CONDELAND

CONSULTING ENGINEERS & PROJECT MANAGERS

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FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT
IN SUPPORT OF A DRAFT PLAN OF SUBDIVISION
OF A PROPOSED PRIVATE TOWNHOUSE DEVELOPMENT AND HOTEL SITE
12371 Highway 48 and 5270 and 5318 Main Street
Town of Whitchurch-Stouffville
For City Park Group

August 26, 2026

C.E. FILE: 26-011

350 Creditstone Road, Unit 200
Concord, ONTARIO L4K 3Z2

TELEPHONE: (905) 695-2096
FACSIMILE: (905) 695-2099

Revision Log

Version	Date	Summary / Overview
1.0	August 26, 2026	FSR and SWM Report

REFFERENCES

1- Wet Weather Flow Management Guidelines, City of Toronto, November 2006

2- Town of Whitchurch-Stouffville, Design Guidelines and Standard Drawings, January 2023

3- Hydrogeological Assessment Update, Proposed Residential and Commercial Development, MainStreet/Hwy 48, Whitchurch-Stouffville, ON., June 23, 2026.

4- Rouge River Watershed Hydrology Study Update by Wood Environment & Infrastructure Solutions", dated September 2018

CONTENTS

1.0. INTRODUCTION

Condeland Engineering Limited has been retained by City Park Group to prepare this Report in support of a Draft Plan application, providing a conceptual Municipal Servicing Design to service the Subject 165-unit townhouse development and a 60 Room Hotel site.

The proposed development is located at the northeast corner of Main Street (Stouffville Road) and Highway 48. The site area is 7.14ha in size of which 2.92 ha is Environmental Protection Lands. The Subject Lands are bound by existing residential along Highway 48 to the west, a car

dealership and SWM pond to the north, a tributary of the Little Rouge Creek and open space to the east, and Main Street to the south.
The site currently consists of pasture lands, existing residential dwellings, and open space. The proposed development is located within the Little Rouge Creek tributary subwatershed.

This report will outline the methodology for municipal servicing. Specifically, the report will demonstrate the ability to provide municipal sanitary and water services and present a conceptual approach for stormwater management and will include Floodplain analysis.

Please note a more detailed analysis will be provided for the Site Plan application.

2.0. SITE GRADING

Ground elevations within the Site range from 254.7 m to 259.5 m.

Under existing conditions, the majority of the Site slopes from north to south and from east to west. A portion of the lands, namely 12371 Highway 48 drains to the west.

The proposed site grading has been designed to tie into the existing grades along the Site boundaries and maintain the existing drainage patterns. The west and northwest limits of the Site will be raised to facilitate drainage and underground stormwater storage tanks from the proposed development. A retaining walls area proposed throughout the site to the grade differential between the existing properties. Refer to Figures 1A and 1B of the Conceptual Grading Plan in Appendix 'A'.

3.0. SANITARY SERVICING DESIGN

Sanitary servicing will be provided via connection to the existing 300mm diameter sanitary sewer located on Main Street. A 200mm diameter sanitary sewer at a 1.00% slope is proposed to connect to the existing Main Street sanitary sewer. A new manhole will be required to facilitate the connection to the proposed sanitary sewer. Please refer to Figures 2A and 2B of the Conceptual Servicing Plan in Appendix 'A' for the location and design of the service connection.

Based on the Town of Whitchurch-Stouffville, the peak sanitary flow for the proposed development is calculated as follows:

As previously noted, the proposed townhouse development is comprised of 165 of 2- and 3- storey townhouse. The peak design sanitary flow for the proposed development is calculated as follows.

<u>Residential Population Estimation</u>

(based on persons per unit)

= 165x2.9 =479 persons

<u>Average Daily Flow</u>

(based on 350 litres / capita / day)

= 479 persons x 350 / (24x60x60) = 1.94 litres / second

<u>Peaking Factor</u>

(based on the Harmon formula)

$K = 1 + 14/ (4 + P^{1/2})$, where P is population in thousands

$K = 1 + 14/ (4 + (479/1000)^{1/2}) = 3.98$

<u>Maximum Sanitary Flow</u>

(based on Avg. daily flow times the Peaking factor)

Max. Sanitary Flow = 1.94 litres / second x 3.98= 7.72 litres / second

<u>Wet Weather Infiltration</u>

(based on 0.23 litres / second / gross hectare)

