



Main Street Engineering  
190A Ontario Street  
St. Catharines, ON L2W 1C4

905 684 8585 tel  
www.mainstreetengineering.ca

# **SERVICING BRIEF**

## **LEDWEZ COURT SUBDIVISION**

*Niagara on the Lake*

**Revised 2026 05 08**

This is an outline of the intended servicing for Ledwez Court in support for Draft Plan Approval. Detailed engineering design will be provided at the Subdivision Agreement stage.

### **Reference Attachments**

BNI Drawing 0371 DPS-1 Draft Plan of Subdivision Dated 2026 05 01

MSE Drawing 25008-PSP-1 Preliminary Servicing Plan Dated 2026 05 08

MSE Drawing 25008-PGP-1 Preliminary Grading Plan Dated 2026 05 08

BNI Drawing 0371 PP-1 Preliminary Queenston Road Sanitary Sewer Extension

Updated by MSE 2026 05 08

MSE Drawing 0371-PDP-1 Preliminary Drainage Plan Dated 2026 05 08

MSE Preliminary Storm Sewer Calculations

MSE Preliminary Storm Water Management Calculation

### **Sanitary Sewers**

The existing sanitary sewer on Queenston Road will be extended from Townline Road easterly to Ledwez Court. The Plan Profile describes the preliminary design. Care has been taken in the location of the sewer within the road allowance to maintain at least one-way traffic during construction as well as protecting the existing watermain in the south shoulder.

The sanitary sewer will be extended through the subdivision with the upper link at 0.60% to increase the cleansing velocity. Some sewage ejectors in the basement levels of some of the houses may be necessary depending upon those house designs.

Lot Laterals will be provided according to Town Standards.



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## **Storm Drainage - Refer to Preliminary Drainage Plan**

The existing drainage pattern is shown in yellow on 25008-PDP-1. The only external area entering the site is the rear yard of #363 Townline Road. If/when that lot gets redeveloped, increased flows from that lot will be restricted to existing or redirected to Queenston Road or Townline Road.

As part of the approval conditions for development of the property to the south, the drainage area of the small tributary at the south-east corner of this site will be redirected elsewhere. That tributary will only serve as an outlet for the rear yard of the future building to the south.

Areas 1 & 3 will be directed to the Queenston Road ditch via rear yard swales. Area 2 will also be directed to the ditch via curb outlets.

Area 6 will be directed to the existing tributary via a rear yard swale.

Area 7 will drain overland to the east.

Areas 4 & 5 will be directed to a storm sewer via a rear lot catchbasin between Lots 3 & 4 and a double catchbasin at the low point in the curb.

The increased flows from development of the site will be detained via an in-line storage sewer between CB #1 and MH A and between MH A & MH B two manholes and/or Preliminary calculations indicate a storage requirement of about 80m<sup>3</sup>. At the subdivision agreement stage, the on-site storage will be determined to reduce the required pipe storage.

The double catchbasin within the circle will be fitted with inlet silt control devices for quality control.

## **Water Servicing**

A 150mm fire main will be installed from the Queenston Road main to a hydrant at the bulb. Pressure tests will be conducted to verify fire protection pressure and flows before house construction.

A 50mm domestic main will be installed around the circle with both ends connected to the fire main.

The fire main will be valved at both ends. The 50 mm main will also be valved.



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Individual lot services will be provided per Town standards.

### **Easements**

Easements will be provided for the storm sewers between Lots 3 & 4 as well as Lots 7 & 8.

### **Lot Grading**

Conventional front/back split drainage has been assumed for all lots. Detailed lot grading plans will be required for each lot at the time of building permit application.

G.E. Barr P.Eng. CNU-A

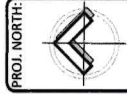




Services	N	E	S	W
Existing SAN MH-1	-	111.91	111.58	111.56
SAN MH-2	-	111.98	-	111.93
SAN MH-3	-	-	112.41	112.36
SAN MH-4	112.69	112.74	-	-
SAN MH-5	-	-	113.20	-
STORM DCB-1	114.18	-	-	-
STORM MH-A	-	113.10	-	-
STORM MH-B	-	112.98	114.11	113.03
OUTLET Headwall	112.50	-	-	-



**PRELIMINARY**



PROJ. NORTH:



KEY PLAN - NTS

SCALE = 1:600

PROJECT TITLE:

LEDWEZ COURT,  
Niagara on the lake, ON

DRAWING TITLE:

PRELIMINARY  
SERVICING PLAN

DATE OF ISSUE:

