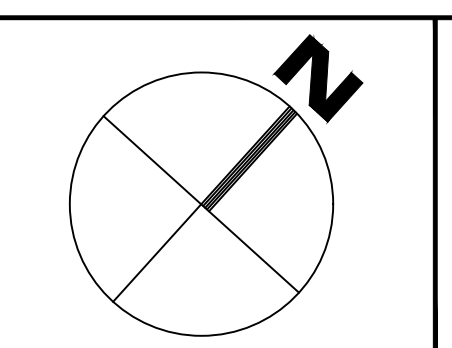


**FOR REVIEW ONLY**  
NOT FOR CONSTRUCTION

No.	Revisions	Date
2	ISSUED FOR REVIEW	APR. 03, 2024
1	ISSUED FOR REVIEW	FEB. 08, 2023

Check and verify all dimensions before proceeding with the work. Do not scale drawings.  
SCALE 1:250  
0 5 10 15 20 25 Metres

**McINTOSH PERRY**  
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Client: **ESCAPE HOMES**  
254 LAKE AVENUE WEST  
CARLETON PLACE, ON K7C 1M4

Project: **254 LAKE AVENUE WEST**

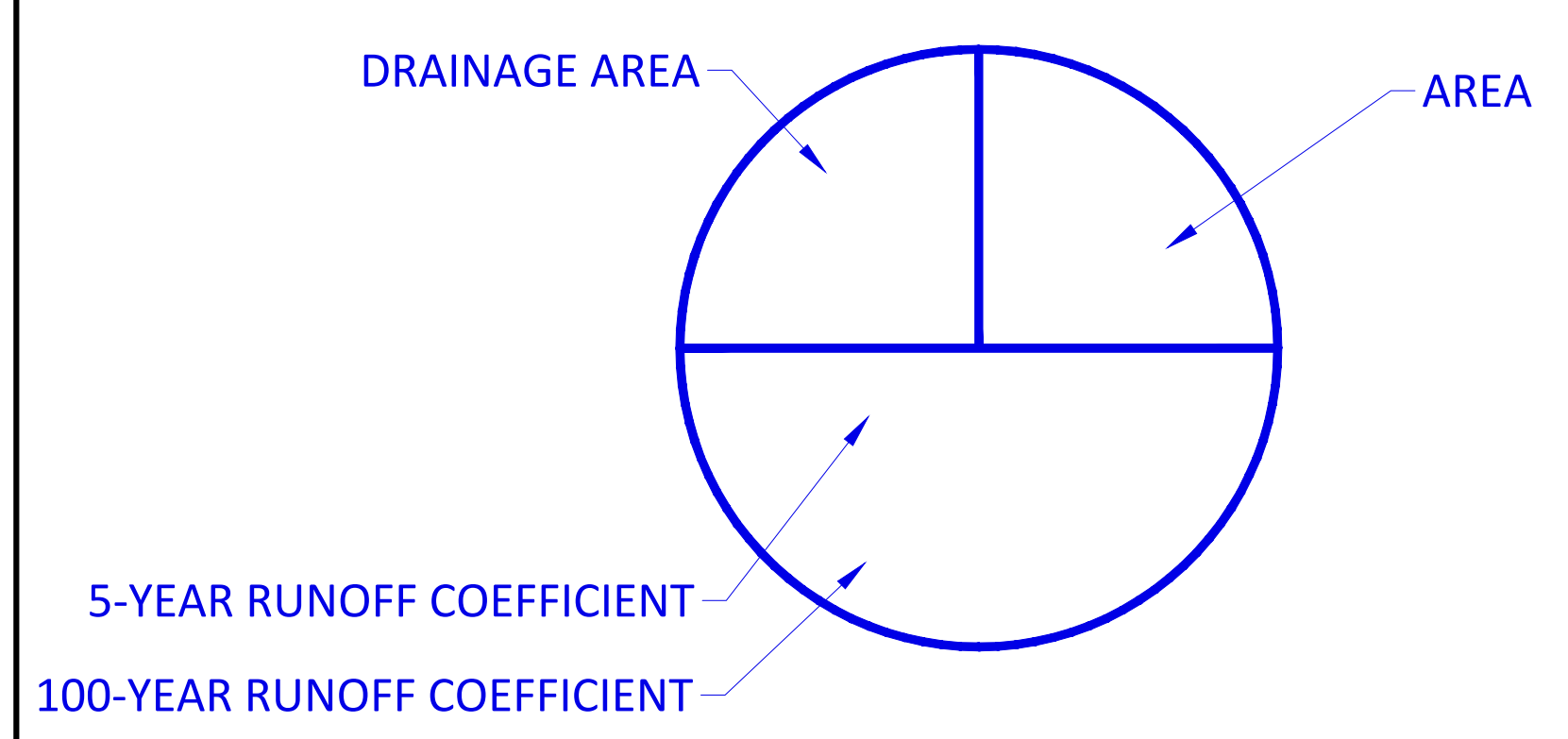
Drawing Title: **POST-DEVELOPMENT DRAINAGE PLAN**

Scale: 1:250	Project Number: CO-22-1448
Drawn By: FV	Checked By: AM
Designed By: AG	Project Number: POST

**GENERAL NOTES**

- THE ORIGINAL TOPOGRAPHY, GROUND ELEVATION AND SURVEY DATA SHOWN ARE SUPPLIED FOR INFORMATION PURPOSES ONLY AND IMPLY NO GUARANTEE OF ACCURACY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL INFORMATION SHOWN.
- THIS PLAN IS NOT A CADASTRAL SURVEY SHOWING LEGAL PROPERTY BOUNDARIES AND EASEMENTS. THE PROPERTY BOUNDARIES SHOWN HEREON HAVE BEEN DERIVED FROM INFORMATION SUPPLIED BY (OR SHOWN ON) ANNIS, OSULLIVAN, VOLLEBEK LTD. DRAWING 17446-21 AND CANNOT BE RELIED UPON TO BE ACCURATE OR COMPLETE. THE PRECISE LOCATION OF THE CURRENT PROPERTY BOUNDARIES AND EASEMENTS CAN ONLY BE DETERMINED BY AN UP-TO-DATE LAND TITLES SEARCH AND A SUBSEQUENT CADASTRAL SURVEY PERFORMED AND CERTIFIED BY AN ONTARIO LAND SURVEYOR.
- THE CONTRACTOR IS TO OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY BEFORE COMMENCING CONSTRUCTION.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT.
- THE CONTRACTOR IS TO DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME ALL RESPONSIBILITY FOR EXISTING UTILITIES WHETHER OR NOT SHOWN ON THESE DRAWINGS. IF THERE IS ANY DISCREPANCY THE CONTRACTOR IS TO NOTIFY THE ENGINEER PROMPTLY.
- RESTORE ALL TRENCHES AND SURFACES OF PUBLIC ROAD ALLOWANCES TO CONDITION EQUAL OR BETTER THAN ORIGINAL CONDITION AND TO THE SATISFACTION OF THE CITY AUTHORITIES.
- EXCAVATE AND DISPOSE OF ALL EXCESS EXCAVATED MATERIAL, SUCH AS ASPHALT, CURBING AND DEBRIS, OFF SITE AS DIRECTED BY THE ENGINEER AND THE CITY.
- TOPSOIL TO BE STRIPPED AND STOCKPILED FOR REHABILITATION. CLEAN FILL TO BE PLACED IN FILL AREAS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.
- ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER UNLESS OTHERWISE SPECIFIED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL AND SAFETY MEASURES DURING THE CONSTRUCTION PERIOD, INCLUDING THE SUPPLY, INSTALLATION, AND REMOVAL OF ALL NECESSARY SIGNAGE, DELINEATORS, MARKERS AND BARRIERS.
- DO NOT ALTER GRADING OF THE SITE WITHOUT PRIOR APPROVAL OF THE ENGINEER/CITY.
- ALL ROADWAY, PARKING LOT, AND GRADING WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH CITY STANDARDS AND SPECIFICATIONS. THE CONTRACTOR IS TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE BUILDING.
- CONTACT THE CITY FOR INSPECTION OF ROUGH GRADING OF PARKING LOTS, ROADWAYS AND LANDSCAPED AREAS PRIOR TO PLACEMENT OF ASPHALT AND TOPSOIL. ALL DEFICIENCIES NOTED SHALL BE RECTIFIED TO THE CITY'S SATISFACTION PRIOR TO PLACEMENT OF ANY ASPHALT, TOPSOIL, SEED & MULCH AND/OR SOD.
- ALL DIMENSIONS AND INVERTS MUST BE VERIFIED PRIOR TO CONSTRUCTION. IF THERE IS ANY DISCREPANCY THE CONTRACTOR IS TO NOTIFY THE ENGINEER PROMPTLY.
- ELECTRICAL, GAS, TELEPHONE AND TELEVISION SERVICE LOCATIONS ARE SUBJECT TO THE INDIVIDUAL AGENCY:
  - ELECTRICAL SERVICE - HYDRO ONE,
  - GAS SERVICE - ENBRIDGE,
  - TELEPHONE SERVICE - BELL CANADA,
  - TELEVISION SERVICE - ROGERS.
- INSTALLATION TO BE IN ACCORDANCE WITH CURRENT CODES AND STANDARDS OF APPROVAL AGENCIES HYDRO ONE, BELL AND THE CITY.
- CONTRACTOR TO ENSURE ALL APPLICABLE OPS SPECIFICATIONS ARE FOLLOWED DURING CONSTRUCTION
- ALL PROPOSED CURB TO BE CONCRETE BARRIER CURB UNLESS OTHERWISE SPECIFIED.

**LEGEND:**



FILENAME: U:\Other\01\Project - Proposals\2022\1448\CO-22-1448\ESCAPE\_HOMES\_SPC\_254\_Lake\_Ave\_Carleton\_Place\_11 - Drawing\CO-22-1448\_Presentation.dwg  
 DATE SAVED: Wednesday, April 03, 2024 1:48:54 PM  
 USER: JFALONE  
 LAST PLOTTED: Wednesday, April 03, 2024 1:48:54 PM

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**APPENDIX G**  
**STORMWATER MANAGEMENT CALCULATIONS**

# McINTOSH PERRY

CO-22-1448 - 254 Lake Avenue West

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Tc (min)	Intensity (mm/hr)	
	5-Year	100-Year
20	70.3	120.0
10	104.2	178.6

C-Values	
Impervious	0.90
Gravel	0.60
Pervious	0.20

## Pre-Development Runoff Coefficient

Drainage Area	Impervious Area (m <sup>2</sup> )	Gravel (m <sup>2</sup> )	Pervious Area (m <sup>2</sup> )	Average C (5-year)	Average C (100-year)
A1	972	17	3,904	0.34	0.40

## Pre-Development Runoff Calculations

Drainage Area	Area (ha)	C 5-Year	C 100-Year	Tc (min)	Q (L/s)	
					5-Year	100-Year
A1	0.49	0.34	0.40	10	48.24	97.31
Total	0.49				48.24	97.31

## Post-Development Runoff Coefficient

Drainage Area	Impervious Area (m <sup>2</sup> )	Gravel (m <sup>2</sup> )	Pervious Area (m <sup>2</sup> )	Average C (5-year)	Average C (100-year)	
B1	197.80	0	0	0.90	1.00	Roof 1
B2	197.80	0	0	0.90	1.00	Roof 2
B3	197.80	0	0	0.90	1.00	Roof 3
B4	197.80	0	0	0.90	1.00	Roof 4
B5	429.22	0	1,028	0.41	0.47	Unrestricted
B6	393.18	0	396	0.55	0.62	Surface Restricted
B7	209.48	0	230	0.53	0.61	Surface Restricted
B8	331.66	0	485	0.48	0.55	Unrestricted
B9	156.14	0	427	0.39	0.45	Unrestricted

## Post-Development Runoff Calculations

Drainage Area	Area (ha)	C 5-Year	C 100-Year	Tc (min)	Q (L/s)		
					5-Year	100-Year	
B1	0.02	0.90	1.00	10	5.16	9.82	Restricted - Roof 1
B2	0.02	0.90	1.00	10	5.16	9.82	Restricted - Roof 2
B3	0.02	0.90	1.00	10	5.16	9.82	Restricted - Roof 3
B4	0.02	0.90	1.00	10	5.16	9.82	Restricted - Roof 4
B5	0.15	0.41	0.47	10	17.14	34.06	Unrestricted
B6	0.08	0.55	0.62	10	12.54	24.43	Surface Restricted
B7	0.04	0.53	0.61	10	6.80	13.26	Surface Restricted
B8	0.08	0.48	0.55	10	11.46	22.49	Unrestricted
B9	0.06	0.39	0.45	10	6.55	13.05	Unrestricted
Total	0.49				75.11	146.56	

