

FUNCTIONAL SERVICE AND SWM REPORT

**PROPOSED SEVERANCE
2045 HEARTWOOD COURT
MISSISSAUGA, ON**

NOVEMBER 03 2021

**PREPARED BY
PREMIER ENGINEERING SOLUTIONS
3294 ALPACA AVENUE, MISSISSAUGA
ONTARIO, L5M 7V3**

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PROPOSED SEVERANCE 2045 HERATWOOD COURT MISSISSAUGA, ON

November 3, 2021

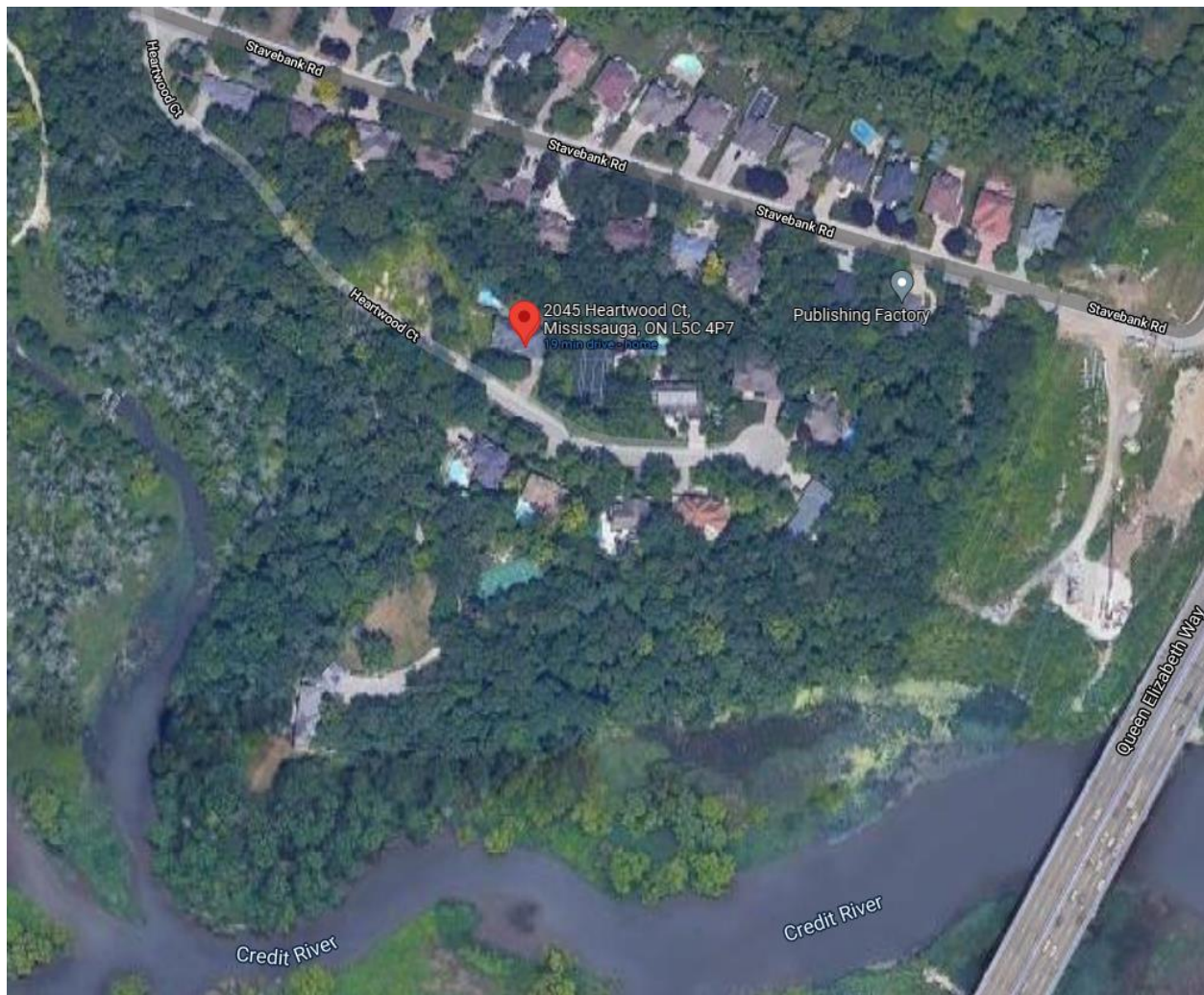
1.0 INTRODUCTION

Premier Engineering Solutions is retained to prepare a Functional Service and Stormwater Management Report to support the Severance Application to building a new Single Family House on the new severed lot. The subject property is an approximately 0.37 hectare parcel located north of Heartwood Crescent and is bounded by wooded land in the northwest and southwest. The subject property consists of a single family residence with a swimming pool in the backyard of the property. The satellite image of the site and its surrounding area is shown in **Figure 1** of this report.