= 0.23 x 3.646 Ha = 0.839 litres / second

<u>Total Design Sanitary Flow</u>

(based on Max. Sanitary Flow + Infiltration)

Total Design Sanitary Flow = 7.720+0.839=8.559 litres / second

<u>Total Flow to Municipal Sanitary Sewer System</u>

Total Population = 479 persons, Total Area = 3.646 Ha

Total Sanitary Flow= 8.559 litres / second

The full flow capacity of the proposed 200 mm sanitary connection at a 1% slope is 32.8 L/s. Therefore, the peak sanitary flow from the proposed townhouse development represents only 26% of the service connection's full flow capacity.

4.0. STORMWATER MANAGEMENT

4.1. EROSION AND SEDIMENT CONTROL

During the construction phase, temporary erosion and sediment controls will be implemented.

Prior to the Building Construction Program, siltation control fencing and filter socks will be installed around the perimeter of the Site, with allowances for construction access. These measures will control the quality of runoff and help localize areas of potential erosion and sedimentation. Regular maintenance and necessary repairs will be performed, including the safe disposal of all sediment material. Maintenance, which will typically involve the removal of sediment, and the installation of a new device shall be carried out when the performance level of the implemented control device is reduced to less than 40% of its initial capacity, based on the engineer's observation. Given that the building and driveway/parking lot construction is basically a completion of the development of the Site, no further erosion control measures will be implemented.

4.2. WATER BALANCE ANALYSIS

The increase in impervious surfaces across the developed Site results in a reduction in infiltration and evapotranspiration, as well as a corresponding increase in runoff compared to the original pre-development condition.

The seasonal groundwater levels below ground surface were measured through monitoring wells from March 20, 2019, to May 21, 2026. The measured groundwater depths ranged from 0.28 m to 2.72 m. Refer to Table 7, Groundwater Levels and Elevations, in the *Hydrogeological Assessment Update* prepared by GHD, dated June 23, 2026.

The estimated infiltration under pre-development and post-development (without enhancements) conditions is 9,708 m³/year and 5,172 m³/year, respectively, representing a decrease of approximately 47%. Refer to the updated water balance results presented in Tables 8 and 9 of *the* Hydrogeological Assessment Update prepared by GHD, dated June 23, 2026.

To compensate for the loss of infiltration and evapotranspiration, various methods can be implemented depending on the specific Site conditions, such as:

- **Increased topsoil depth:** Provide a minimum 0.3 m of topsoil in landscaped areas to promote lot-level infiltration and evapotranspiration.
- **Irrigation cistern:** Provide an irrigation cistern to sustain plantings throughout the Site. The cistern can be supplied with rainwater collected from building roofs, where the runoff is generally considered relatively clean and free of pollutants and therefore requires little or no treatment for reuse for irrigation.
- S**oakaway pits:** Provide soakaway pits to collect clean runoff from rooftops in areas where the groundwater table is more than 1.0 m below the base of the pit.
- **Rainwater harvesting:** Implement rainwater harvesting for non-potable uses, such as car washing.
- **Roof drainage:** Direct runoff from approximately 7,189 m² of roof area associated with the townhouse development and future hotel site to the roof drainage collection (RDC) sewer, with infiltration measures incorporated to achieve approximately 992 m³/year of infiltration. This is based on an assumed 16% of the annual precipitation (862 mm) being infiltrated. Refer to Figure 6 in Appendix 'D' for the Roof Drainage Plan The proposed infiltration measures will help reduce the infiltration deficit between the pre- and post-development conditions.

In accordance with the WWFMP guidelines, the water balance target for the subject development is based on the following criteria: the minimum on-site runoff retention requirement is to retain all runoff from a small design rainfall event, typically 5mm through infiltration, evapotranspiration and rainwater reuse.

To confirm that the water balance target for retaining runoff from a small design rainfall event (minimum 5 mm) is achieved, it is necessary to relate the percentage of annual runoff retained on-site to daily (24-hour) rainfall event depths. Figure 1(a) of the WWFMP guidelines is used to illustrate this relationship (refer to Appendix 'D'). This figure is based on rainfall data from 16 gauges across Toronto for the year 1991, which is considered representative of long-term average annual precipitation patterns. It indicates that 24-hour rainfall events of 5 mm or less and 20 mm or less contribute approximately 50% and 90% of the total average annual rainfall volumes, respectively.