## Required Restricted Flow

Drainage Area	Area (ha)	C 5-Year	Tc (min)	Q (L/s)	
				5-Year	100-Year
A1	0.49	0.34	10	48.24	97.31

## Post-Development Restricted Runoff Calculations

Drainage Area	Unrestricted Flow (L/S)		Restricted Flow (L/S)		Storage Required (m <sup>3</sup> )		Storage Provided (m <sup>3</sup> )	
	5-year	100-Year	5-Year	100-Year	5-Year	100-Year	5-Year	100-Year
B1	5.16	9.82	0.42	0.72	4.3	8.5	5.2	8.9
B2	5.16	9.82	0.42	0.72	4.3	8.5	5.2	8.9
B3	5.16	9.82	0.42	0.72	4.3	8.5	5.2	8.9
B4	5.16	9.82	0.42	0.72	4.3	8.5	5.2	8.9
B5	17.14	34.06	17.14	34.06				
B6	12.54	24.43	4.67	7.53	4.7	10.7	4.8	11.8
B7	6.80	13.26	2.95	5.11	2.3	4.9	2.3	5.2
B8	11.46	22.49	11.46	22.49				
B9	6.55	13.05	6.55	13.05				
Total	75.11	146.56	44.45	85.12	24.4	49.5	27.9	52.6

# McINTOSH PERRY

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## Storage Requirements for Area B1

### 5-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B1	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m <sup>3</sup> )
10	104.2	5.16	0.42	4.74	2.84
20	70.3	3.48	0.42	3.06	3.67
30	53.9	2.67	0.42	2.25	4.05
40	44.2	2.19	0.42	1.77	4.24
50	37.7	1.87	0.42	1.45	4.34
60	32.9	1.63	0.42	1.21	4.35
70	29.4	1.45	0.42	1.03	4.35
80	26.6	1.32	0.42	0.90	4.30

Maximum Storage Required 5-year = 4.35 m<sup>3</sup>

### 100-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B1	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m <sup>3</sup> )
10	178.6	9.82	0.72	9.10	5.46
20	120.0	6.60	0.72	5.88	7.05
30	91.9	5.05	0.72	4.33	7.80
40	75.1	4.13	0.72	3.41	8.18
50	64.0	3.52	0.72	2.80	8.40
60	55.9	3.07	0.72	2.35	8.47
70	49.8	2.74	0.72	2.02	8.48
80	45.0	2.47	0.72	1.75	8.42
90	41.1	2.26	0.72	1.54	8.32
100	37.9	2.08	0.72	1.36	8.18

Maximum Storage Required 100-year = 8.48 m<sup>3</sup>

### 5-Year Storm Event Storage Summary

Roof Storage			
Location	Area*	Depth	Volume (m <sup>3</sup> )
Roof	148.35	0.035	5.19

Storage Available (m<sup>3</sup>) = 5.19  
Storage Required (m<sup>3</sup>) = 4.35

### 100-Year Storm Event Storage Summary

Roof Storage			
Location	Area*	Depth	Volume (m <sup>3</sup> )
Roof	148.35	0.060	8.90

Storage Available (m<sup>3</sup>) = 8.90  
Storage Required (m<sup>3</sup>) = 8.48

\*Area is 75% of the total roof area

# McINTOSH PERRY

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## Storage Requirements for Area B2

### 5-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B2	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m <sup>3</sup> )
10	104.2	5.16	0.42	4.74	2.84
20	70.3	3.48	0.42	3.06	3.67
30	53.9	2.67	0.42	2.25	4.05
40	44.2	2.19	0.42	1.77	4.24
50	37.7	1.87	0.42	1.45	4.34
60	32.9	1.63	0.42	1.21	4.35
70	29.4	1.45	0.42	1.03	4.35
80	26.6	1.32	0.42	0.90	4.30

Maximum Storage Required 5-year = 4.35 m<sup>3</sup>

### 100-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B2	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m <sup>3</sup> )
10	178.6	9.82	0.72	9.10	5.46
20	120.0	6.60	0.72	5.88	7.05
30	91.9	5.05	0.72	4.33	7.80
40	75.1	4.13	0.72	3.41	8.18
50	64.0	3.52	0.72	2.80	8.40
60	55.9	3.07	0.72	2.35	8.47
70	49.8	2.74	0.72	2.02	8.48
80	45.0	2.47	0.72	1.75	8.42
90	41.1	2.26	0.72	1.54	8.32
100	37.9	2.08	0.72	1.36	8.18

Maximum Storage Required 100-year = 8.48 m<sup>3</sup>

### 5-Year Storm Event Storage Summary

Roof Storage			
Location	Area*	Depth	Volume (m <sup>3</sup> )
Roof	148.35	0.035	5.19

Storage Available (m<sup>3</sup>) = 5.19  
Storage Required (m<sup>3</sup>) = 4.35

### 100-Year Storm Event Storage Summary

Roof Storage			
Location	Area*	Depth	Volume (m <sup>3</sup> )
Roof	148.35	0.060	8.90

Storage Available (m<sup>3</sup>) = 8.90  
Storage Required (m<sup>3</sup>) = 8.48

\*Area is 75% of the total roof area

# McINTOSH PERRY

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## Storage Requirements for Area B3

### 5-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B3	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m <sup>3</sup> )
10	104.2	5.16	0.42	4.74	2.84
20	70.3	3.48	0.42	3.06	3.67
30	53.9	2.67	0.42	2.25	4.05
40	44.2	2.19	0.42	1.77	4.24
50	37.7	1.87	0.42	1.45	4.34
60	32.9	1.63	0.42	1.21	4.35
70	29.4	1.45	0.42	1.03	4.35
80	26.6	1.32	0.42	0.90	4.30

Maximum Storage Required 5-year = 4.35 m<sup>3</sup>

### 100-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B3	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m <sup>3</sup> )
10	178.6	9.82	0.72	9.10	5.46
20	120.0	6.60	0.72	5.88	7.05
30	91.9	5.05	0.72	4.33	7.80
40	75.1	4.13	0.72	3.41	8.18
50	64.0	3.52	0.72	2.80	8.40
60	55.9	3.07	0.72	2.35	8.47
70	49.8	2.74	0.72	2.02	8.48
80	45.0	2.47	0.72	1.75	8.42
90	41.1	2.26	0.72	1.54	8.32
100	37.9	2.08	0.72	1.36	8.18

Maximum Storage Required 100-year = 8.48 m<sup>3</sup>

### 5-Year Storm Event Storage Summary

Roof Storage			
Location	Area*	Depth	Volume (m <sup>3</sup> )
Roof	148.35	0.035	5.19

Storage Available (m<sup>3</sup>) = 5.19  
Storage Required (m<sup>3</sup>) = 4.35

### 100-Year Storm Event Storage Summary

Roof Storage			
Location	Area*	Depth	Volume (m <sup>3</sup> )
Roof	148.35	0.060	8.90

Storage Available (m<sup>3</sup>) = 8.90  
Storage Required (m<sup>3</sup>) = 8.48

\*Area is 75% of the total roof area

# McINTOSH PERRY

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## Storage Requirements for Area B4

### 5-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B4	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m <sup>3</sup> )
10	104.2	5.16	0.42	4.74	2.84
20	70.3	3.48	0.42	3.06	3.67
30	53.9	2.67	0.42	2.25	4.05
40	44.2	2.19	0.42	1.77	4.24
50	37.7	1.87	0.42	1.45	4.34
60	32.9	1.63	0.42	1.21	4.35
70	29.4	1.45	0.42	1.03	4.35
80	26.6	1.32	0.42	0.90	4.30

Maximum Storage Required 5-year = 4.35 m<sup>3</sup>

### 100-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B4	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m <sup>3</sup> )
10	178.6	9.82	0.72	9.10	5.46
20	120.0	6.60	0.72	5.88	7.05
30	91.9	5.05	0.72	4.33	7.80
40	75.1	4.13	0.72	3.41	8.18
50	64.0	3.52	0.72	2.80	8.40
60	55.9	3.07	0.72	2.35	8.47
70	49.8	2.74	0.72	2.02	8.48
80	45.0	2.47	0.72	1.75	8.42
90	41.1	2.26	0.72	1.54	8.32
100	37.9	2.08	0.72	1.36	8.18

Maximum Storage Required 100-year = 8.48 m<sup>3</sup>

### 5-Year Storm Event Storage Summary

Roof Storage			
Location	Area*	Depth	Volume (m <sup>3</sup> )
Roof	148.35	0.035	5.19

Storage Available (m<sup>3</sup>) = 5.19  
Storage Required (m<sup>3</sup>) = 4.35

### 100-Year Storm Event Storage Summary

Roof Storage			
Location	Area*	Depth	Volume (m <sup>3</sup> )
Roof	148.35	0.060	8.90

Storage Available (m<sup>3</sup>) = 8.90  
Storage Required (m<sup>3</sup>) = 8.48

\*Area is 75% of the total roof area



# McINTOSH PERRY

CO-22-1448 - 254 Lake Avenue West

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## Roof Drain Flow (B1-B4)

Roof Drains Summary		
Type of Control Device	Watts Drainage - Accutrol Weir	
Number of Roof Drains	1	
	5-Year	100-Year
Rooftop Storage (m <sup>3</sup> )	5.19	8.90
Storage Depth (mm)	0.035	0.060
Flow (Per Roof Drain) (L/s)	0.42	0.72
Total Flow (L/s)	0.42	0.72

Flow Rate Vs. Build-Up (One Weir)	
Depth (mm)	Flow (L/s)
15	0.18
20	0.24
25	0.30
30	0.36
35	0.42
40	0.48
45	0.54
50	0.60
55	0.66

\*Roof Drain model to be Accutrol Weirs, See attached sheets

\*Roof Drain Flow information taken from Watts Drainage website

### CALCULATING ROOF FLOW EXAMPLES

1 roof drain during a 5 year storm  
 elevation of water = 25mm  
 Flow leaving 1 roof drain = (1 x 0.30 L/s) = 0.30 L/s

1 roof drain during a 100 year storm  
 elevation of water = 50mm  
 Flow leaving 1 roof drain = (1 x 0.60 L/s) = 0.60 L/s

4 roof drains during a 5 year storm  
 elevation of water = 25mm  
 Flow leaving 4 roof drains = (4 x 0.30 L/s) = 1.20 L/s

4 roof drains during a 100 year storm  
 elevation of water = 50mm  
 Flow leaving 4 roof drains = (4 x 0.60 L/s) = 2.40 L/s

Roof Drain Flow			
	Flow (l/s)	Storage Depth (mm)	Drains Flow (l/s)
	0.18	15	0.18
	0.24	20	0.24
	0.30	25	0.30
	0.36	30	0.36
5-Year	0.42	35	0.42
	0.48	40	0.48
	0.54	45	0.54
	0.60	50	0.60
	0.66	55	0.66
100-Year	0.72	60	0.72
	0.78	65	0.78
	0.84	70	0.84
	0.90	75	0.90
	0.96	80	0.96
	1.02	85	1.02
	1.08	90	1.08
	1.14	95	1.14
	1.20	100	1.20
	1.26	105	1.26
	1.32	110	1.32
	1.38	115	1.38
	1.44	120	1.44
	1.50	125	1.50
	1.56	130	1.56
	1.62	135	1.62
	1.68	140	1.68
	1.74	145	1.74
	1.80	150	1.80

Note: The flow leaving through a restricted roof drain is based on flow vs. head information

# McINTOSH PERRY

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Storage Requirements for Area B6

5-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B6	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m <sup>3</sup> )
10	104.2	12.55	4.67	7.88	4.73
20	70.3	8.46	4.67	3.79	4.55
30	53.9	6.49	4.67	1.82	3.28
40	44.2	5.32	4.67	0.65	1.56

Maximum Storage Required 5-year = 4.73 m<sup>3</sup>

100-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B6	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m <sup>3</sup> )
10	178.6	24.44	7.53	16.91	10.15
20	120.0	16.42	7.53	8.89	10.67
30	91.9	12.58	7.53	5.05	9.08
40	75.1	10.28	7.53	2.75	6.59

Maximum Storage Required 100-year = 10.67 m<sup>3</sup>

5-Year Storm Event Storage Summary

		Water Elev. (m) = 136.99			
Location	Btm Storage Area	INV. (out)	Depth (m)	Head (m)	Volume (m <sup>3</sup> )
Storage Area 1	136.89	136.89	0.10	0.05	4.8