This report has been prepared to demonstrate the servicing feasibility of the proposed development is in conjunction with the existing municipal services available for the severed new lot and to see how the new development affects the existing municipal services and specially to see the how the drainage is affected by the proposed development.

The subject property is fully serviced by storm, a 75mm sanitary low pressure main and a 150mm water along Heartwood Court.

The subject property is fully serviced by storm, sanitary and water. There is a 150 diameter water main, and a 450 combined sewer along Eglington Avenue West.



**Figure 1 SATELLITE IMAGE OF THE SUBJECT SITE
AND IT'S SURROUNDING AREA**

2.0 WATER SYSTEM

2.1 EXISTING SYSTEM

There is an existing 150mm watermain along the Heartwood Court. An existing fire hydrant is located in front of the new severed proposed lot.

2.2 PROPOSED SYSTEM

We are proposing a 25mm new domestic water connection from the existing 150mm along the street for the proposed single family house.

The Existing Fire Hydrant is less than 90m from the far end of the proposed development, we don't have any issue with the fire requirement.

3.0 SANITARY SYSTEM

3.1 EXISTING SYSTEM

An existing low pressure 75mm Sanitary Low Pressure Main runs along 0.80m south of the property line to serve the existing house along Heartwood Court. The detail of the sanitary sewer and with pumping accessories is shown in the City Drawings **13034_D** and **13035_D**.

3.2 PROPOSED SYSTEM

We are proposing a new 38mm diameter sanitary pumping service, PVC pipe as per detail shown on the City's drawing 13035_D. The sanitary flows from the proposed single family house will be collected in a pumping chamber located under the floor of the garage of the proposed development. A grinder pump will be proposed to collect from the pumping chamber and pumped through 38mm sanitary PVC pipe to the city 75mm Sanitary low pressure Main as shown in the attached City's Drawing **13035_D**.

As per the Detail shown on the **Drawing 13035_D**, two grinder pumps of Model 214 series are being proposed for proposed development.

4.0 EASEMENT RESTRICTION

There is an 6m wide storm easement for storm drainage, along the southeast side of the property. An overland flow route passes through the easement(refer to the City's **Dwg. 13035_D**). The drainage Pattern will be kept same as existing shown on drawings **Dwg. 13035_D**. The Easement Plan for the Sub-Division is shown in **Appendix 'A'**. The Drawings **13034_D** and **13035_D** are restricted and need permission to include in the Appendices.

5.0 STORMWATER MANAGEMENT

5.1 PRE-DEVELOPMENT RUNOFF COEFFICIENT (NEW SEVERED LOT)

The new severed lot is a vacant grass land, with of dead trees remaining.

Area of Lot	=0.2085ha
Grass/Landscape	=0.2085 ha
Runoff Coefficient	=0.25

5.2 POST-DEVELOPMENT RUNOFF COEFFICIENT (NEW SEVERED LOT)

Area of Lot	=0.2085ha
New House	=0.0263ha
Driveway(New House)	=0.00585ha
Total Hard Surface	=0.03215 ha
Grass/Landscape	=0.17635ha
Runoff Coefficient	$=(0.03215 \times 0.90 + 0.17635 \times 0.25) / 0.2085$ =0.35

5.3 PRE-DEVELOPMENT RUNOFF COEFFICIENT (ORIGINAL LOT)

The new severed lot is a vacant grass land, with of dead trees remaining.