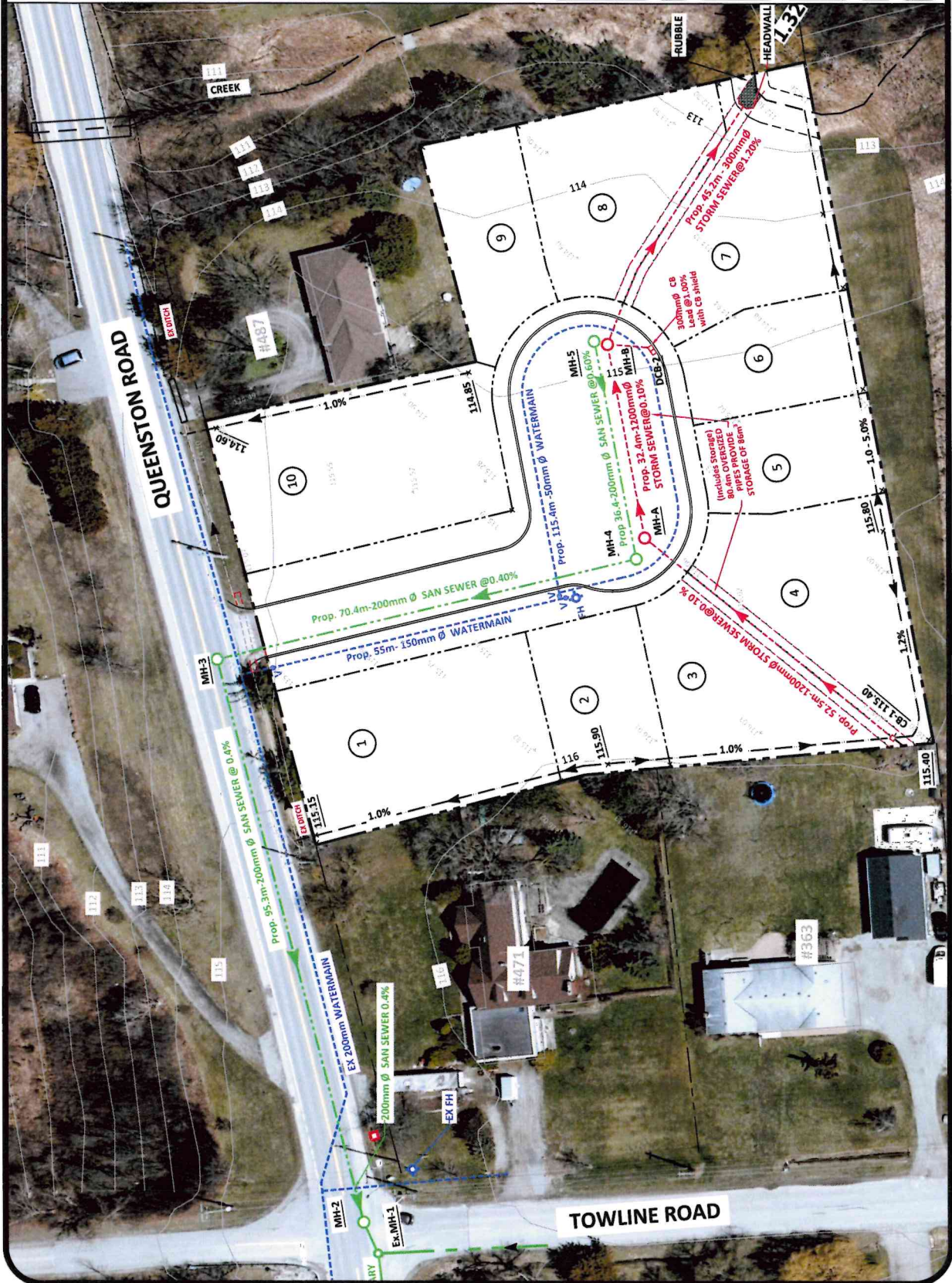
2026 05 08

DRAWING No.:

0371-PSP-1

REV No.:

00





**LEGEND:**

- Swale
- Double Catch Basin
- Catch Basin
- Lot Number
- Proposed Elevations
- Existing Elevations



**PRELIMINARY**



SCALE = 1:600

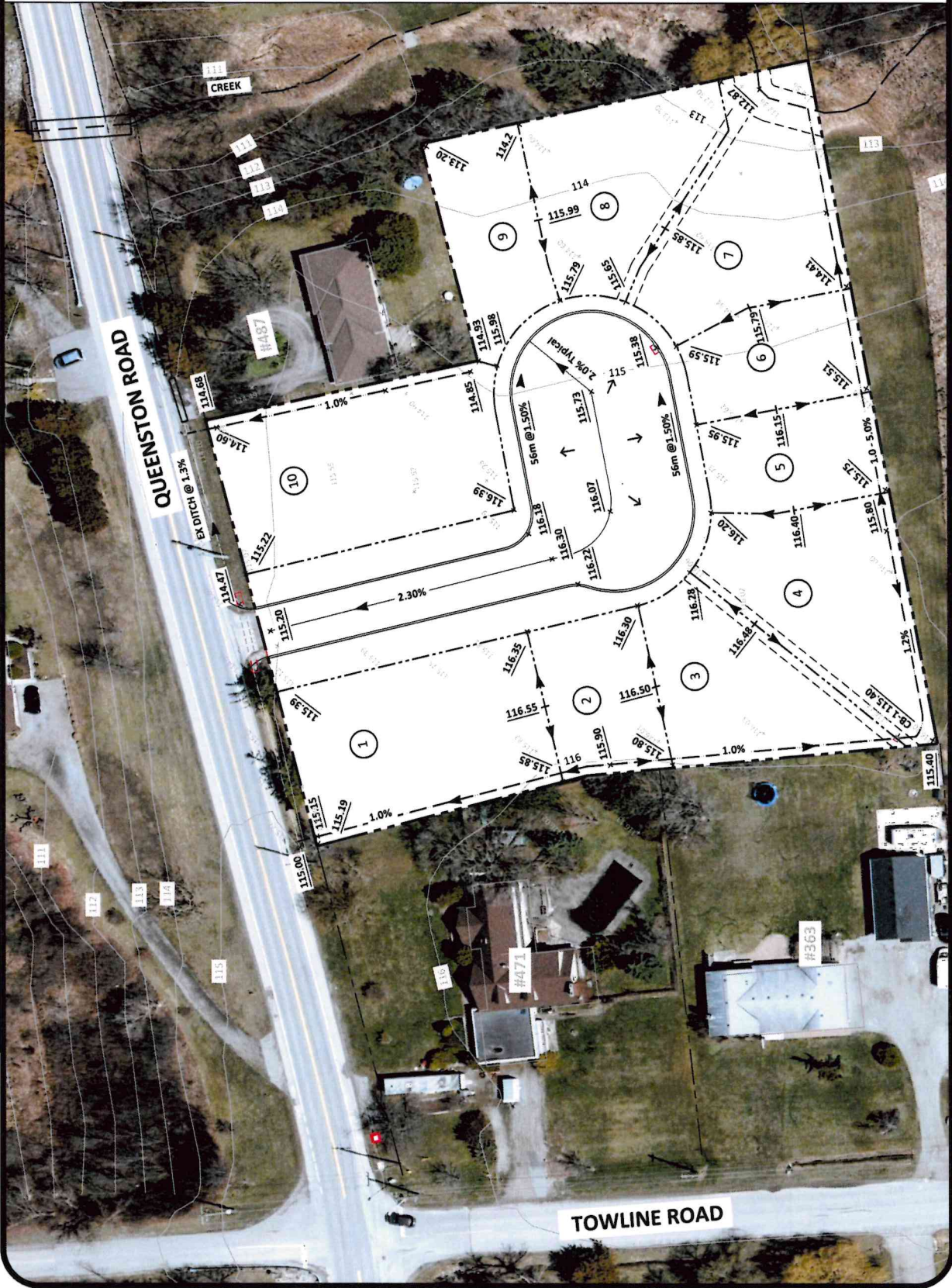
PROJECT TITLE:  
LEDWEZ COURT,  
Niagara on the lake, ON