Storage Available (m<sup>3</sup>) = 4.8  
Storage Required (m<sup>3</sup>) = 4.7

100-Year Storm Event Storage Summary

		Water Elev. (m) = 137.07			
Location	Btm Storage Area	INV. (out)	Depth (m)	Head (m)	Volume (m <sup>3</sup> )
Storage Area 1	136.89	136.89	0.18	0.13	11.8

Storage Available (m<sup>3</sup>) = 11.8  
Storage Required (m<sup>3</sup>) = 10.7

\*Available Storage calculated from AutoCAD

# McINTOSH PERRY

CO-22-1448 - 254 Lake Avenue West

For Orifice Flow, C= 0.60  
 For Weir Flow, C= 1.84

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	Orifice 1
invert elevation	136.89
center of crest elevation	136.94
orifice width / weir length	100 mm
weir height	
orifice area (m <sup>2</sup> )	0.008

Elevation Discharge Table - Storm Routing

Elevation	Orifice 1		Orifice 2		Weir 1		Weir 2		Total
	H [m]	Q [m <sup>3</sup> /s]	H [m]	Q [m <sup>3</sup> /s]	H [m]	Q [m <sup>3</sup> /s]	H [m]	Q [m <sup>3</sup> /s]	Q [L/s]
136.89	x	x							0.00
136.90	x	x							0.00
136.91	x	x							0.00
136.92	x	x							0.00
136.93	x	x							0.00
136.94	x	x							0.00
136.95	0.01	0.00							2.09
136.96	0.02	0.00							2.95
136.97	0.03	0.00							3.62
136.98	0.04	0.00							4.17
136.99	0.05	0.00							4.67
137.00	0.06	0.01							5.11
137.01	0.07	0.01							5.52
137.02	0.08	0.01							5.90
137.03	0.09	0.01							6.26
137.04	0.10	0.01							6.60
137.05	0.11	0.01							6.92
137.06	0.12	0.01							7.23
137.07	0.13	0.01							7.53
137.08	0.14	0.01							7.81
137.09	0.15	0.01							8.08
137.10	0.16	0.01							8.35
137.11	0.17	0.01							8.61
137.12	0.18	0.01							8.86
137.13	0.19	0.01							9.10
137.14	0.20	0.01							9.33
137.15	0.21	0.01							9.57
137.16	0.22	0.01							9.79
137.17	0.23	0.01							10.01
137.18	0.24	0.01							10.23
137.19	0.25	0.01							10.44
137.20	0.26	0.01							10.64
137.21	0.27	0.01							10.85
137.22	0.28	0.01							11.05
137.23	0.29	0.01							11.24
137.24	0.30	0.01							11.43
137.25	0.31	0.01							11.62
137.26	0.32	0.01							11.81

5-Year

100-Year

- Notes:
1. For Orifice Flow, User is to Input an Elevation Higher than Crown of Orifice.
  2. Orifice Equation:  $Q = cA(2gh)^{1/2}$
  3. Weir Equation:  $Q = CLH^{3/2}$
  4. These Computations Do Not Account for Submergence Effects Within the Pond Riser.
  5. H for orifice equations is depth of water above the centroid of the orifice.
  6. H for weir equations is depth of water above the weir crest.

# McINTOSH PERRY

CO-22-1448 - 254 Lake Avenue West

Storage Requirements for Area B7

9 of 11

**5-Year Storm Event**

Tc (min)	I (mm/hr)	Runoff (L/s) B7	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m <sup>3</sup> )
10	104.2	6.80	2.95	3.85	2.31
20	70.3	4.58	2.95	1.63	1.96
30	53.9	3.52	2.95	0.57	1.02
40	44.2	2.88	2.95	0.00	0.00
50	37.7	2.46	2.95	0.00	0.00
60	32.9	2.15	2.95	0.00	0.00
70	29.4	1.92	2.95	0.00	0.00
80	26.6	1.73	2.95	0.00	0.00
90	24.3	1.58	2.95	0.00	0.00

Maximum Storage Required 5-year = 2.31 m<sup>3</sup>

**100-Year Storm Event**

Tc (min)	I (mm/hr)	Runoff (L/s) B7	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m <sup>3</sup> )
10	178.6	13.26	5.11	8.15	4.89
20	120.0	8.91	5.11	3.80	4.56
30	91.9	6.82	5.11	1.71	3.08
40	75.1	5.58	5.11	0.47	1.12
50	64.0	4.75	5.11	0.00	0.00
60	55.9	4.15	5.11	0.00	0.00
70	49.8	3.70	5.11	0.00	0.00
80	45.0	3.34	5.11	0.00	0.00
90	41.1	3.05	5.11	0.00	0.00
100	37.9	2.81	5.11	0.00	0.00
110	35.2	2.61	5.11	0.00	0.00
120	32.9	2.44	5.11	0.00	0.00

Maximum Storage Required 100-year = 4.89 m<sup>3</sup>

**5-Year Storm Event Storage Summary**

		Water Elev. (m) = 136.79			
Location	Btm Storage Area	INV. (out)	Depth (m)	Head (m)	Volume (m <sup>3</sup> )
Storage Area 2	136.72	136.72	0.07	0.02	2.3

Storage Available (m<sup>3</sup>) = 2.3  
Storage Required (m<sup>3</sup>) = 2.3 \*

**100-Year Storm Event Storage Summary**

		Water Elev. (m) = 136.83			
Location	Btm Storage Area	INV. (out)	Depth (m)	Head (m)	Volume (m <sup>3</sup> )
Storage Area 2	136.72	136.72	0.11	0.06	5.2

Storage Available (m<sup>3</sup>) = 5.2  
Storage Required (m<sup>3</sup>) = 4.9 \*

\*Available Storage calculated from AutoCAD

# McINTOSH PERRY

CO-22-1448 - 254 Lake Avenue West

For Orifice Flow, C= 0.60  
 For Weir Flow, C= 1.84

10 of 11

	Orifice 1
invert elevation	136.72
center of crest elevation	136.77
orifice width / weir length	100 mm
weir height	
orifice area (m <sup>2</sup> )	0.008

Tempest LMF 80 ICD is proposed based on Stormwater Analysis

Elevation Discharge Table - Storm Routing

Elevation	Orifice 1		Orifice 2		Weir 1		Weir 2		Total
	H [m]	Q [m <sup>3</sup> /s]	H [m]	Q [m <sup>3</sup> /s]	H [m]	Q [m <sup>3</sup> /s]	H [m]	Q [m <sup>3</sup> /s]	Q [L/s]
136.72	x	x							0.00
136.73	x	x							0.00
136.74	x	x							0.00
136.75	x	x							0.00
136.76	x	x							0.00
136.77	x	x							0.00
136.78	0.01	0.00							2.09
136.79	0.02	0.00							2.95
136.80	0.03	0.00							3.62
136.81	0.04	0.00							4.17
136.82	0.05	0.00							4.67
136.83	0.06	0.01							5.11
136.84	0.07	0.01							5.52
136.85	0.08	0.01							5.90
136.86	0.09	0.01							6.26
136.87	0.10	0.01							6.60
136.88	0.11	0.01							6.92
136.89	0.12	0.01							7.23
136.90	0.13	0.01							7.53
136.91	0.14	0.01							7.81
136.92	0.15	0.01							8.08
136.93	0.16	0.01							8.35
136.94	0.17	0.01							8.61
136.95	0.18	0.01							8.86
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136.97	0.20	0.01							9.33
136.98	0.21	0.01							9.57
136.99	0.22	0.01							9.79
137.00	0.23	0.01							10.01
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137.02	0.25	0.01							10.44
137.03	0.26	0.01							10.64
137.04	0.27	0.01							10.85
137.05	0.28	0.01							11.05
137.06	0.29	0.01							11.24
137.07	0.30	0.01							11.43
137.08	0.31	0.01							11.62
137.09	0.32	0.01							11.81

5-Year

100-Year

- Notes:
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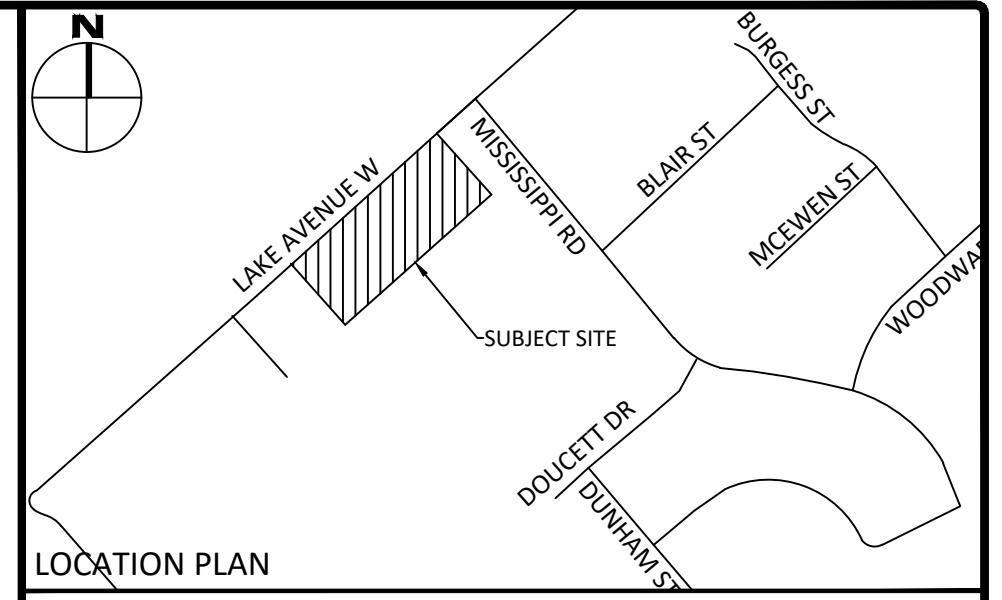
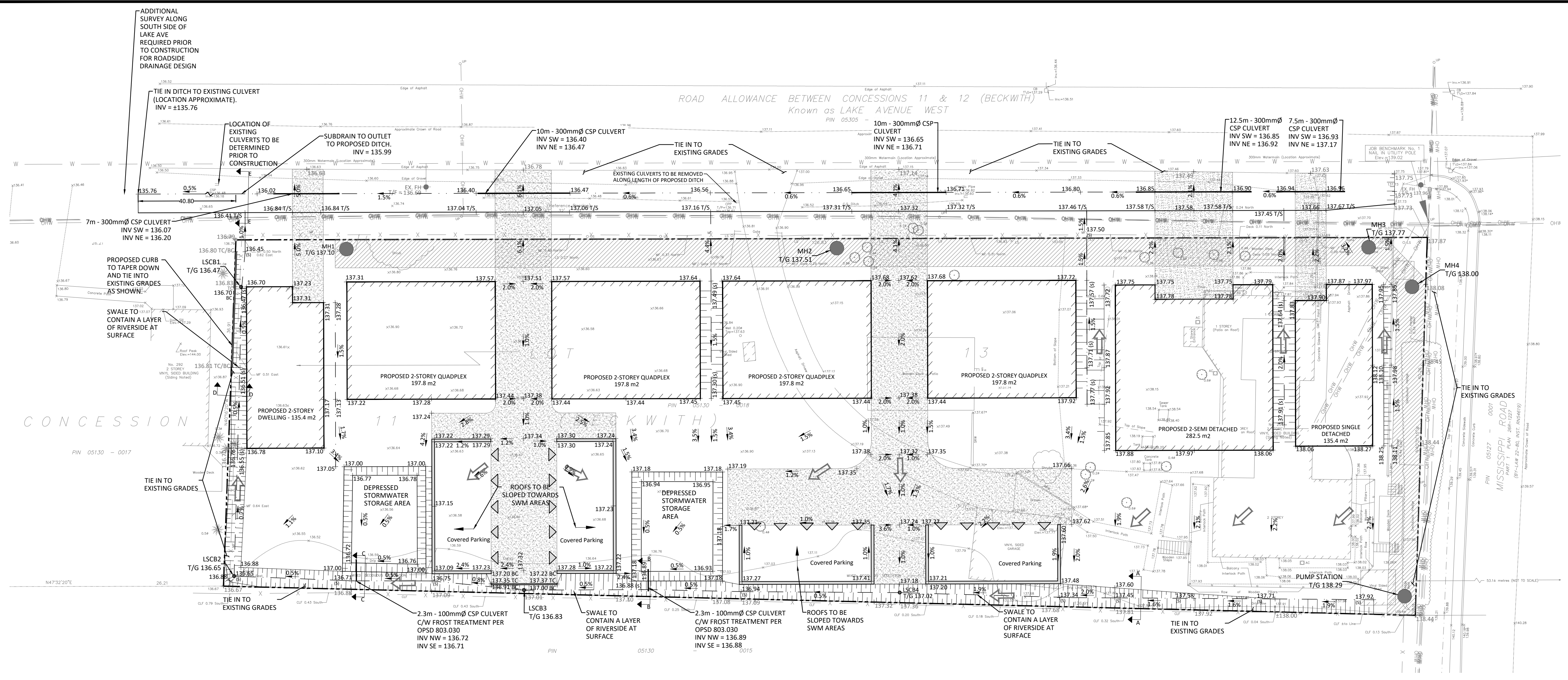
**STORM SEWER DESIGN SHEET**