Area of Lot	=0.3724ha
Existing House	=0.0263ha
Driveway	=0.0131ha
Swimming Pool and Patio	=0.0303ha
Total Hard Surface	=0.0697
Grass/Landscape	=0.3027 ha
Runoff Coefficient	$=(0.0697 \times 0.90 + 0.3027 \times 0.25) / 0.3724$

$$=0.37$$

The Drainage Plan is shown in **Appendix 'B'**

5.4 POST-DEVELOPMENT RUNOFF COEFFICIENT (ORIGINAL LOT))

Area of Lot	=0.3724ha
Existing House	=0.0263ha
Driveway	=0.0131ha
Swimming Pool and Patio	=0.0303ha
New House	=0.0263ha
Driveway(New House)	=0.00585ha
Total Hard Surface	=0.10185 ha
Grass/Landscape	=0.27055ha
Runoff Coefficient	$=(0.10185 \times 0.90 + 0.27055 \times 0.25)/3724$
	=0.43

The Drainage Plan is shown in **Appendix 'B'**. As the runoff coefficient is increased from 0.37 to 0.43, we need to propose techniques to bring down runoff due to increase in impervious area.

5.5 SOAKAWAY PIT DESIGN

As internally, in a residential house we don't provide storm system, we will propose two soakaway pits to retain the rainwater and slowly infiltrate the rainwater into the ground, thus reducing the runoff from the proposed development. We are proposing to retain 25mm of rainwater from the hard surface instead of 5mm as to reduce the runoff volume.

Total increase in the Hard Surface	=0.03215ha
Percolation Rate	=12.5mm/hour(See Appendix 'C')
Rain water to retain	$=321.5 \times 0.025$
	=8.038m ³
Proposing a Soakaway Pit of 12x2x1.0m(Deep)	
0.37 Volume of Stored Rainwater	$=12 \times 2 \times 1 \times 0.40(\text{Porosity})$
	=9.6m ³ > 8.038m ³
Infiltration in 48 Hours	$=12 \times 2 \times 0.0125 \times 48$
	=14.4m ³ > 8.038m ³ O.K.

5.0 CONCLUSION

All necessary services such as roads, sanitary sewers, water, storm outlet and utilities are available and have sufficient capacity to accommodate the proposed development.

Overland flow route is kept same as in the original design shown on Drawing **13035_D**

Based on the availability of municipal services and other utilities and the fact that the proposed development is compatible with the existing land use and complements the existing landscape, we recommend approval to be granted to the proposed development. The proposed development will also generate impost fee for the City, which will assist in financing of other projects, in addition to the creation of healthy tax base.

Report prepared by:

Muhammad Ismail P.Eng.



Appendix 'A'
Background Information

PLAN OF SURVEY OF
PART OF LOTS 8,9,10,11,12 AND 13 AND BLOCK 26
REGISTERED PLAN No.43 M-
CITY OF MISSISSAUGA
REGIONAL MUNICIPALITY OF PEEL
(FORMERLY COUNTY OF PEEL)
SCALE : 1 : 500
G.B. CLARKE O.L.S. 1987.

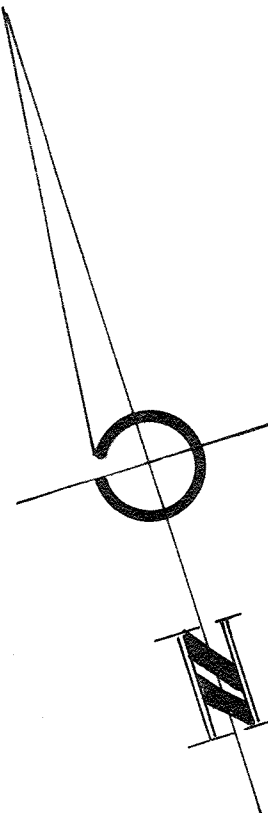


PARTS 1 TO 7 INCLUSIVE - PART OF PARCEL

I REQUIRE THIS PLAN TO BE
DEPOSITED UNDER THE LAND TITLES ACT.
DATE _____
G.B. CLARKE O.L.S.

PLAN 43R-
RECEIVED AND DEPOSITED
DATE _____
LAND REGISTRAR FOR THE
LAND TITLES DIVISION OF PEEL.
(No. 43)

CAUTION: THIS PLAN IS NOT A PLAN OF SUBDIVISION WITHIN THE
MEANING OF THE PLANNING ACT.