DRAWING TITLE:  
PRELIMINARY  
GRADING PLAN

DATE OF ISSUE:  
2026 05 08

DRAWING NO.:  
0371-PGP-1

REV NO.:  
00





NOTES:  
 Pre-Development Drainage Area  
 Post-Development Drainage Area

DRAINAGE AREAS:		
#	AREA m <sup>2</sup>	R
1	770	0.4
2	1099	0.5
3	634	0.4
4	3081	0.3
5	3050	0.7
6	1330	0.4
7	1010	0.4



**PRELIMINARY**



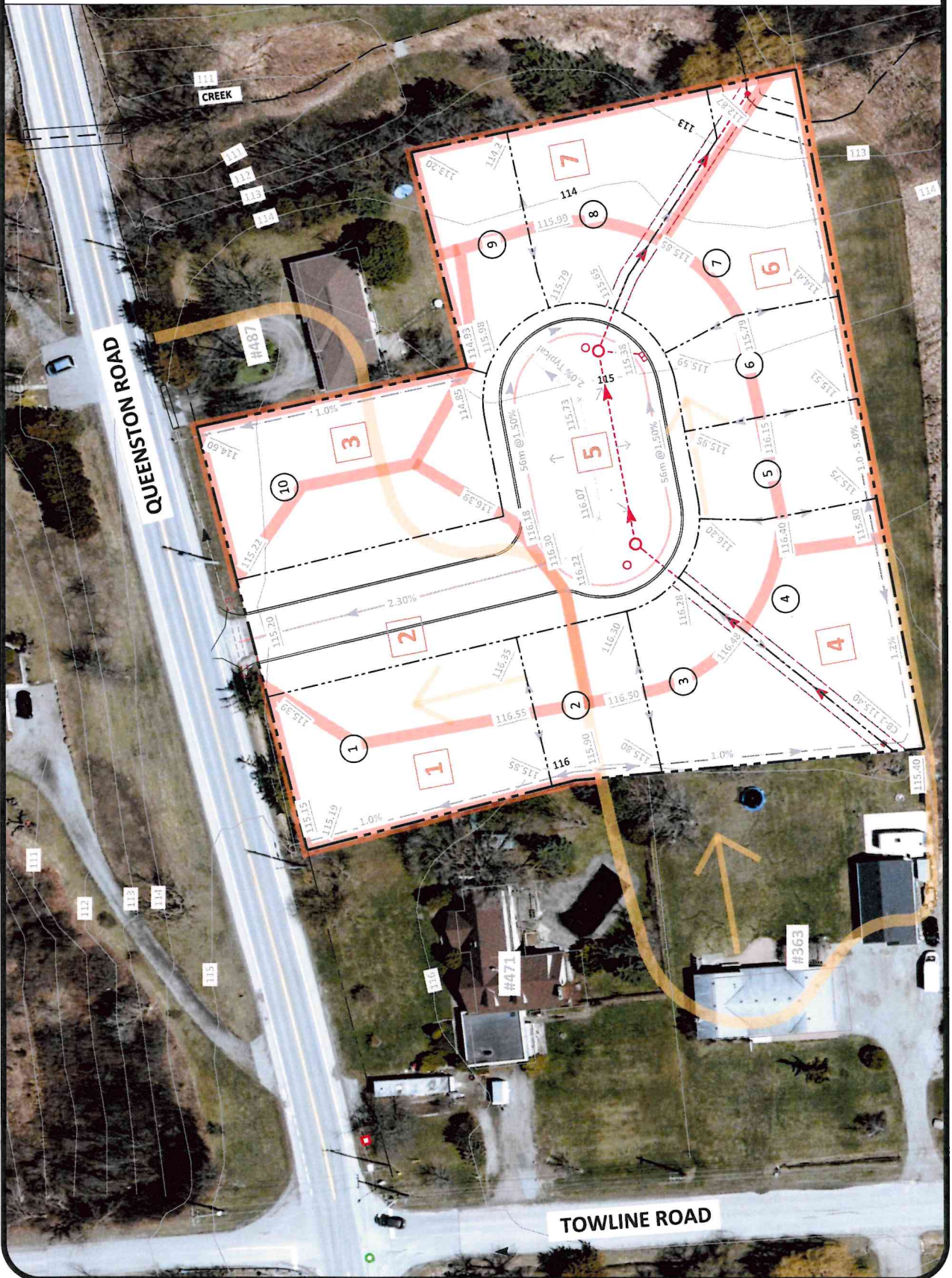
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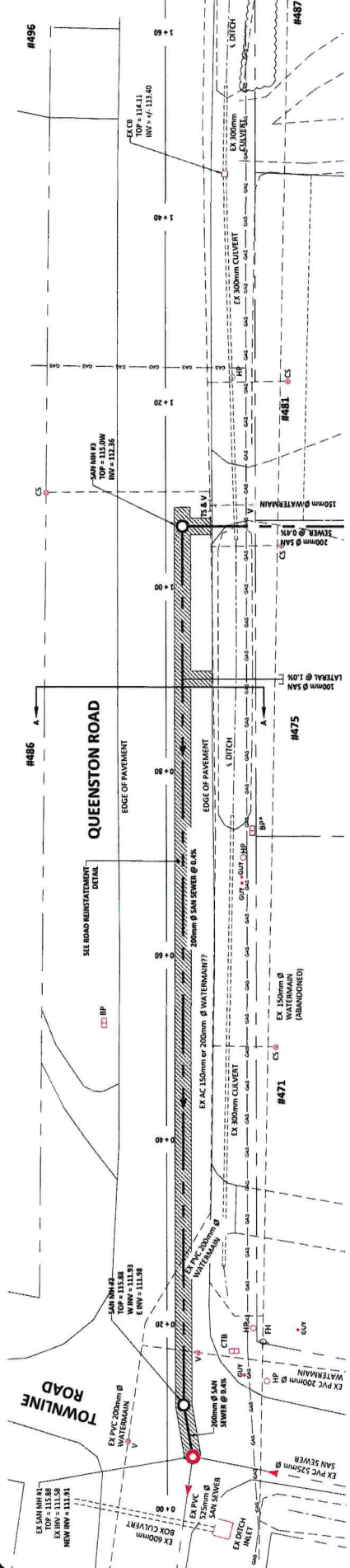
PROJECT TITLE:  
 LEDWEZ COURT,  
 Niagara on the lake, ON