**PROJECT:** CCO-22-1448; 254 Lake Avenue West  
**LOCATION:** Drainage Ditch between SWM Storage Areas to Outlet



LOCATION				CONTRIBUTING AREA (ha)				RATIONAL DESIGN FLOW								SEWER DATA									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
STREET	AREA ID	FROM	TO	C-VALUE	C-VALUE (100 Year)	AREA (ha)	INDIV AC	CUMUL AC	INLET (min)	TIME IN PIPE	TOTAL (min)	i (5) (mm/hr)	i (100) (mm/hr)	5yr PEAK FLOW (L/s)	100yr PEAK FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	PIPE SIZE (mm) DIA	Ditch Size (mm)			SLOPE (%)	VELOCITY (m/s)	AVAIL CAP (100yr) (L/s)	AVAIL CAP (%)
		MH	MH																z (x:1 slope)	H	Width (w)				
<b>Lake Ave West south drainage ditch</b>																									
Lake Ave West	X1	Mississippi Road	West End of Site	0.59	0.67	0.15	0.09	0.09	10.00	2.81	12.81	91.39	156.42	22.09	42.94	143.52	121.00	0	1.63	350	0	0.80	0.719	100.58	70.08%
	B4, B3, B2 and B1 Roof Connections													1.68	2.88	143.52								97.70	68.07%
	Drainage Areas B5-B9													40.55	76.97	143.52								20.73	14.44%
<b>Internal Drainage Areas - 254 Lake Ave West to Rear Yard Drain</b>																									
254 Lake Ave	B9	SW Corner of Lot G	SW Corner of Lot G	0.39	0.45	0.06	0.02	0.02	10.00	0.35	10.35	102.40	175.46	6.66	13.17	45.65	14.00	0	3	150	0	1.90	0.676	32.48	71.15%
	B8	SW Corner of Lot G	SW Corner of Lot F	0.48	0.55	0.08	0.04	0.06	10.35	0.56	10.91	99.62	170.65	17.30	34.04	41.89	21.00	0	3	150	0	1.60	0.621	7.84	18.72%
	B5a	SE Corner of Lot E	SW Corner of Lot E	0.67	0.75	0.06	0.04	0.10	10.91	0.55	11.46	97.05	166.20	28.14	54.84	79.91	22.50	250	3	150	0	1.90	0.676	25.07	31.38%
	B6	SE Corner of Lot C	SE Corner of Lot C	0.55	0.62	0.08	0.04	0.04						4.67	7.53										
	B5b	SE Corner of Lot D	SW Corner of Lot B	0.20	0.25	0.01	0.00	0.15	11.46	2.22	13.68	88.06	150.67	33.30	63.41	71.72	56.00	250	3	200	0	0.50	0.420	8.31	11.58%
	B7	SW Corner of Lot B	SW Corner of Lot B	0.53	0.61	0.04	0.02	0.02						2.95	5.11										
	B5c	SW Corner of Lot B	NE Corner Lot A	0.47	0.54	0.04	0.02	0.19	13.68	1.72	15.41	82.26	140.66	40.55	76.97	92.07	47.00	250	3	225	0	0.50	0.455	15.10	16.40%
				<b>Total</b>		0.37								40.55	76.97										
<b>Definitions:</b>				<b>Mannings Coefficients:</b>				<b>Designed:</b>				<b>Revision</b>				<b>Date</b>									
Q = 2.78CIA, where:				(npipe) =				A.M.																	
Q = Peak Flow in Litres per Second (L/s)				(nchannel) =				F.V.																	
A = Area in Hectares (ha)								Project No.:																	
i = Rainfall intensity in millimeters per hour (mm/hr)								CCO-22-1448																	
<b>Notes:</b>																<b>Sheet No:</b>									
1. 5 & 100 Year storm intensity 'I' from City of Ottawa IDF curve equations for 5 and 100 year storm events.																1 of 1									
2. Storm flows considered entering realigned ditch include drainage from Lots A through G including controlled release from Lots B and C																									
3. Ditch designed to convey flows from rear yard of Lot G through to Lot A for surface discharge to south drainage ditch.																									
4. Roof Areas Controlled by Control Flow Roof Drains and directed to south drainage ditch along Lake Avenue West; Refer to SWM Report for detailed calculations																									
5. Outlet From Drainage Area B6 and B7 Controlled By Orifice Pipe; Refer to SWM Report for detailed calculations; 100 year discharge B6 - 7.53 L/s; B7 - 5.11 L/s																									

APPENDIX H  
CIVIL DRAWINGS



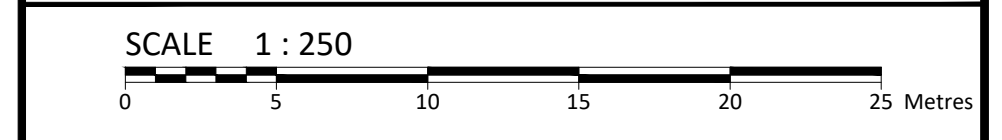
**LEGEND**

	CONCRETE BARRIER CURB		LIMIT OF CONSTRUCTION
	CONCRETE DRIVEWAY		DRAINAGE SWALE
	PROPOSED ASPHALT		DRAINAGE DITCH
	MANHOLE		SURFACE ELEVATION
	STORM SEWER MANHOLE		SLOPE ELEVATION
	CATCHBASIN MANHOLE		TOP OF FINAL ELEVATION
	CATCHBASIN		OVERLAND FLOW ROUTE
	SANITARY SEWER MANHOLE		SILT FENCE BARRIER
	FIRE HYDRANT		STREAM BALE CHECK DAM
	WATER VALVE		
	WATER METER		
	REMOTE WATER METER		

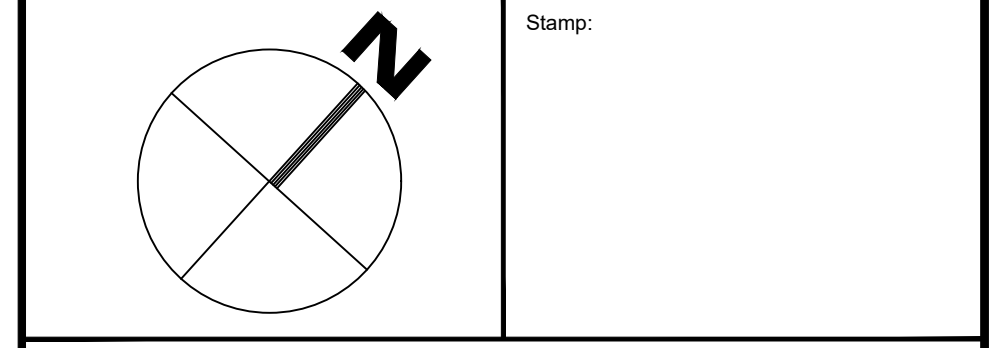
**FOR REVIEW ONLY**  
NOT FOR CONSTRUCTION

2	ISSUED FOR REVIEW	APR. 03, 2024
1	ISSUED FOR REVIEW	FEB. 08, 2023
No.	Revisions	Date

Check and verify all dimensions before proceeding with the work. Do not scale drawings.



**McINTOSH PERRY**  
115 Walgreen Road, RR3, Carp, ON K0A 1L0  
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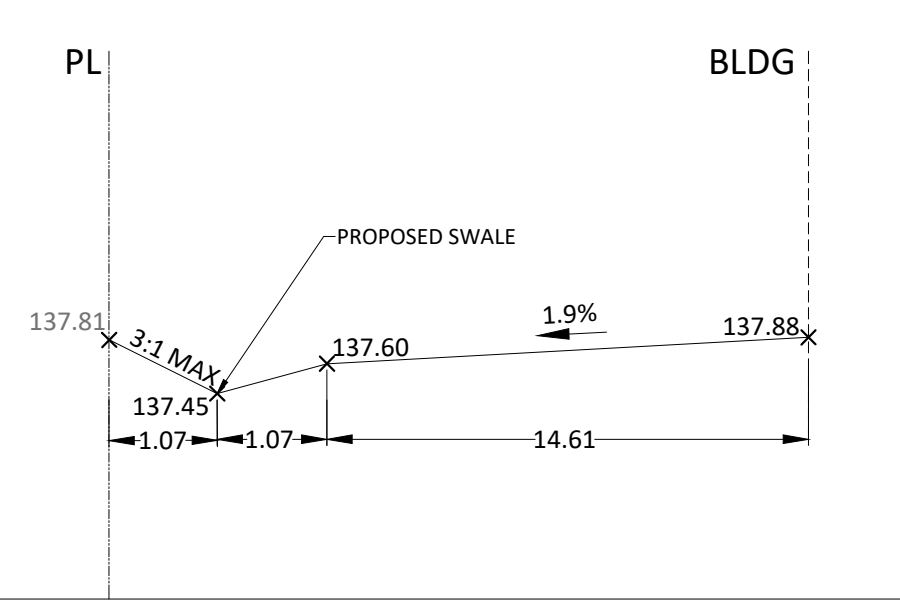
Client: **ESCAPE HOMES**  
254 LAKE AVENUE WEST  
CARLETON PLACE, ON K7C 1M4

Project: **254 LAKE AVENUE WEST**

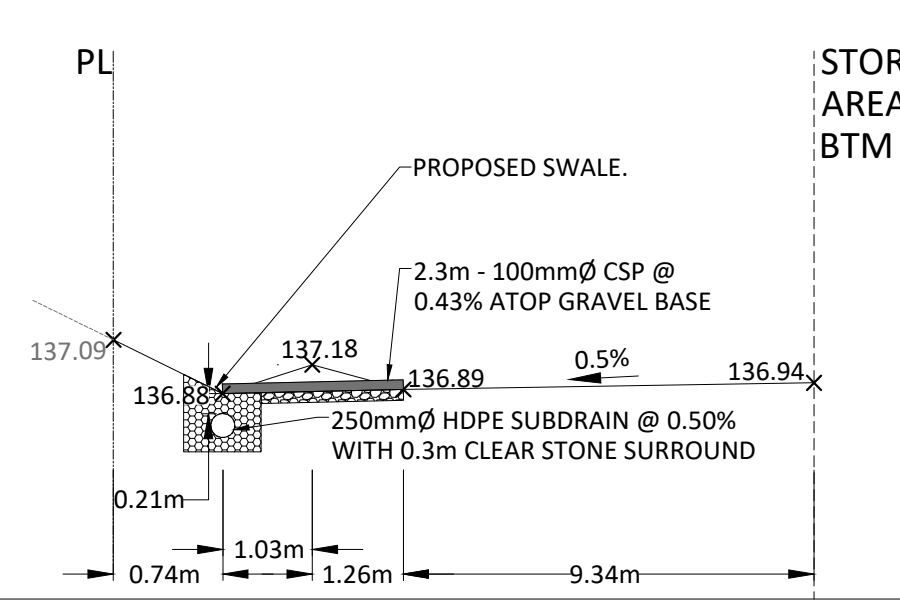
Drawing Title: **GRADING AND DRAINAGE PLAN**

Scale: 1:250	Project Number: CO-22-1448
Drawn By: FV	Drawing Number: C101
Checked By: AM	
Designed By: AG	