STAVEBANK ROAD

LOT 3 LOT 4 LOT 5 LOT 6 LOT 7 LOT 8 BLOCK 26 BLOCK 27
REGISTERED PLAN No.

LOT 9
43

HEARTWOOD

COURT

LOT 12

LOT 13

LOT 14

LOT 18

LOT 17

LOT 16

LOT 15

INDIAN RESERVE
2
RESERVE
ALLOWANCE FOR ROAD BETWEEN RANGES 2 AND 3 CREDIT INDIAN RESERVE
RANGE CREDIT

SURVEYOR'S CERTIFICATE :

I CERTIFY THAT :
1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH
THE SURVEYS ACT AND THE LAND TITLES ACT AND THE REGULATIONS
MADE THEREUNDER.
2. THE SURVEY WAS COMPLETED ON THE 24th DAY OF JUNE, 1987.
DATED: 24th JUNE, 1987. G. B. CLARKE
ONTARIO LAND SURVEYOR

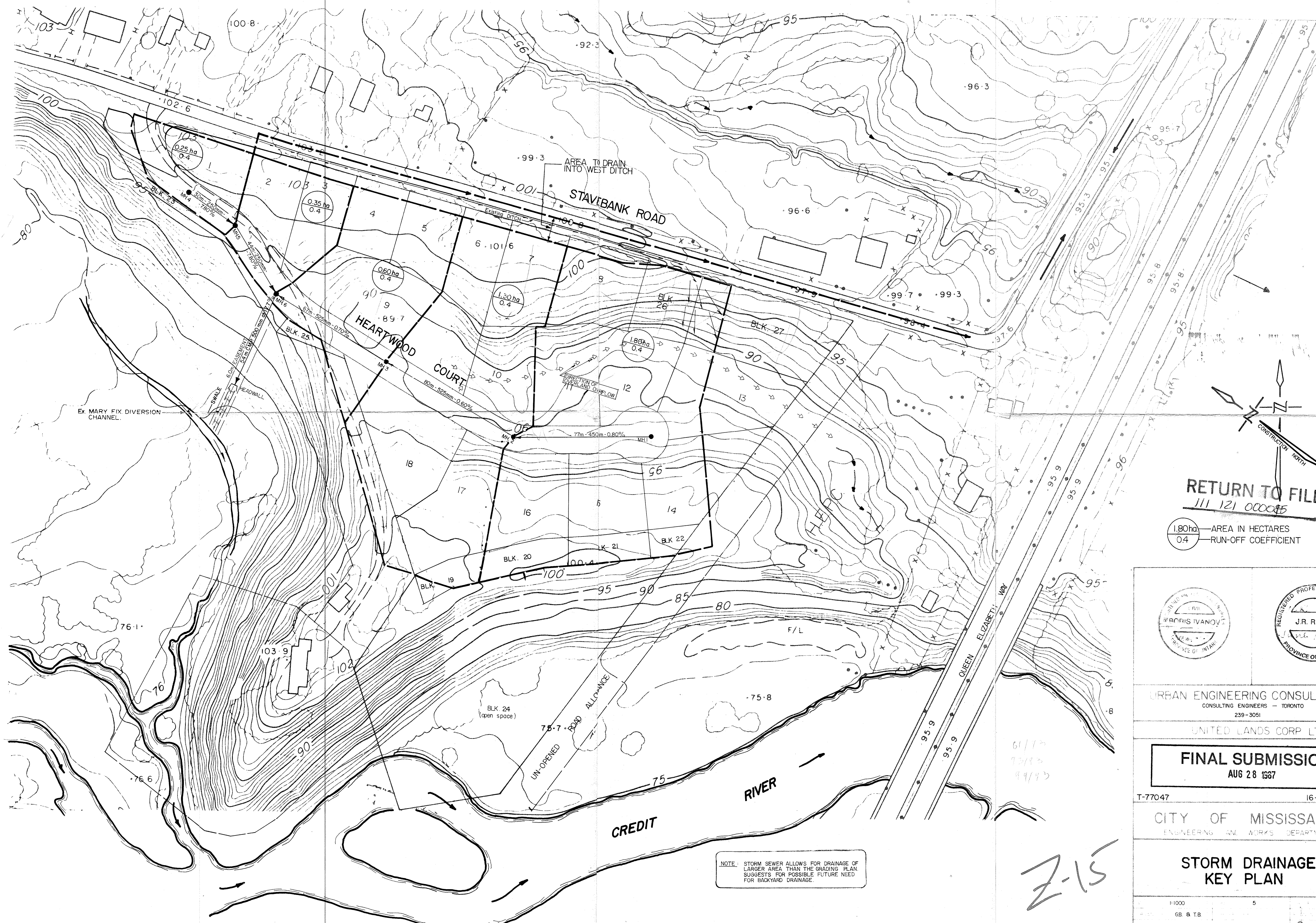
NOTE:

BEARINGS SHOWN HEREON ARE REFERRED TO THE NLY. LIMIT OF HEARTWOOD COURT
HAVING AN ASTRONOMIC BEARING OF N88°54'46" W IN ACCORDANCE WITH R.P. 43 M-
SIB DENOTES STANDARD IRON BAR (0.025 SQ. x 1.22 LONG)
IB II IRON BAR (0.015 SQ. x 0.61 LONG)
□ II SET
■ II FOUND
P II R.P. 43 M-

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

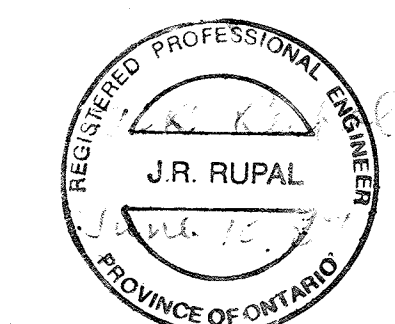
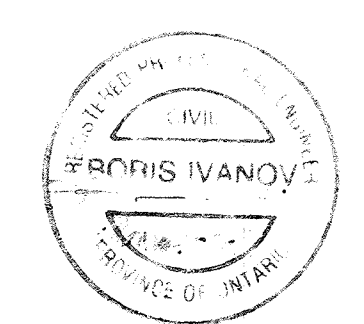
DRAWN BY : M. SINGH
CHECKED BY : G.B. CLARKE
C.A. SEXTON LIMITED-ONTARIO LAND SURVEYOR
12 CENTRE STREET - THORNHILL, ONTARIO, 889-9103
JOB No. 87-5562

SERVICE DATA					
SERVICE	DATE	INIT	SERVICE	DATE	INIT
REVISIONS					
DATE	DETAILS	INIT			



RETURN TO FILE
111 121 000085

1.80ha - AREA IN HECTARES
0.4 - RUN-OFF COEFFICIENT



URBAN ENGINEERING CONSULTANTS
CONSULTING ENGINEERS - TORONTO
239-3051

UNITED LANDS CORP. LTD.

FINAL SUBMISSION
AUG 28 1987

T-77047

16-III-78147

CITY OF MISSISSAUGA
ENGINEERING AND WORKS DEPARTMENT

**STORM DRAINAGE
KEY PLAN**

1:1000	5
GB & T.B.	
JUNE	C-

E-168-7.