DRAWING TITLE:  
 PRELIMINARY  
 DRAINAGE PLAN

DATE OF ISSUE: 2026 05 08

DRAWING NO: 0371-PDP-1  
 REV NO: 00

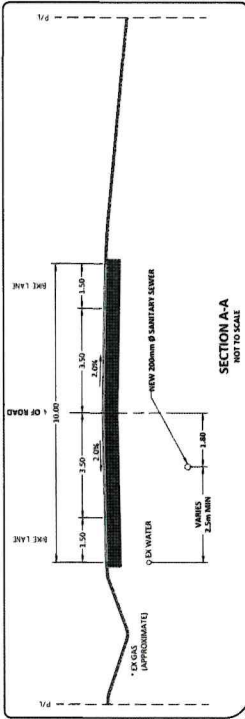
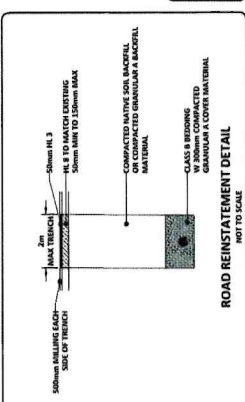




ROAD VERT	ROAD HORIZ	ROAD DATA	MAN #
110	115.82	EX. SAN MH #1 TOP = 111.58 NEW INV = 111.58	EX. SAN #1 Ø 0.4%
111	115.77	EX. SAN MH #2 TOP = 111.58 NEW INV = 111.58	EX. SAN #2 Ø 0.4%
112	115.77	EX. SAN MH #3 TOP = 111.58 NEW INV = 111.58	EX. SAN #3 Ø 0.4%
113	115.60	EX. SAN MH #4 TOP = 111.58 NEW INV = 111.58	EX. SAN #4 Ø 0.4%
114	115.57	EX. SAN MH #5 TOP = 111.58 NEW INV = 111.58	EX. SAN #5 Ø 0.4%
115	115.57	EX. SAN MH #6 TOP = 111.58 NEW INV = 111.58	EX. SAN #6 Ø 0.4%
116	115.37	EX. SAN MH #7 TOP = 111.58 NEW INV = 111.58	EX. SAN #7 Ø 0.4%
117	115.11	EX. SAN MH #8 TOP = 111.58 NEW INV = 111.58	EX. SAN #8 Ø 0.4%
118	114.76	EX. SAN MH #9 TOP = 111.58 NEW INV = 111.58	EX. SAN #9 Ø 0.4%
119	114.94	EX. SAN MH #10 TOP = 111.58 NEW INV = 111.58	EX. SAN #10 Ø 0.4%
120	114.94	EX. SAN MH #11 TOP = 111.58 NEW INV = 111.58	EX. SAN #11 Ø 0.4%

**QUEENSTON ROAD PLAN AND PROFILE**

HORIZ SCALE 1:200  
VERT SCALE 1:50



Revised 2026 05 08

PROJECT TITLE  
**SANITARY SEWER EXTENSION  
QUEENSTON ROAD  
N-O-T-L, Ontario**

DATE OF ISSUE  
2022.01.31

PROJECT NO.  
0371-PP-1

REV. NO.  
0

DRAWING TITLE  
**PLAN & PROFILE**

better neighbourhoods  
Engineering & Construction  
1000 Lakeshore Blvd. E., Suite 100  
Markham, ON L3R 0Y3  
Tel: 905.477.1111  
Fax: 905.477.1112

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"          1 Equal length"
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"          101 No description"
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"          0.339 Total Area"
"          55.000 Flow length"
"          2.000 Overland Slope"
"          0.254 Pervious Area"
"          55.000 Pervious length"
"          2.000 Pervious slope"
"          0.085 Impervious Area"
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"          2.000 Impervious slope"
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"          75.000 Pervious SCS Curve No."
"          0.347 Pervious Runoff coefficient"
"          0.100 Pervious Ia/S coefficient"
"          8.467 Pervious Initial abstraction"
"          0.015 Impervious Manning 'n'"
"          98.000 Impervious SCS Curve No."
"          0.905 Impervious Runoff coefficient"