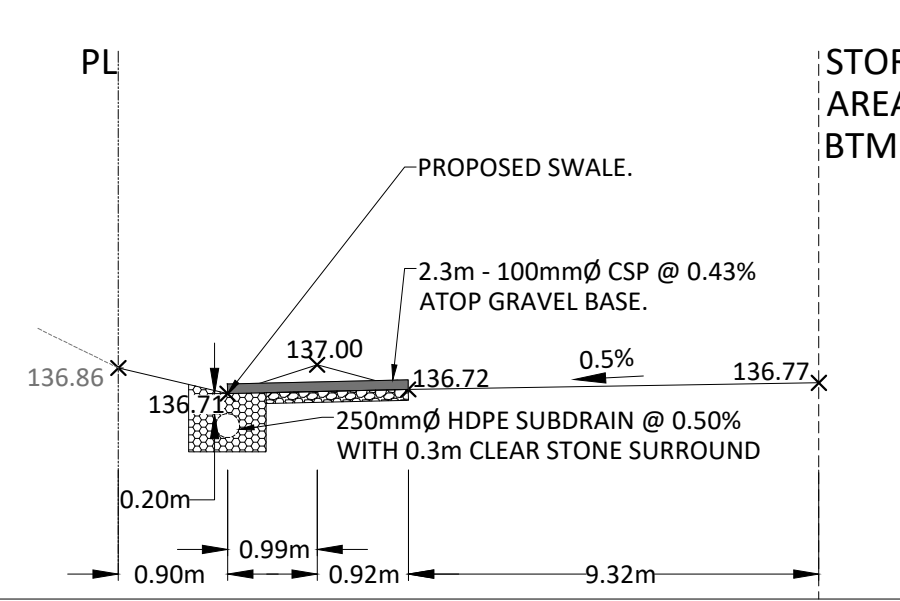
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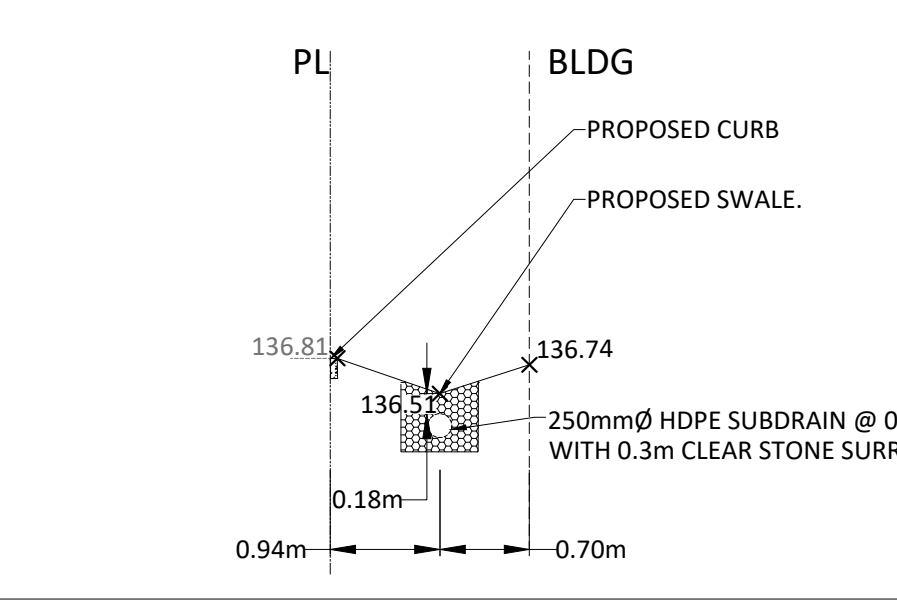
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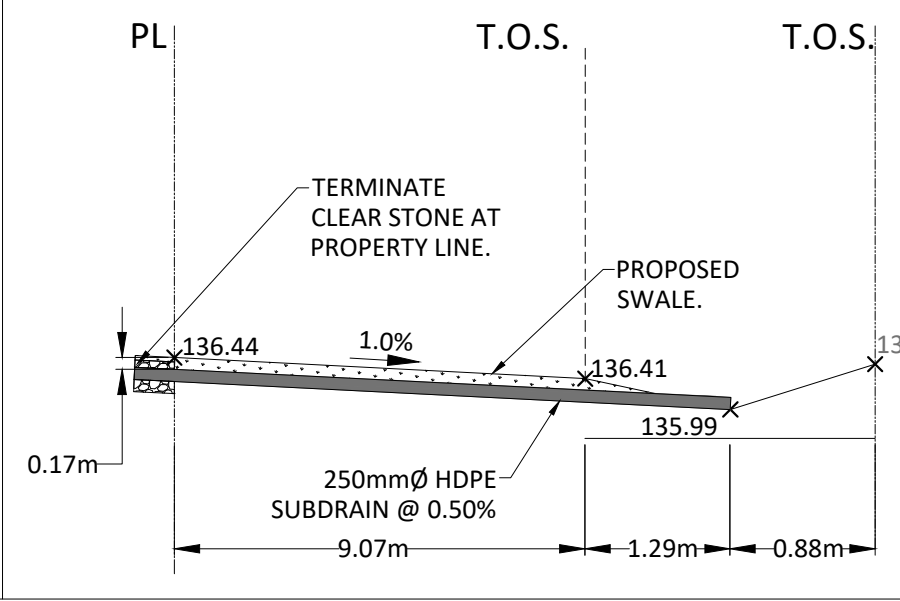
**CROSS SECTION C-C**  
N.T.S.



**CROSS SECTION D-D**  
N.T.S.



**CROSS SECTION E-E**  
N.T.S.



**GENERAL NOTES**

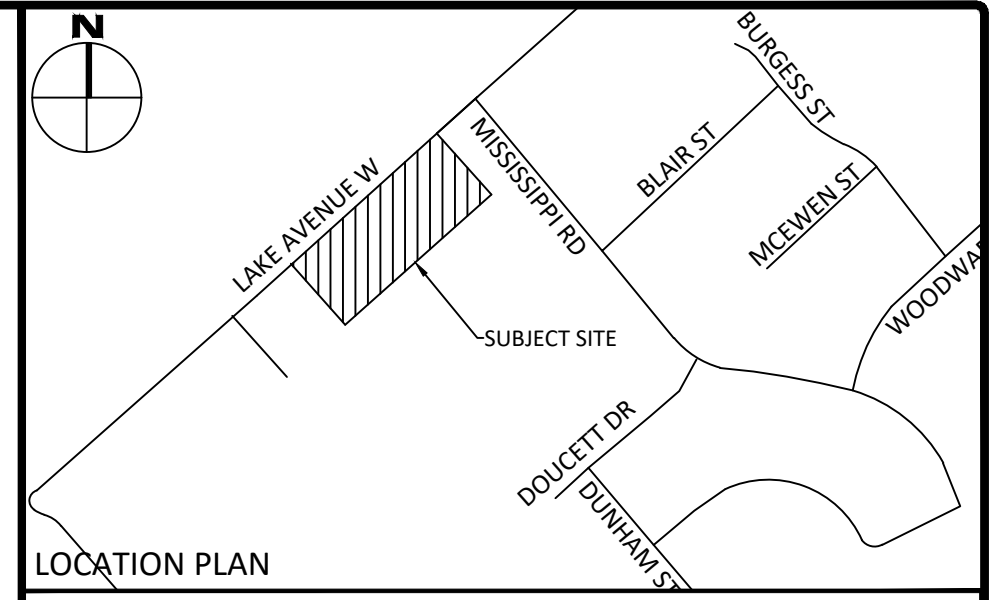
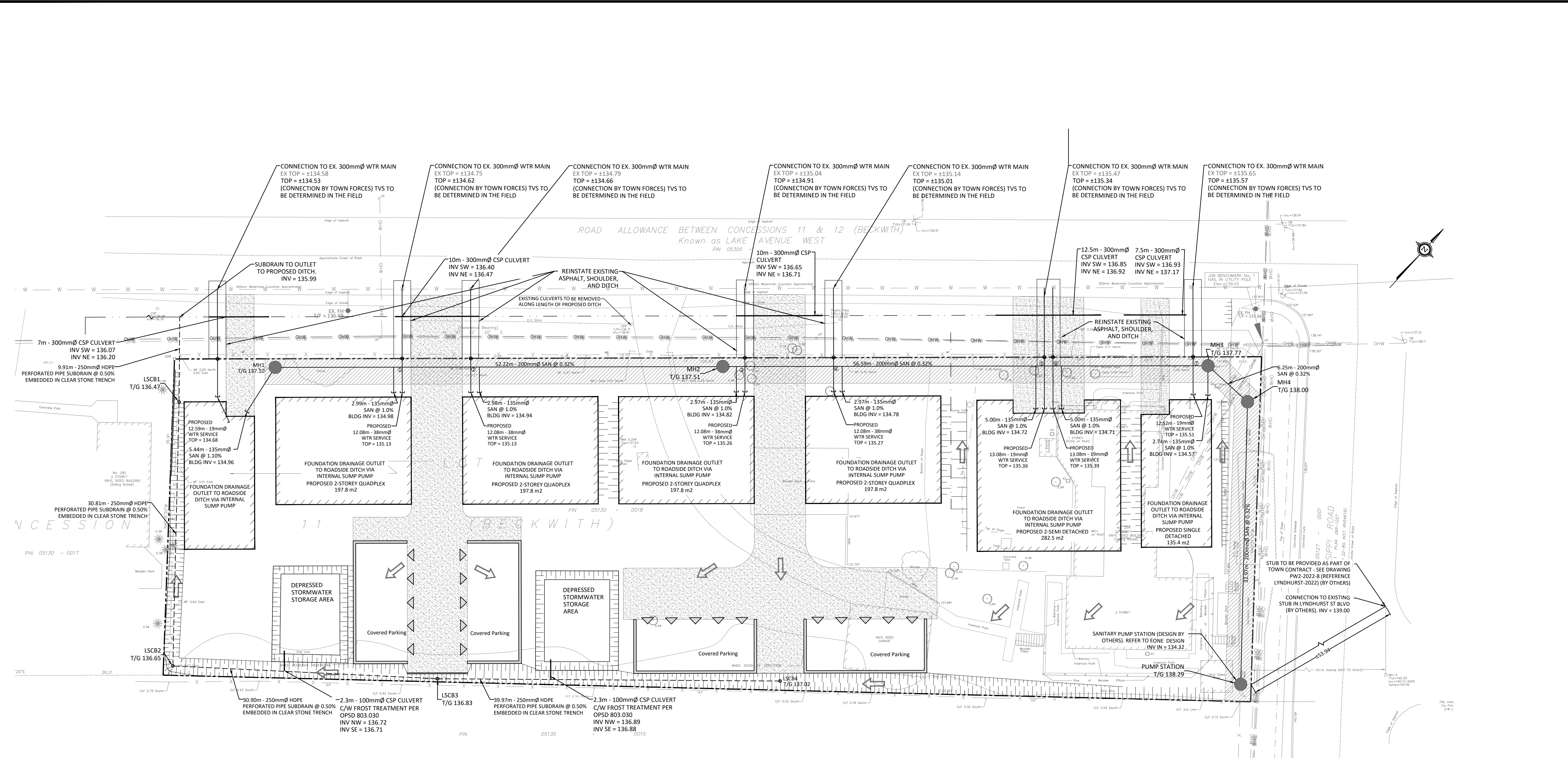
- THE ORIGINAL TOPOGRAPHY, GROUND ELEVATION AND SURVEY DATA SHOWN ARE SUPPLIED FOR INFORMATION PURPOSES ONLY AND IMPLY NO GUARANTEE OF ACCURACY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL INFORMATION SHOWN.
- THIS PLAN IS NOT A CADASTRAL SURVEY SHOWING LEGAL PROPERTY BOUNDARIES AND EASEMENTS. THE PROPERTY BOUNDARIES SHOWN HEREON HAVE BEEN DERIVED FROM INFORMATION SUPPLIED BY (OR SHOWN ON) ANNIS, OSULLIVAN, VOLLEBEK LTD. DRAWING 17446-21 AND CANNOT BE RELIED UPON TO BE ACCURATE OR COMPLETE. THE PRECISE LOCATION OF THE CURRENT PROPERTY BOUNDARIES AND EASEMENTS CAN ONLY BE DETERMINED BY AN UP-TO-DATE LAND TITLES SEARCH AND A SUBSEQUENT CADASTRAL SURVEY PERFORMED AND CERTIFIED BY AN ONTARIO LAND SURVEYOR.
- THE CONTRACTOR IS TO OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY BEFORE COMMENCING CONSTRUCTION.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT.
- THE CONTRACTOR IS TO DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME ALL RESPONSIBILITY FOR EXISTING UTILITIES WHETHER OR NOT SHOWN ON THESE DRAWINGS. IF THERE IS ANY DISCREPANCY THE CONTRACTOR IS TO NOTIFY THE ENGINEER PROMPTLY.
- RESTORE ALL TRENCHES AND SURFACES OF PUBLIC ROAD ALLOWANCES TO CONDITION EQUAL OR BETTER THAN ORIGINAL CONDITION AND TO THE SATISFACTION OF THE CITY AUTHORITIES.
- EXCAVATE AND DISPOSE OF ALL EXCESS EXCAVATED MATERIAL, SUCH AS ASPHALT, CURBING AND DEBRIS, OFF SITE AS DIRECTED BY THE ENGINEER AND THE CITY.
- TOPSOIL TO BE STRIPPED AND STOCKPILED FOR REHABILITATION. CLEAN FILL TO BE PLACED IN FILL AREAS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.
- ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER UNLESS OTHERWISE SPECIFIED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL AND SAFETY MEASURES DURING THE CONSTRUCTION PERIOD, INCLUDING THE SUPPLY, INSTALLATION, AND REMOVAL OF ALL NECESSARY SIGNAGE, DELINEATORS, MARKERS AND BARRIERS.
- DO NOT ALTER GRADING OF THE SITE WITHOUT PRIOR APPROVAL OF THE ENGINEER/CITY.
- ALL ROADWAY, PARKING LOT, AND GRADING WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH CITY STANDARDS AND SPECIFICATIONS. THE CONTRACTOR IS TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE BUILDING.
- CONTACT THE CITY FOR INSPECTION OF ROUGH GRADING OF PARKING LOTS, ROADWAYS AND LANDSCAPED AREAS PRIOR TO PLACEMENT OF ASPHALT AND TOPSOIL. ALL DEFICIENCIES NOTED SHALL BE RECTIFIED TO THE CITY'S SATISFACTION PRIOR TO PLACEMENT OF ANY ASPHALT, TOPSOIL, SEED & MULCH AND/OR SOD.
- ALL DIMENSIONS AND INVERTS MUST BE VERIFIED PRIOR TO CONSTRUCTION. IF THERE IS ANY DISCREPANCY THE CONTRACTOR IS TO NOTIFY THE ENGINEER PROMPTLY.
- ELECTRICAL, GAS, TELEPHONE AND TELEVISION SERVICE LOCATIONS ARE SUBJECT TO THE INDIVIDUAL AGENCY:
  - ELECTRICAL SERVICE - HYDRO ONE,
  - GAS SERVICE - ENBRIDGE,
  - TELEPHONE SERVICE - BELL CANADA,
  - TELEVISION SERVICE - ROGERS.
- INSTALLATION TO BE IN ACCORDANCE WITH CURRENT CODES AND STANDARDS OF APPROVAL AGENCIES HYDRO ONE, BELL AND THE CITY.
- CONTRACTOR TO ENSURE ALL APPLICABLE OPS SPECIFICATIONS ARE FOLLOWED DURING CONSTRUCTION
- ALL PROPOSED CURB TO BE CONCRETE BARRIER CURB UNLESS OTHERWISE SPECIFIED.