Appendix 'B'
Storm Drainage Plans

PRE-DEVELOPMENT DRAINAGE PLAN

LEGEND

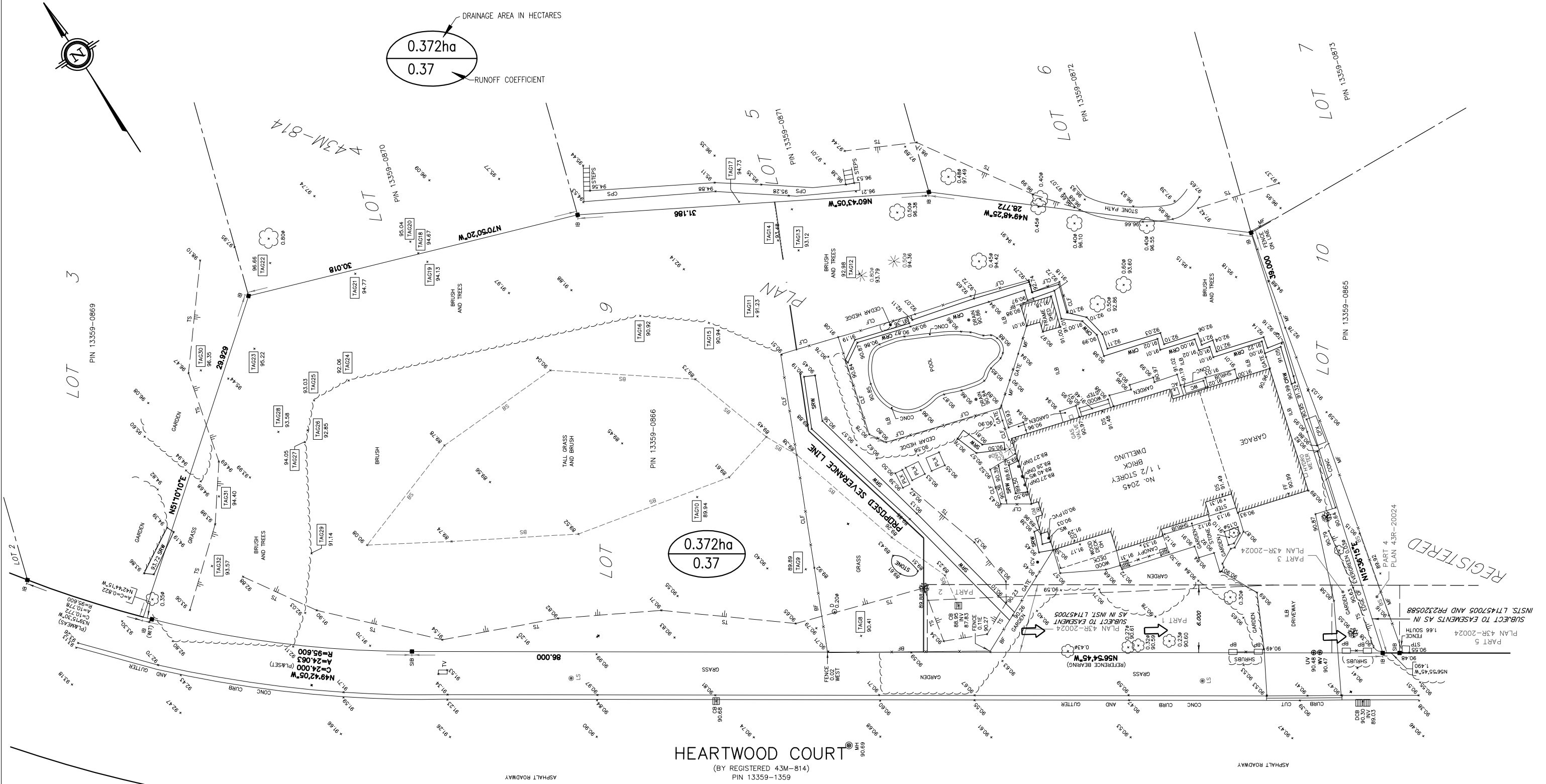
EXISTING GRADE

PROP MAJOR OVERLAND FLOW DIRECTION

DRAINAGE AREA IN HECTARES

0.372ha

— RUNOFF COEFFICIENT



POST-DEVELOPMENT DRAINAGE PLAN

PROP MAJOR OVERLAND FLOW DIRECTION

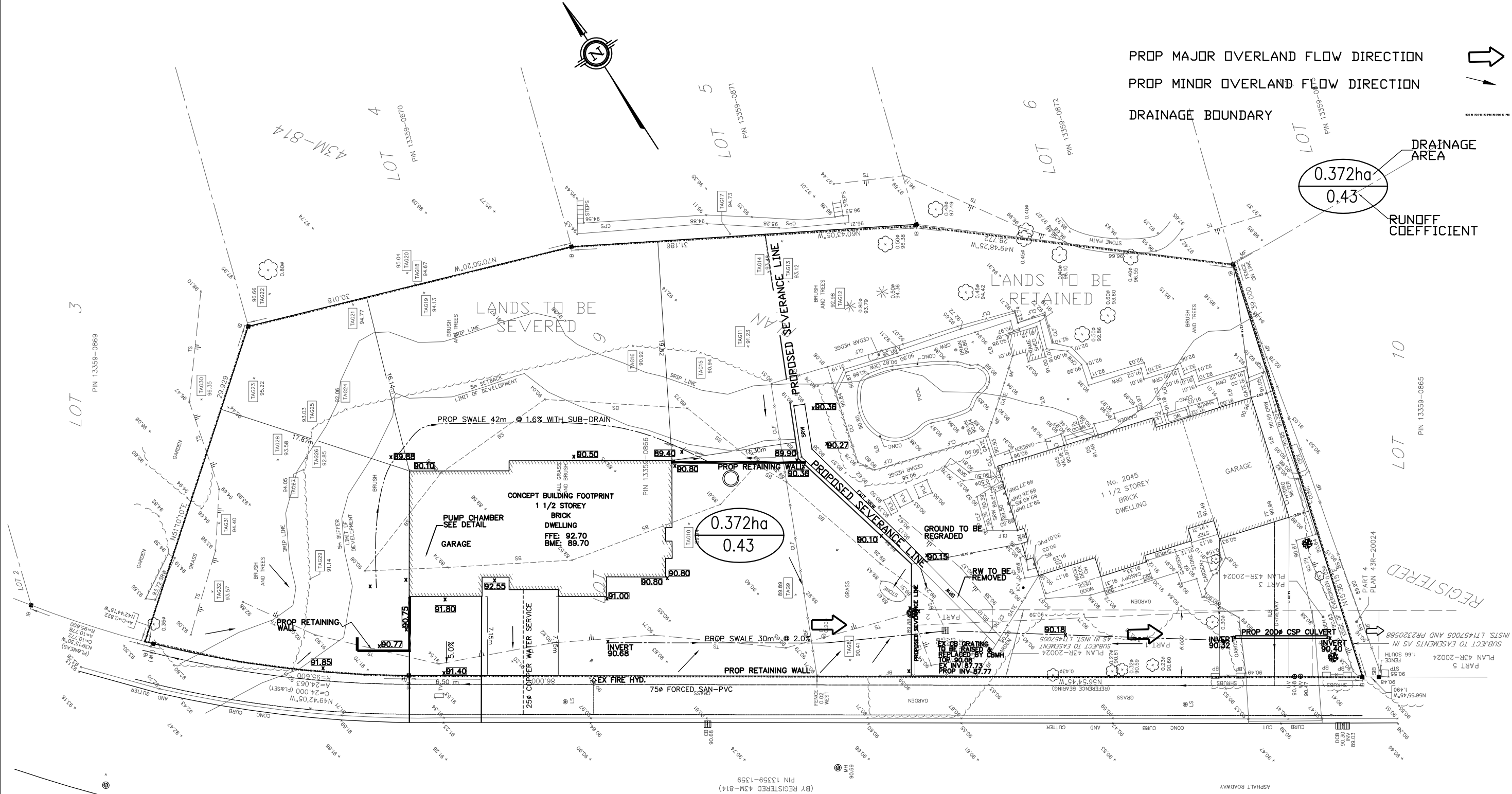


PROP MINOR OVERLAND FLOW DIRECTION



DRAINAGE BOUNDARY

0.372ha
0.43
DRAINAGE AREA
RUNOFF COEFFICIENT



HEARTWOOD COURT

(BY REGISTERED 43M-814)
PIN 13359-1359

ASPHALT ROADWAY

ASPHALT ROADWAY

REGISTERED

PART 5
PLAN 43R-20024
SUBJECT TO EASEMENTS AS IN
INSTS. L17457005 AND PR2320988

PART 4
PLAN 43R-20024

PART 3
PLAN 43R-20024

Appendix 'C'
Percolation Rate Test

PREMIER ENGINEERING SOLUTIONS

CIVIL ENGINEERS AND CAD SPECIALIST

3294 ALPACA AVENUE, MISSISSAUGA, ONTARIO L5M 7V3

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E-mail: mfi@p-engineeringsolutions.com

October 06, 2021

**Re: Percolation Test Determination of Soil in Test Pit at 2045 Heartwood Court,
Mississauga, Ontario**

On the request of the client we visited the site, 2045 Heartwood Court to carry a percolation test, we visited the site on September 26, 2021. The percolation rate test was done near the proposed location of the Soakaway/Infiltration Pit.

Test Procedure

A pit was dug by hand. At around 2 feet depth water table was found. The pit was dug further 6 to 8". The pit was partially filled with water. The drop of water level in the pit was measured over a period of three and half an hour.