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"	0.518	Impervious Initial abstraction"				
"		0.036	0.000	0.000	0.000	c.m/sec"
"		Catchment 101	Pervious	Impervious	Total Area	"
"		Surface Area	0.254	0.085	0.339	hectare"
"		Time of concentration	21.308	2.459	12.537	minutes"
"		Time to Centroid	126.511	88.625	108.881	minutes"
"		Rainfall depth	64.717	64.717	64.717	mm"
"		Rainfall volume	164.69	54.90	219.59	c.m"
"		Rainfall losses	42.290	6.156	33.256	mm"
"		Runoff depth	22.428	58.561	31.461	mm"
"		Runoff volume	57.07	49.67	106.75	c.m"
"		Runoff coefficient	0.347	0.905	0.486	"
"		Maximum flow	0.016	0.033	0.036	c.m/sec"
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"	6	Combine "				
"	1	Node #"				
"		"				
"		Maximum flow		0.036		c.m/sec"
"		Hydrograph volume		106.747		c.m"
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"	1	Equal length"				
"	1	SCS method"				
"	102	No description"				
"	15.000	% Impervious"				
"	0.881	Total Area"				
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"	2.000	Overland Slope"				
"	0.749	Pervious Area"				
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"	2.000	Pervious slope"				
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"	130.000	Impervious length"				
"	2.000	Impervious slope"				
"	0.250	Pervious Manning 'n'"				
"	75.000	Pervious SCS Curve No."				
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"	0.100	Pervious Ia/S coefficient"				
"	8.467	Pervious Initial abstraction"				

"	0.015	Impervious Manning 'n'"			
"	98.000	Impervious SCS Curve No."			
"	0.906	Impervious Runoff coefficient"			
"	0.100	Impervious Ia/S coefficient"			
"	0.518	Impervious Initial abstraction"			
"		0.059	0.000	0.036	0.036 c.m/sec"
"		Catchment 102	Pervious	Impervious	Total Area "
"		Surface Area	0.749	0.132	0.881 hectare"
"		Time of concentration	35.703	4.120	25.737 minutes"
"		Time to Centroid	145.549	91.281	128.425 minutes"
"		Rainfall depth	64.717	64.717	64.717 mm"
"		Rainfall volume	484.47	85.49	569.96 c.m"
"		Rainfall losses	42.269	6.073	36.840 mm"
"		Runoff depth	22.448	58.644	27.877 mm"
"		Runoff volume	168.04	77.47	245.52 c.m"
"		Runoff coefficient	0.347	0.906	0.431 "
"		Maximum flow	0.032	0.051	0.059 c.m/sec"
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"	8	Copy to Outflow"			
"		0.059	0.059	0.059	0.036"
" 40		HYDROGRAPH Combine 2"			
"	6	Combine "			
"	2	Node #"			
"		"			
"		Maximum flow		0.059	c.m/sec"
"		Hydrograph volume		245.516	c.m"
"		0.059	0.059	0.059	0.059"
" 38		START/RE-START TOTALS 102"			
"	3	Runoff Totals on EXIT"			
"		Total Catchment area		1.220	hectare"
"		Total Impervious area		0.217	hectare"
"		Total % impervious		17.781"	
" 19		EXIT"			