FILENAME: U:\Other\01\Project - Proposals\2022\1448\CCO\CCO-22-1448\Escape\_Hms\_SPC\_254 Lake Ave. Carleton Place\13 - Drawing\CCO-22-1448 Presentation.dwg  
 DATE PLOTTED: Wednesday, April 03, 2024 10:45:10 AM  
 PLOTTER: HP DesignJet T1100e

D07-12-XX-XXXX

#XXXX





**LEGEND**

	CONCRETE BARRIER CURB
	CONCRETE WALKWAY
	PROPOSED ASPHALT
	MUD MAT
	STORM SEWER MANHOLE
	CATCHBASIN
	SANITARY SEWER MANHOLE
	FIRE HYDRANT
	WATER VALVE
	WATER METER
	REMOTE WATER METER
	DRAINAGE DITCH
	SURFACE ELEVATION
	SHALE ELEVATION
	100% PARALLEL RELATION
	OVERLAID FLOW ROUTE
	SILT FENCE BARRIER
	STRAW BALE CHECK DAM

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SCALE 1:250

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115 Walgreen Road, RR3, Carp, ON K0A 1L0  
Tel: 613-836-2184 Fax: 613-836-3742  
www.mcintoshperry.com

Client: ESCAPE HOMES  
254 LAKE AVENUE WEST  
CARLETON PLACE, ON K7C 1M4

Project: 254 LAKE AVENUE WEST

Drawing Title: **SITE SERVICING PLAN**

Scale:	1:250	Project Number:	CO-22-1448
Drawn By:	FV	Checked By:	AM
Designed By:	AG	Drawing Number:	C102

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  - ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER UNLESS OTHERWISE SPECIFIED.

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL AND SAFETY MEASURES DURING THE CONSTRUCTION PERIOD, INCLUDING THE SUPPLY, INSTALLATION, AND REMOVAL OF ALL NECESSARY SIGNAGE, DELINEATORS, MARKERS AND BARRIERS.
- DO NOT ALTER GRADING OF THE SITE WITHOUT PRIOR APPROVAL OF THE ENGINEER/CITY.
- ALL ROADWAY, PARKING LOT, AND GRADING WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH CITY STANDARDS AND SPECIFICATIONS. THE CONTRACTOR IS TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE BUILDING.
- CONTACT THE CITY FOR INSPECTION OF ROUGH GRADING OF PARKING LOTS, ROADWAYS AND LANDSCAPE AREAS PRIOR TO PLACEMENT OF ASPHALT AND TOSPOIL. ALL DEFICIENCIES NOTED SHALL BE RECTIFIED TO THE CITY'S SATISFACTION PRIOR TO PLACEMENT OF ANY ASPHALT, TOSPOIL, SEED & MULCH AND/OR SOD.
- ALL DIMENSIONS AND INVERTS MUST BE VERIFIED PRIOR TO CONSTRUCTION, IF THERE IS ANY DISCREPANCY THE CONTRACTOR IS TO NOTIFY THE ENGINEER PROMPTLY.
- ELECTRICAL, GAS, TELEPHONE AND TELEVISION SERVICE LOCATIONS ARE SUBJECT TO THE INDIVIDUAL AGENCIES:
  - ELECTRICAL SERVICE - HYDRO ONE,
  - GAS SERVICE - ENBRIDGE,
  - TELEPHONE SERVICE - BELL CANADA,
  - TELEVISION SERVICE - ROGERS.
- INSTALLATION TO BE IN ACCORDANCE WITH CURRENT CODES AND STANDARDS OF APPROVAL AGENCIES HYDRO ONE, BELL AND THE CITY.
- CONTRACTOR TO INSURE ALL APPLICABLE OPS SPECIFICATIONS ARE FOLLOWED DURING CONSTRUCTION.
- ALL PROPOSED CURB TO BE CONCRETE BARRIER CURB UNLESS OTHERWISE SPECIFIED.

- WATERMAIN NOTES**
- CONSTRUCT ALL WATERMANS AND APPURTENANCES IN ACCORDANCE WITH OPS STANDARDS AND SPECIFICATIONS, AS WELL AS CITY STANDARDS.
  - INDUSTRIAL/COMMERCIAL SERVICE CONNECTIONS TO BE 50mm COPPER PIPING AND SHALL CONFORM TO ASTM 888 TYPE "K" SOFT.
  - WATERMANS AND/OR WATER SERVICES ARE TO HAVE A MINIMUM COVER OF 2.4m. OTHERWISE THERMAL INSULATION IS REQUIRED AS PER CITY STANDARDS (IF AVAILABLE) OR OPSD 1109.030.
  - IF THE WATERMAIN MUST BE DEFLECTED TO MEET ALIGNMENT, ENSURE THAT THE AMOUNT OF DEFLECTION USED IS EQUAL TO OR LESS THAN THAT WHICH IS RECOMMENDED BY THE MANUFACTURER.
  - THERMAL INSULATION OF WATERMANS AT OPEN STRUCTURES AS PER CITY STANDARDS (IF AVAILABLE) OR OPSD 1109.030.
  - VALVES TO BE OPERATED BY CITY STAFF ONLY.
  - NO CONNECTION TO EXISTING WATER NETWORK SHALL BE COMPLETED UNTIL A WATER PERMIT IS OBTAINED FROM THE CITY. CITY TO BE PRESENT FOR WATERMAIN CONNECTION. CONNECTION, EDUCATION, BACKFILLING AND REINSTATEMENT TO BE COMPLETED BY CONTRACTOR.
  - IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM ANY WATERMAIN CONNECTIONS REQUIRED. THIS SHALL BE COMPLETED IN THE PRESENCE OF A DESIGNATED MUNICIPAL WATER OPERATOR AND THE SELECTED CONTRACTOR SHALL PROVE TO THE SATISFACTION OF THE CITY THAT THEY ARE COMPETENT TO PERFORM THE WORKS PRIOR TO INITIATING CONSTRUCTION.
  - ALL WATERMANS SHALL BE EQUIPPED WITH BUTTERFLY AND GATE VALVES AS PER OPSD 1100.101.
  - ALL FIRE HYDRANTS, VALVE AND VALVE BOX SHALL CONFORM TO OPSD 1103.020.
  - CONCRETE THRUST BLOCKS TO CONFORM TO OPSD 1103.010 AND OPSD 1103.020.
  - ALL WATERMAIN TO BE CLASS 150 DR-18 OR APPROVED EQUIVALENT.
  - ALL WATERMAIN TO BE EQUIPPED WITH TRACER WIRE.

- SEWER NOTES:**
- CONSTRUCT ALL SEWERS, CATCH BASINS, MANHOLES AND APPURTENANCES IN ACCORDANCE WITH OPS STANDARDS AND SPECIFICATIONS, AS WELL AS CITY.
  - SEWER TRENCHING AND BEDDING SHALL CONFORM TO OPSD 802.010 AND 802.013 UNLESS NOTED OTHERWISE.
    - BEDDING SHALL BE A MINIMUM 150mm OF GRANULAR "A", COMPACTED TO MINIMUM 95% STANDARD PROCTOR DRY DENSITY. CLEAR STONE BEDDING SHALL NOT BE PERMITTED.
    - SUB-BEDDING, IF REQUIRED SHALL CONSIST OF 450mm OF COMPACTED GRANULAR "B" TYPE 1.
    - BACKFILL TO AT LEAST 300mm ABOVE TOP OF PIPE WITH GRANULAR "A" OR GRANULAR "B" TYPE 1.
    - TO MINIMIZE DIFFERENTIAL FROST HEAVING, TRENCH BACKFILL (FROM PAVEMENT SUBGRADE TO 2.0 METRES BELOW FINISHED GRADE) SHALL MATCH EXISTING SOIL CONDITIONS.
  - SANITARY SEWERS AND CONNECTIONS 150mmØ AND SMALLER TO BE PVC SDR-28.
  - SEWERS AND CONNECTIONS 200mmØ AND LARGER TO BE PVC SDR-35. BEDDING TO BE TYPE "B" EXCEPT AT RISERS, UNLESS NOTED OTHERWISE.
  - INSULATE ALL STORM AND SANITARY SEWERS/SERVICES THAT HAVE LESS THAN 1.5m OF COVER WITH THERMAL INSULATION AS PER OPSD 1109.030.
  - SEWER CONNECTIONS ARE TO BE MADE ABOVE THE SPRINGLINE OF THE SEWERMAIN AS PER CITY OF OTTAWA STANDARD DRAWING S11, S11.1 & S11.2.
  - SUPPLY AND INSTALL ALL PIPING AND APPURTENANCES AS SHOWN AND DETAILED TO WITHIN 1.0m OF BUILDING. ALL ENDS OF SERVICES TO BE PROPERLY CAPPED AND LOCATED WITH 2"x4" LONG MARKER.
  - CONTRACTOR TO TELEVISION (CCTV) ALL PROPOSED SEWERS ON SITE. OUTLET CONNECTION TO THE MAIN AND PIPES 150mmØ OR GREATER PRIOR TO BASE COURSE ASPHALT. UPON COMPLETION OF CONTRACT, THE CONTRACTOR IS RESPONSIBLE TO FLUSH AND CLEAN ALL SEWERS & APPURTENANCES.
  - DYE TESTING IS TO BE COMPLETED ON SANITARY SERVICE TO CONFIRM PROPER CONNECTION TO SANITARY SEWER MAIN.