The top one foot consists of bark of trees and dead leaves, then followed by silty clayey/light brown plasticity cohesive clay.

After the digging was completed, the test pit was then partially filled with potable water from buckets. The water level to which the test pit was filled was 18" from the existing ground surface. The drop of the water level was found to be 9 cm in three hours and half an hour.

Using the rates of drops of the water levels, the rate of percolation(T) was calculated for the test pit. The permeability of the soil around and below the test pit was extrapolated.

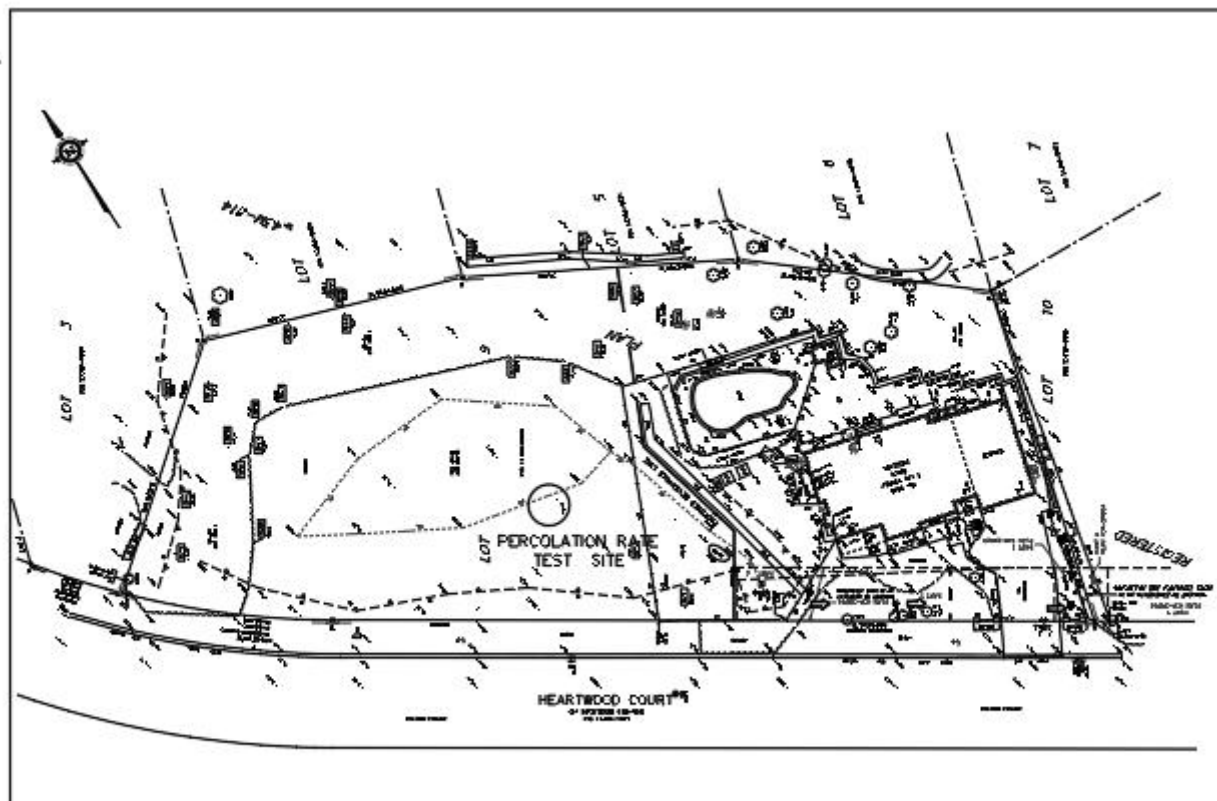


Figure 2
Test Pit Pictures



Showing the Test Pit Depth



Picture of the Excavated Soil

From the above measurements of the drops of water levels(9cm in 3hour-30minutes), we calculated the T-Time to be approximately 1 and a permeability of 25.7mm/hour) . We will apply a factor of safety of 2, thus rate of percolation comes to 12.8mm/hour. Thus, for the design of infiltration trench/Soakaway pit we will adopt permeability rate of 12.8mm/hour safely.

We trust that this report meets your requirements. Please call the undersigned if you have any questions.

Report prepared by,

M Furqan Ismail, P.Eng.