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"          35.000 % Impervious"
"          0.060 Total Area"
"          48.000 Flow length"
"          2.000 Overland Slope"
"          0.039 Pervious Area"
"          48.000 Pervious length"
"          2.000 Pervious slope"
"          0.021 Impervious Area"
"          48.000 Impervious length"
"          2.000 Impervious slope"
"          0.250 Pervious Manning 'n'"
"          61.000 Pervious SCS Curve No."
"          0.172 Pervious Runoff coefficient"
"          0.100 Pervious Ia/S coefficient"
"          16.239 Pervious Initial abstraction"
"          0.015 Impervious Manning 'n'"
"          98.000 Impervious SCS Curve No."
"          0.905 Impervious Runoff coefficient"

```

"	0.100	Impervious Ia/S coefficient"			
"	0.518	Impervious Initial abstraction"			
"		0.008	0.000	0.000	0.000 c.m/sec"
"		Catchment 201	Pervious	Impervious	Total Area "
"		Surface Area	0.039	0.021	0.060 hectare"
"		Time of concentration	30.453	2.266	9.622 minutes"
"		Time to Centroid	139.100	88.350	101.594 minutes"
"		Rainfall depth	64.717	64.717	64.717 mm"
"		Rainfall volume	25.24	13.59	38.83 c.m"
"		Rainfall losses	53.579	6.138	36.975 mm"
"		Runoff depth	11.138	58.579	27.742 mm"
"		Runoff volume	4.34	12.30	16.65 c.m"
"		Runoff coefficient	0.172	0.905	0.429 "
"		Maximum flow	0.001	0.008	0.008 c.m/sec"
" 40		HYDROGRAPH Add Runoff "			
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"	12.000	Pervious length"			
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"	61.000	Pervious SCS Curve No."			
"	0.172	Pervious Runoff coefficient"			
"	0.100	Pervious Ia/S coefficient"			
"	16.239	Pervious Initial abstraction"			

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"	0.100	Impervious Ia/S coefficient"			
"	0.518	Impervious Initial abstraction"			
"		0.002	0.000	0.008	0.008 c.m/sec"
"		Catchment 202	Pervious	Impervious	Total Area "
"		Surface Area	0.010	0.005	0.015 hectare"
"		Time of concentration	13.255	0.986	4.231 minutes"
"		Time to Centroid	119.667	86.109	94.984 minutes"
"		Rainfall depth	64.717	64.717	64.717 mm"
"		Rainfall volume	6.31	3.40	9.71 c.m"
"		Rainfall losses	53.613	7.365	37.426 mm"
"		Runoff depth	11.104	57.352	27.291 mm"
"		Runoff volume	1.08	3.01	4.09 c.m"
"		Runoff coefficient	0.172	0.886	0.422 "
"		Maximum flow	0.000	0.002	0.002 c.m/sec"
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"	6	Combine "			
"	10	Node #"			
"		"			
"		Maximum flow	0.011		c.m/sec"
"		Hydrograph volume	20.739		c.m"
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"	1	SCS method"			
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"	0.194	Total Area"			
"	48.000	Flow length"			
"	2.000	Overland Slope"			
"	0.126	Pervious Area"			
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"	2.000	Pervious slope"			
"	0.068	Impervious Area"			
"	48.000	Impervious length"			
"	2.000	Impervious slope"			
"	0.250	Pervious Manning 'n'"			
"	61.000	Pervious SCS Curve No."			

"	0.172	Pervious Runoff coefficient"				
"	0.100	Pervious Ia/S coefficient"				
"	16.239	Pervious Initial abstraction"				
"	0.015	Impervious Manning 'n'"				
"	98.000	Impervious SCS Curve No."				
"	0.905	Impervious Runoff coefficient"				
"	0.100	Impervious Ia/S coefficient"				
"	0.518	Impervious Initial abstraction"				
"		0.027	0.000	0.002	0.011 c.m/sec"	
"		Catchment 203	Pervious	Impervious	Total Area	"
"		Surface Area	0.126	0.068	0.194	hectare"
"		Time of concentration	30.453	2.266	9.622	minutes"
"		Time to Centroid	139.100	88.350	101.594	minutes"
"		Rainfall depth	64.717	64.717	64.717	mm"
"		Rainfall volume	81.78	44.03	125.81	c.m"
"		Rainfall losses	53.579	6.138	36.975	mm"
"		Runoff depth	11.138	58.579	27.742	mm"
"		Runoff volume	14.07	39.86	53.93	c.m"
"		Runoff coefficient	0.172	0.905	0.429	"
"		Maximum flow	0.003	0.027	0.027	c.m/sec"
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"	4	Add Runoff "				
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"	8	Copy to Outflow"				
"		0.027	0.027	0.027	0.011"	
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"	6	Combine "				
"	10	Node #"				
"		"				
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"		0.027	0.027	0.027	0.038"	
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"	1	Equal length"				
"	1	SCS method"				
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"	0.090	Total Area"				
"	12.000	Flow length"				
"	2.000	Overland Slope"				
"	0.058	Pervious Area"				
"	12.000	Pervious length"				
"	2.000	Pervious slope"				
"	0.031	Impervious Area"				
"	12.000	Impervious length"				

"	2.000	Impervious slope"				
"	0.250	Pervious Manning 'n'"				
"	61.000	Pervious SCS Curve No."				
"	0.172	Pervious Runoff coefficient"				
"	0.100	Pervious Ia/S coefficient"				
"	16.239	Pervious Initial abstraction"				
"	0.015	Impervious Manning 'n'"				
"	98.000	Impervious SCS Curve No."				
"	0.886	Impervious Runoff coefficient"				
"	0.100	Impervious Ia/S coefficient"				
"	0.518	Impervious Initial abstraction"				
"		0.014	0.000	0.027	0.038 c.m/sec"	
"		Catchment 204	Pervious	Impervious	Total Area	"
"		Surface Area	0.058	0.031	0.090	hectare"
"		Time of concentration	13.255	0.986	4.231	minutes"
"		Time to Centroid	119.667	86.109	94.984	minutes"
"		Rainfall depth	64.717	64.717	64.717	mm"
"		Rainfall volume	37.65	20.27	57.92	c.m"
"		Rainfall losses	53.613	7.365	37.426	mm"