**CROSSING CONFLICT TABLE**

LOCATION	DESCRIPTION	SEPARATION
1	38mmØ WTR SERVICE INV 135.34 200mmØ SAN SEWER OBY 135.04	0.30
2	38mmØ WTR SERVICE INV 135.52 200mmØ SAN SEWER OBY 135.02	0.30
3	38mmØ WTR SERVICE INV 135.18 200mmØ SAN SEWER OBY 134.88	0.30
4	38mmØ WTR SERVICE INV 135.15 200mmØ SAN SEWER OBY 134.85	0.30
5	19mmØ WTR SERVICE INV 135.40 200mmØ SAN SEWER OBY 134.77	0.63
6	19mmØ WTR SERVICE INV 135.40 200mmØ SAN SEWER OBY 134.77	0.63
7	19mmØ WTR SERVICE INV 135.43 200mmØ SAN SEWER OBY 134.71	0.72

**STM STRUCTURE TABLE**

NAME	RIM ELEV.	INVERT IN	INVERT OUT	DESCRIPTION
LSCB1	136.47	SE136.040	NW136.040	PER CITY OF OTTAWA STANDARD S30
LSCB2	136.65	NE136.195	NW136.195	PER CITY OF OTTAWA STANDARD S30
LSCB3	136.83	NE136.350	SW136.350	PER CITY OF OTTAWA STANDARD S30
LSCB4	137.02		SW136.550	PER CITY OF OTTAWA STANDARD S31

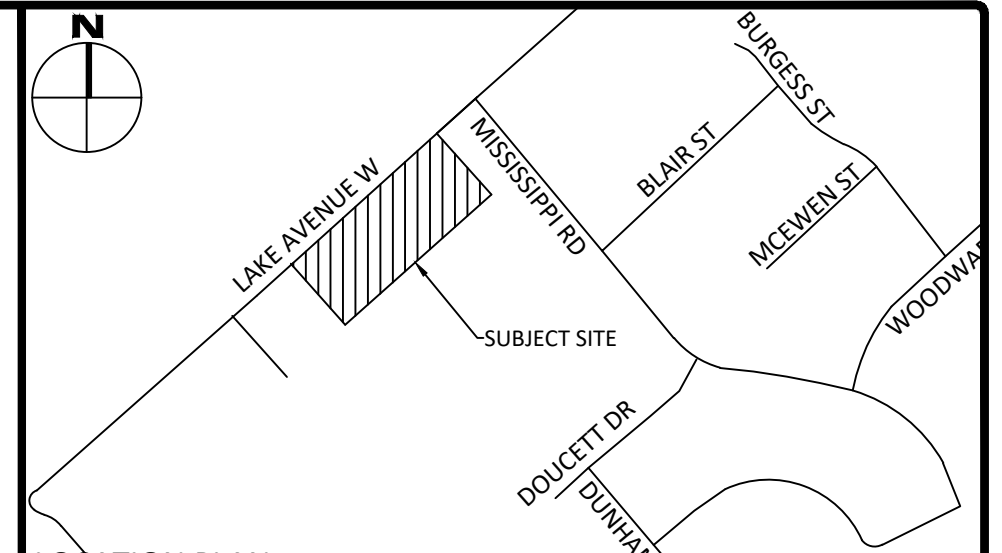
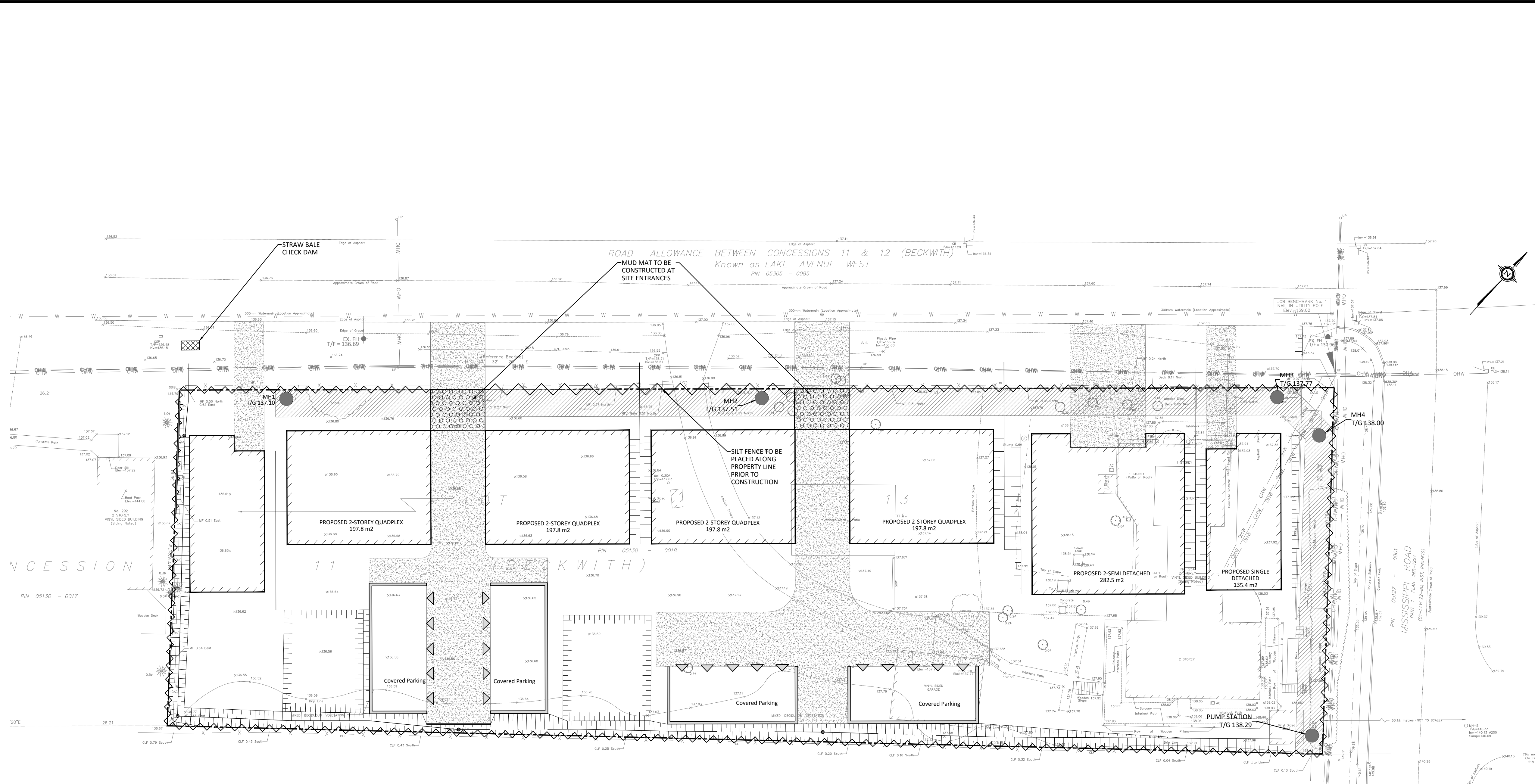
**SAN STRUCTURE TABLE**

NAME	RIM ELEV.	INVERT IN	INVERT OUT	DESCRIPTION
MH1	137.10		NE134.890	STRUC OPSD 701.010 FRAME OPSD 401.010 COVER OPSD 401.010 TYPE A
MH2	137.51	SW134.723	NE134.690	STRUC OPSD 701.010 FRAME OPSD 401.010 COVER OPSD 401.010 TYPE A
MH3	137.77	SW134.509	E134.480	STRUC OPSD 701.010 FRAME OPSD 401.010 COVER OPSD 401.010 TYPE A
MH4	138.00	W134.460	SE134.430	STRUC OPSD 701.010 FRAME OPSD 401.010 COVER OPSD 401.010 TYPE A
PUMP STATION	138.29	NW134.325		EONE DESIGN (BY OTHERS)

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**LEGEND**

CONCRETE BARRIER CURB	LIMIT OF CONSTRUCTION
CONCRETE WALKWAY	DRAINAGE SWALE
PROPOSED ASPHALT	DRAINAGE DITCH
MUD MAT	SLOPING AT 1% UNLESS SPECIFIED
MH# T/G	95.50 SURFACE ELEVATION
SMH# T/G	95.50 SWALE ELEVATION
CMH# T/G	T/W 95.50 B/W 94.25
CB# T/G	TOP OF WALL ELEVATION
CA# T/G	BOTTOM OF WALL ELEVATION
CS# T/G	OVERLAND FLOW ROUTE
HYD B/F	SILT FENCE
WATER VALVE	STRAW BALE CHECK DAM
WATER METER	
REMOTE WATER METER	

**FOR REVIEW ONLY**  
NOT FOR CONSTRUCTION

No.	Revisions	Date
2	ISSUED FOR REVIEW	APR. 03, 2024
1	ISSUED FOR REVIEW	FEB. 08, 2023

Check and verify all dimensions before proceeding with the work. Do not scale drawings.

SCALE 1:250

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Client: ESCAPE HOMES  
254 LAKE AVENUE WEST  
CARLETON PLACE, ON K7C 1M4

Project: 254 LAKE AVENUE WEST

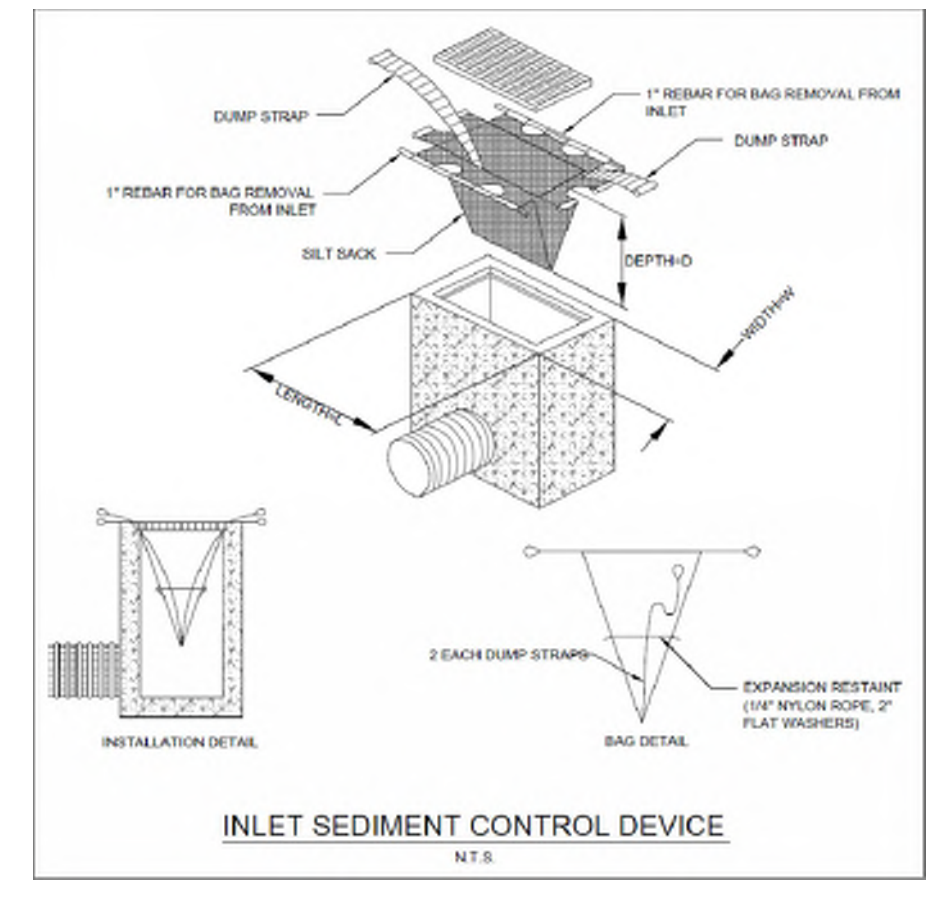
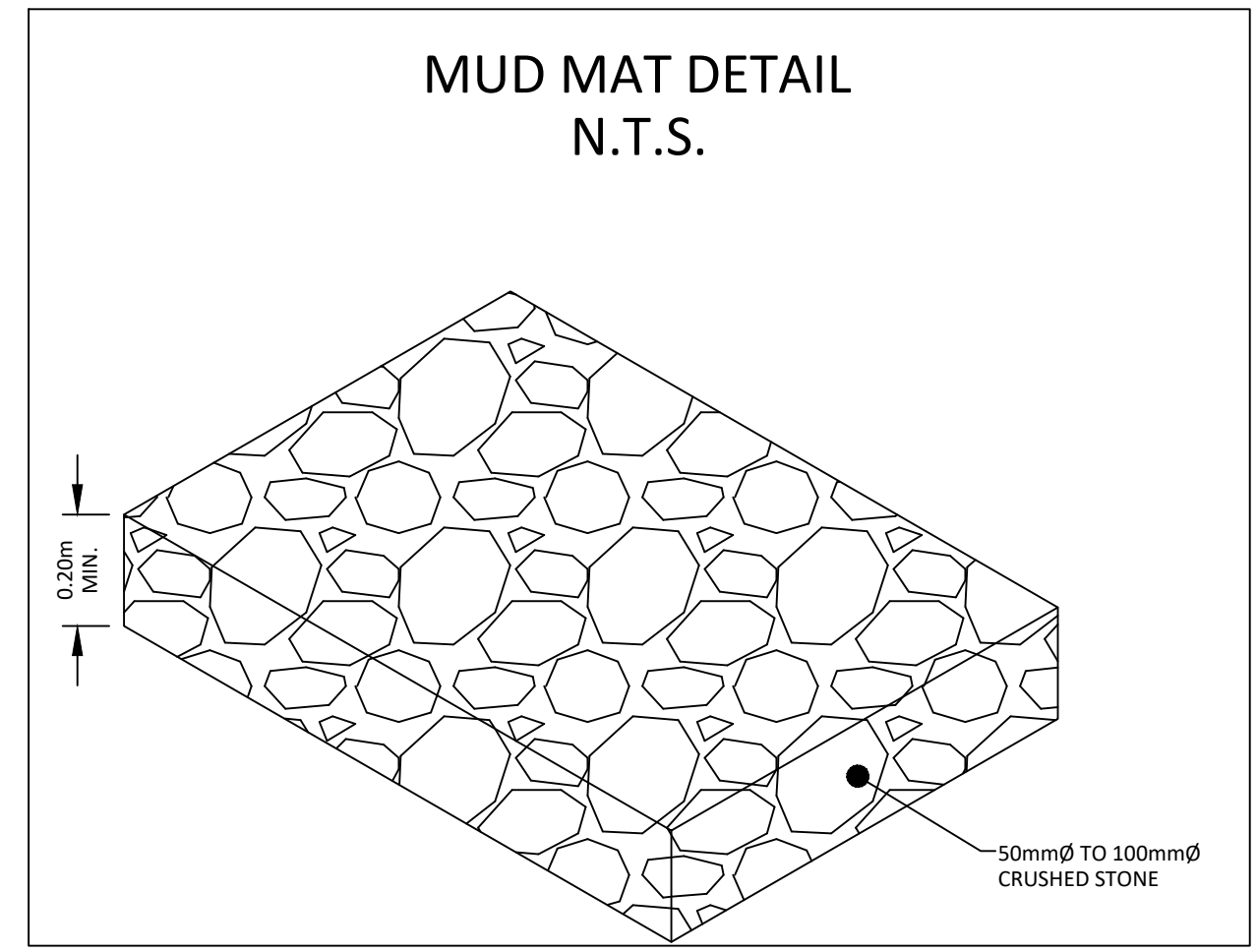
Drawing Title: EROSION AND SEDIMENT CONTROL PLAN

Scale: 1:250	Project Number: CO-22-1448
Drawn By: FV	Checked By: AM
Designed By: AG	Drawing Number: C103

- GENERAL NOTES**
- THE ORIGINAL TOPOGRAPHY, GROUND ELEVATION AND SURVEY DATA SHOWN ARE SUPPLIED FOR INFORMATION PURPOSES ONLY, AND IMPLY NO GUARANTEE OF ACCURACY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL INFORMATION SHOWN.
  - THIS PLAN IS NOT A CADASTRAL SURVEY SHOWING LEGAL PROPERTY BOUNDARIES AND EASEMENTS. THE PROPERTY BOUNDARIES SHOWN HEREON HAVE BEEN DERIVED FROM INFORMATION SUPPLIED BY (OR SHOWN ON) ANNS, O'SULLIVAN, VOLBERG & CO. DRAWING 17466-21 AND CANNOT BE RELIED UPON TO BE ACCURATE OR COMPLETE. THE PRECISE LOCATION OF THE CURRENT PROPERTY BOUNDARIES AND EASEMENTS CAN ONLY BE DETERMINED BY AN UP-TO-DATE LAND TITLES SEARCH AND A SUBSEQUENT CADASTRAL SURVEY PERFORMED AND CERTIFIED BY AN ONTARIO LAND SURVEYOR.
  - THE CONTRACTOR IS TO OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY BEFORE COMMENCING CONSTRUCTION.
  - THE CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT.
  - THE CONTRACTOR IS TO DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION, PROTECT AND ASSUME ALL RESPONSIBILITY FOR EXISTING UTILITIES WHETHER OR NOT SHOWN ON THESE DRAWINGS. IF THERE IS ANY DISCREPANCY THE CONTRACTOR IS TO NOTIFY THE ENGINEER PROMPTLY.
  - RESTORE ALL TRENCHES AND SURFACES OF PUBLIC ROAD ALLOWANCES TO CONDITION EQUAL OR BETTER THAN ORIGINAL CONDITION AND TO THE SATISFACTION OF THE CITY AUTHORITIES.
  - EXCAVATE AND DISPOSE OF ALL EXCESS EXCAVATED MATERIAL, SUCH AS ASPHALT, CURBING AND DEBRIS, OFF-SITE AS DIRECTED BY THE ENGINEER AND THE CITY.
  - TOPSOIL TO BE STRIPPED AND STOCKPILED FOR REHABILITATION. CLEAN FILL TO BE PLACED IN FILL AREAS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.
  - ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER UNLESS OTHERWISE SPECIFIED.
  - THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL AND SAFETY MEASURES DURING THE CONSTRUCTION PERIOD, INCLUDING THE SUPPLY, INSTALLATION, AND REMOVAL OF ALL NECESSARY SIGNAGE, DELINEATORS, MARKERS AND BARRIERS.
  - DO NOT ALTER GRADING OF THE SITE WITHOUT PRIOR APPROVAL OF THE ENGINEER/CITY.

- ALL ROADWAY, PARKING LOT, AND GRADING WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH CITY STANDARDS AND SPECIFICATIONS. THE CONTRACTOR IS TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE BUILDING.
- CONTACT THE CITY FOR INSPECTION OF ROUGH GRADING OF PARKING LOTS, ROADWAYS AND LANDSCAPED AREAS PRIOR TO PLACEMENT OF ASPHALT AND TOPSOIL. ALL DEFICIENCIES NOTED SHALL BE RECTIFIED TO THE CITY'S SATISFACTION PRIOR TO PLACEMENT OF ANY ASPHALT, TOPSOIL, SEED & MULCH AND/OR SOIL.
- ALL DIMENSIONS AND INVERTS MUST BE VERIFIED PRIOR TO CONSTRUCTION. IF THERE IS ANY DISCREPANCY THE CONTRACTOR IS TO NOTIFY THE ENGINEER PROMPTLY.
- ELECTRICAL, GAS, TELEPHONE AND TELEVISION SERVICE LOCATIONS ARE SUBJECT TO THE INDIVIDUAL AGENCY.
  - ELECTRICAL SERVICE - HYDRO ONE
  - GAS SERVICE - ENBRIDGE
  - TELEPHONE SERVICE - BELL CANADA
  - TELEVISION SERVICE - ROGERS
- INSTALLATION TO BE IN ACCORDANCE WITH CURRENT CODES AND STANDARDS OF APPROVAL AGENCIES HYDRO ONE, BELL AND THE CITY.
- CONTRACTOR TO ENSURE ALL APPLICABLE OPS SPECIFICATIONS ARE FOLLOWED DURING CONSTRUCTION.
- ALL PROPOSED CURB TO BE CONCRETE BARRIER CURB UNLESS OTHERWISE SPECIFIED.

- EROSION AND SEDIMENT CONTROL**
- THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATERCOURSE, DURING CONSTRUCTION ACTIVITIES. THIS INCLUDES LIMITING THE AMOUNT OF DISPOSED SOIL, TEMPORARY SEDIMENT CONTROL (GEO SOCK INSERTS WITH AN OVERFLOW UNDER GRATE OR COVER) TO BE IMPLEMENTED DURING CONSTRUCTION ON ALL PROPOSED ROAD CATCHBASINS, REAR YARD CATCHBASINS AND CATCHBASIN MANHOLES AND OTHER SEDIMENT TRAPS. NO RECYCLED GEOSOCK MATERIAL SHALL BE PERMITTED FOR USE ON SITE. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
  - AT THE DISCRETION OF THE PROJECT MANAGER OR MUNICIPAL STAFF, ADDITIONAL SILT CONTROL DEVICES SHALL BE INSTALLED AT DESIGNATED LOCATIONS.
  - FOR SILT FENCE BARRIER, USE OPS 219.110. GEOTEXTILE FOR SILT FENCE AS PER OPS 1860, TABLE 3.
  - EXCEPT AS PROVIDED IN PARAGRAPHS 4.1, and 4.2. BELOW, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS FEASIBLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY HAS TEMPORARILY OR PERMANENTLY CEASED.
    - WHERE THE INITIATION OF STABILIZATION MEASURES BY THE 14TH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASES IS PRECLUDED BY SNOW COVER, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS FEASIBLE.
    - WHERE CONSTRUCTION ACTIVITY WILL RESUME ON A PORTION OF THE SITE WITHIN 21 DAYS FROM WHEN ACTIVITIES CEASED, (E.G. THE TOTAL TIME PERIOD THAT CONSTRUCTION ACTIVITY IS TEMPORARILY CEASED IS LESS THAN 21 DAYS) THEN STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF SITE BY THE 14TH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY CEASED.
  - SEDIMENT THAT IS ACCUMULATED BY THE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED IN A MANNER THAT AVOIDS ESCAPE OF THE SEDIMENT TO THE DOWNSTREAM SIDE OF THE CONTROL MEASURE AND AVOIDS DAMAGE TO THE CONTROL MEASURE. SEDIMENT SHALL BE REMOVED TO THE LEVEL OF THE GRADE EXISTING AT THE TIME THE CONTROL MEASURE WAS CONSTRUCTED AND BE ACCORDING TO THE FOLLOWING:
    - FOR LIGHT-DUTY SEDIMENT BARRIERS, ACCUMULATED SEDIMENT SHALL BE REMOVED ONCE IT REACHES THE LESSES OF THE FOLLOWING:
      - A DEPTH OF ONE-HALF THE EFFECTIVE HEIGHT OF THE CONTROL MEASURE.
    - A DEPTH OF 300 MM IMMEDIATELY UPSTREAM OF THE CONTROL MEASURE.
    - FOR ALL CONTROL MEASURES, ACCUMULATED SEDIMENT SHALL BE REMOVED AS NECESSARY TO PERFORM MAINTENANCE REPAIRS.
    - ACCUMULATED SEDIMENT SHALL BE REMOVED PRIOR TO THE REMOVAL OF THE CONTROL MEASURE.
    - ACCUMULATED SEDIMENT IS TO BE REMOVED AND DISPOSED OF AS PER OPS 180.
    - ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MONITORED TO ENSURE THEY ARE IN EFFECTIVE WORKING ORDER. THE CONDITION OF THE CONTROL MEASURES SHALL BE MONITORED PRIOR TO ANY FORECAST STORM EVENT AND FOLLOWING A STORM EVENT.
    - DUST CONTROL MEASURES SHOULD BE CONSIDERED PRIOR TO CLEARING AND GRADING. THE USE OF WATER, CALCIUM CHLORIDE FLAKES/SOLUTION OR MAGNESIUM CHLORIDE FLAKES/SOLUTION SHALL BE USED AS DUST SUPPRESSANTS AS PER OPS 506. THIS IS TO LIMIT WIND EROSION OF SOILS WHICH MAY TRANSPORT SEDIMENTS OFF-SITE, WHERE THEY MAY BE WASHED INTO THE RECEIVING WATER BY THE NEXT RAINSTORM.
    - ALL 'GREEN AREAS' TO BE TREATED WITH 150mm TOPSOIL AND SO2 AS SOON AS FEASIBLE, AS PER OPS 570.
    - ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER UNLESS OTHERWISE SPECIFIED.
    - STOCKPILED MATERIAL IS TO BE STORED AWAY FROM POTENTIAL RECEIVERS (E.G. STORM CATCHBASINS, MANHOLES), AND BE SURROUNDED BY EROSION CONTROL MEASURES WHERE MATERIAL IS LEFT IN PLACE IN EXCESS OF 14 DAYS.
    - IF REQUIRED, DEWATERING/SETTLING BASINS SHALL BE CONSTRUCTED AS PER OPS 219.240 AND LOCATED ON FLAT GRADE UPSTREAM OF OTHER EXISTING MITIGATION MEASURES. WATERCOURSES SHALL NOT BE DIVERTED, OR BLOCKED, AND TEMPORARY WATERCOURSES CROSSINGS SHALL NOT BE CONSTRUCTED OR UTILIZED, UNLESS OTHERWISE SPECIFIED IN THE CONTRACT. IF CLOSURE OF ANY PERMANENT WATER PASSAGE IS NECESSARY, THE CONTRACTOR SHALL RELEASE ANY STRANDED FISH TO THE OPEN PORTION OF THE WATERCOURSE WITHOUT HARM.
    - ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL CONFORM TO OPS 577.
    - WHERE DEWATERING IS REQUIRED, THE DISCHARGED WATER SHALL BE CONTROLLED IN ACCORDANCE WITH OPS 518.
    - ALL SETTLING/FILTRATION BASINS SHALL BE EQUIPPED WITH TERRAFIX 270R GEOTEXTILE (OR APPROVED EQUIVALENT) AND SHALL BE CLEANED AND REPLACED AS REQUIRED.



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