"		Runoff depth	11.104	57.352	27.291	mm"
"		Runoff volume	6.46	17.97	24.43	c.m"
"		Runoff coefficient	0.172	0.886	0.422	"
"		Maximum flow	0.002	0.014	0.014	c.m/sec"
" 40		HYDROGRAPH Add Runoff "				
"	4	Add Runoff "				
"		0.014	0.014	0.027	0.038"	
" 40		HYDROGRAPH Copy to Outflow"				
"	8	Copy to Outflow"				
"		0.014	0.014	0.014	0.038"	
" 40		HYDROGRAPH Combine 10"				
"	6	Combine "				
"	10	Node #"				
"		"				
"		Maximum flow	0.052		c.m/sec"	
"		Hydrograph volume	99.096		c.m"	
"		0.014	0.014	0.014	0.052"	
" 40		HYDROGRAPH Start - New Tributary"				
"	2	Start - New Tributary"				
"		0.014	0.000	0.014	0.052"	
" 33		CATCHMENT 205"				
"	1	Triangular SCS"				
"	1	Equal length"				
"	1	SCS method"				
"	205	No description"				
"	35.000	% Impervious"				
"	0.028	Total Area"				
"	52.000	Flow length"				
"	2.000	Overland Slope"				
"	0.018	Pervious Area"				
"	52.000	Pervious length"				

"	2.000	Pervious slope"				
"	0.010	Impervious Area"				
"	52.000	Impervious length"				
"	2.000	Impervious slope"				
"	0.250	Pervious Manning 'n'"				
"	61.000	Pervious SCS Curve No."				
"	0.172	Pervious Runoff coefficient"				
"	0.100	Pervious Ia/S coefficient"				
"	16.239	Pervious Initial abstraction"				
"	0.015	Impervious Manning 'n'"				
"	98.000	Impervious SCS Curve No."				
"	0.905	Impervious Runoff coefficient"				
"	0.100	Impervious Ia/S coefficient"				
"	0.518	Impervious Initial abstraction"				
"			0.004	0.000	0.014	0.052 c.m/sec"
"		Catchment 205	Pervious	Impervious	Total Area	"
"		Surface Area	0.018	0.010	0.028	hectare"
"		Time of concentration	31.951	2.377	10.093	minutes"
"		Time to Centroid	140.806	88.515	102.158	minutes"
"		Rainfall depth	64.717	64.717	64.717	mm"
"		Rainfall volume	11.86	6.39	18.25	c.m"
"		Rainfall losses	53.580	6.126	36.971	mm"
"		Runoff depth	11.137	58.591	27.746	mm"
"		Runoff volume	2.04	5.78	7.82	c.m"
"		Runoff coefficient	0.172	0.905	0.429	"
"		Maximum flow	0.000	0.004	0.004	c.m/sec"
" 40		HYDROGRAPH Add Runoff "				
"	4	Add Runoff "				
"			0.004	0.004	0.014	0.052"
" 40		HYDROGRAPH Copy to Outflow"				
"	8	Copy to Outflow"				
"			0.004	0.004	0.004	0.052"
" 40		HYDROGRAPH Combine 11"				
"	6	Combine "				
"	11	Node #"				
"						
"		Maximum flow		0.004		c.m/sec"
"		Hydrograph volume		7.824		c.m"
"			0.004	0.004	0.004	0.004"
" 40		HYDROGRAPH Start - New Tributary"				
"	2	Start - New Tributary"				
"			0.004	0.000	0.004	0.004"
" 33		CATCHMENT 207"				
"	1	Triangular SCS"				
"	1	Equal length"				
"	1	SCS method"				
"	207	No description"				
"	35.000	% Impervious"				
"	0.177	Total Area"				
"	40.000	Flow length"				

"	2.000	Overland Slope"				
"	0.115	Pervious Area"				
"	40.000	Pervious length"				
"	2.000	Pervious slope"				
"	0.062	Impervious Area"				
"	40.000	Impervious length"				
"	2.000	Impervious slope"				
"	0.250	Pervious Manning 'n'"				
"	61.000	Pervious SCS Curve No."				
"	0.172	Pervious Runoff coefficient"				
"	0.100	Pervious Ia/S coefficient"				
"	16.239	Pervious Initial abstraction"				
"	0.015	Impervious Manning 'n'"				
"	98.000	Impervious SCS Curve No."				
"	0.904	Impervious Runoff coefficient"				
"	0.100	Impervious Ia/S coefficient"				
"	0.518	Impervious Initial abstraction"				
"		0.025	0.000	0.004	0.004 c.m/sec"	
"		Catchment 207	Pervious	Impervious	Total Area	"
"		Surface Area	0.115	0.062	0.177	hectare"
"		Time of concentration	27.297	2.031	8.631	minutes"
"		Time to Centroid	135.525	87.914	100.350	minutes"
"		Rainfall depth	64.717	64.717	64.717	mm"
"		Rainfall volume	74.29	40.00	114.29	c.m"
"		Rainfall losses	53.578	6.205	36.997	mm"
"		Runoff depth	11.139	58.512	27.720	mm"
"		Runoff volume	12.79	36.17	48.95	c.m"
"		Runoff coefficient	0.172	0.904	0.428	"
"		Maximum flow	0.003	0.025	0.025	c.m/sec"
" 40		HYDROGRAPH Add Runoff "				
"	4	Add Runoff "				
"		0.025	0.025	0.004	0.004"	
" 40		HYDROGRAPH Copy to Outflow"				
"	8	Copy to Outflow"				
"		0.025	0.025	0.025	0.004"	
" 40		HYDROGRAPH Combine 12"				
"	6	Combine "				
"	12	Node #"				
"		"				
"		Maximum flow	0.025		c.m/sec"	
"		Hydrograph volume	48.953		c.m"	
"		0.025	0.025	0.025	0.025"	
" 40		HYDROGRAPH Start - New Tributary"				
"	2	Start - New Tributary"				
"		0.025	0.000	0.025	0.025"	
" 33		CATCHMENT 206"				
"	1	Triangular SCS"				
"	1	Equal length"				
"	1	SCS method"				
"	206	No description"				

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"      35.000  % Impervious"
"      0.315  Total Area"
"     54.000  Flow length"
"      2.000  Overland Slope"
"      0.205  Pervious Area"
"     54.000  Pervious length"
"      2.000  Pervious slope"
"      0.110  Impervious Area"
"     54.000  Impervious length"
"      2.000  Impervious slope"
"      0.250  Pervious Manning 'n'"
"     61.000  Pervious SCS Curve No."
"      0.172  Pervious Runoff coefficient"
"      0.100  Pervious Ia/S coefficient"
"     16.239  Pervious Initial abstraction"
"      0.015  Impervious Manning 'n'"
"     98.000  Impervious SCS Curve No."
"      0.905  Impervious Runoff coefficient"
"      0.100  Impervious Ia/S coefficient"
"      0.518  Impervious Initial abstraction"
"          0.043  0.000  0.025  0.025 c.m/sec"
"      Catchment 206      Pervious  Impervious  Total Area  "
"      Surface Area      0.205      0.110      0.315      hectare"
"      Time of concentration  32.683      2.432      10.328      minutes"
"      Time to Centroid      141.631      88.589      102.434      minutes"
"      Rainfall depth      64.717      64.717      64.717      mm"
"      Rainfall volume      132.55      71.37      203.92      c.m"
"      Rainfall losses      53.576      6.140      36.973      mm"
"      Runoff depth      11.141      58.577      27.744      mm"
"      Runoff volume      22.82      64.60      87.42      c.m"
"      Runoff coefficient      0.172      0.905      0.429      "
"      Maximum flow      0.004      0.043      0.043      c.m/sec"
" 40      HYDROGRAPH Add Runoff  "
"          4  Add Runoff  "
"          0.043  0.043  0.025  0.025"
" 51      PIPE DESIGN"
"      0.043  Current peak flow  c.m/sec"
"      0.013  Manning 'n'"
"      0.250  Diameter  metre"
"      0.600  Gradient  %"
"          Depth of flow      0.191  metre"
"          Velocity      1.066  m/sec"
"          Pipe capacity      0.046  c.m/sec"
"          Critical depth      0.169  metre"
" 53      ROUTE  Pipe Route 47"
"      47.00  Pipe Route 47 Reach length  ( metre)"
"      0.207  X-factor <= 0.5"
"     33.069  K-lag  ( seconds)"
"      0.000  Default(0) or user spec.(1) values used"
"      0.500  X-factor <= 0.5"

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"	30.000	K-lag ( seconds)"			
"	0.500	Beta weighting factor"			
"	50.000	Routing time step ( seconds)"			
"	1	No. of sub-reaches"			
"		Peak outflow	0.040	c.m/sec"	
"		0.043 0.043 0.040		0.025 c.m/sec"	
" 40		HYDROGRAPH Combine 13"			
"	6	Combine "			
"	13	Node #"			
"		"			
"		Maximum flow	0.040	c.m/sec"	
"		Hydrograph volume	87.420	c.m"	
"		0.043 0.043 0.040		0.040"	
" 40		HYDROGRAPH Start - New Tributary"			
"	2	Start - New Tributary"			
"		0.043 0.000 0.040		0.040"	
" 33		CATCHMENT 208"			
"	1	Triangular SCS"			
"	1	Equal length"			
"	1	SCS method"			
"	208	No description"			
"	35.000	% Impervious"			
"	0.341	Total Area"			
"	106.000	Flow length"			
"	2.000	Overland Slope"			
"	0.222	Pervious Area"			
"	106.000	Pervious length"			
"	2.000	Pervious slope"			
"	0.119	Impervious Area"			
"	106.000	Impervious length"			
"	2.000	Impervious slope"			
"	0.250	Pervious Manning 'n'"			
"	61.000	Pervious SCS Curve No."			
"	0.172	Pervious Runoff coefficient"			
"	0.100	Pervious Ia/S coefficient"			
"	16.239	Pervious Initial abstraction"			
"	0.015	Impervious Manning 'n'"			
"	98.000	Impervious SCS Curve No."			
"	0.898	Impervious Runoff coefficient"			
"	0.100	Impervious Ia/S coefficient"			
"	0.518	Impervious Initial abstraction"			
"		0.046 0.000 0.040		0.040 c.m/sec"	
"		Catchment 208	Pervious	Impervious	Total Area "
"		Surface Area	0.222	0.119	0.341 hectare"
"		Time of concentration	48.986	3.645	15.554 minutes"
"		Time to Centroid	160.096	90.636	108.880 minutes"
"		Rainfall depth	64.717	64.717	64.717 mm"
"		Rainfall volume	143.61	77.33	220.94 c.m"
"		Rainfall losses	53.576	6.633	37.146 mm"
"		Runoff depth	11.141	58.085	27.571 mm"

"	Runoff volume	24.72	69.41	94.13	c.m"
"	Runoff coefficient	0.172	0.898	0.426	"
"	Maximum flow	0.004	0.046	0.046	c.m/sec"
" 40	HYDROGRAPH Add Runoff "				
"	4 Add Runoff "				
"	0.046 0.046 0.040 0.040"				
" 40	HYDROGRAPH Copy to Outflow"				
"	8 Copy to Outflow"				
"	0.046 0.046 0.046 0.040"				
" 40	HYDROGRAPH Combine 13"				
"	6 Combine "				
"	13 Node #"				
"	"				
"	Maximum flow	0.086			c.m/sec"
"	Hydrograph volume	181.549			c.m"
"	0.046 0.046 0.046 0.086"				
" 40	HYDROGRAPH Start - New Tributary"				
"	2 Start - New Tributary"				
"	0.046 0.000 0.046 0.086"				
" 40	HYDROGRAPH Undo"				
"	1 Undo"				
"	0.046 0.046 0.046 0.086"				
" 40	HYDROGRAPH Confluence 13"				
"	7 Confluence "				
"	13 Node #"				
"	"				
"	Maximum flow	0.086			c.m/sec"
"	Hydrograph volume	181.549			c.m"
"	0.046 0.086 0.046 0.000"				
" 54	POND DESIGN"				
"	0.086 Current peak flow	c.m/sec"			
"	0.015 Target outflow	c.m/sec"			
"	181.5 Hydrograph volume	c.m"			
"	21. Number of stages"				
"	0.000 Minimum water level	metre"			
"	1.200 Maximum water level	metre"			
"	0.000 Starting water level	metre"			
"	0 Keep Design Data: 1 = True; 0 = False"				
"	Level Discharge	Volume"			
"	0.000 0.000 0.000"				
"	0.06000 0.00110 0.5096"				
"	0.1200 0.00435 2.665"				
"	0.1800 0.00615 5.953"				
"	0.2400 0.00753 9.950"				
"	0.3000 0.00870 14.471"				
"	0.3600 0.00972 19.392"				
"	0.4200 0.01065 24.619"				
"	0.4800 0.01151 30.075"				
"	0.5400 0.01230 35.691"				
"	0.6000 0.01305 41.405"				

0.6600	0.01375	47.157"
0.7200	0.01442	52.890"
0.7800	0.01506	58.546"
0.8400	0.01568	64.062"
0.9000	0.01627	69.374"
0.9600	0.01684	74.406"
1.020	0.01739	79.072"
1.080	0.01793	83.260"
1.140	0.01845	86.812"
1.200	0.01895	89.436"

1. ORIFICES"

Orifice invert	Orifice coefficient	Orifice diameter	Number of orifices"
0.000	0.630	0.0900	1.000"

1. SUPERPIPES\_1"

1. Type 1 is Pipe"

Downstream Invert	Pipe Length	Pipe Width	Pipe Height	Pipe Grade %	Number of Pipes"
0.000	80.000	1.200	1.200	0.100	1.000"

Peak outflow	0.016	c.m/sec"		
Maximum level	0.924	metre"		
Maximum storage	71.385	c.m"		
Centroidal lag	2.672	hours"		
0.046	0.086	0.016	0.000	c.m/sec"

HYDROGRAPH Next link "

5 Next link "

0.046	0.016	0.016	0.000"
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START/RE-START TOTALS 13"

3 Runoff Totals on EXIT"

Total Catchment area	1.220	hectare"
Total Impervious area	0.427	hectare"
Total % impervious	35.000"	

EXIT"