As indicated in the calculations, 26.9% of the average annual rainfall will be retained on-site for the proposed townhouse development and the future hotel site.

Graphing 26.9% of the total annual Average rainfall Depth on Figure 1(a) in Appendix 'D' yields approximately 2.10 mm which fall short of the targeted 5 mm retention requirement. Therefore, the above-noted methods are proposed to address this shortfall, with the detailed design to be provided at the Site Plan Stage.

4.3. STORMWATER MANAGEMENT QUANTITY AND QUALITY CONTROL

4.3.1. QUANTITY CONTROL

This section of the Report (Stormwater Management) demonstrates that the post development storm runoff from the Site can be effectively managed through the proposed stormwater management system with on-site control. The maximum peak-controlled flows for the 2 through 100-year storm event will be maintained below the corresponding existing peak flows for each storm event.

Pre- and Post-Development Tributary Plans, shown in Figures 3 and 4, respectively, have been prepared and are included in Appendix 'B'. These plans will be further refined and discretized during the detailed design stage. The purpose of the plans is to establish a basis for determining the required stormwater storage volumes using the VO Version 6.2 hydrologic model. The parameters used in the analysis are provided in Appendix 'C'. The VOH schematic models for both pre- and post-development conditions are also included in Appendix 'C'.

All drainage from roadway areas, roof areas, outdoor amenity areas, terraces, and landscaped areas will be captured via roof drains and catchbasins and directed to the proposed stormwater management detention facilities.

The west part of the townhouse development (catchment 505) and the future hotel site (catchment 502) will drain to HY 48 in addition to existing catchments 503 and 504.

The main portion of the townhouse development (catchment 501) will drain to the Little Rouge Creek tributary. An underground stormwater management facility is proposed for the townhouse development. The storage facility will be located within the private road and will discharge toward the existing 4.0 m × 2.0 m box culvert crossing Main Street. The facility includes two GreenStorm tanks designed to capture the 100-year runoff flow from catchment 501. There are two inlet pipes to the first tank one from the total capture catchbasins near the Main Street entrance and the other from OGS1 within the storm sewer system. The inlet to the second tank will be connected to OGS2 within the storm sewer system, refer to Figures 1A and 1B of Conceptual Servicing Plan in Appendix 'A'.

The 100-year runoff flow from the west part of the townhouse development will be captured by catchbasins and diverted to an underground GreenStorm tank located beneath the road.

The future hotel site will be serviced by an underground stormwater storage facility located beneath the parking lot. The facility includes a Greenstorm tank that will discharge to the existing 1.0 m diameter CSP culvert crossing Highway 48, as shown on the Conceptual Servicing Plan (Appendix 'A').

A multi-stage control structure will be used to control and attenuate flows from the 2-year through 100-year storm events to pre-development flow rates or less for both developments.

The table below presents a comparison of the results from the VO Version 6.2 model for the existing, uncontrolled post-development, and controlled post-development conditions for the 4-hour Chicago, 6-hour AES, and 24-hour SCS design storm events. Refer to Appendix 'C' for the detailed model outputs for each design storm.

The results demonstrate that the controlled post-development flows are less than the corresponding pre-development flows to the Little Rouge Creek Tributary and the Highway 48 culvert. The required storage volumes for each stormwater management facility serving the townhouse development and future hotel site are also provided in the table below. The available storage in both facilities is more than the required one.

PreDevelopment Discharge		
	To Little Rouge	to Hwy 48 culvert
Storm Event 4-hr Chicago	Peak Flow Rate (m3/s)	Peak Flow Rate (m3/s)
2-year	0.041	0.025
5-year	0.084	0.051
10-year	0.116	0.071
25-year	0.163	0.100
50-year	0.201	0.124
100-year	0.239	0.148

	To Little Rouge	to Hwy 48 culvert
Storm Event 6-hr AES	Peak Flow Rate (m3/s)	Peak Flow Rate (m3/s)
2-year	0.052	0.032
5-year	0.096	0.059
10-year	0.130	0.080
25-year	0.177	0.109
50-year	0.214	0.133
100-year	0.251	0.157

	To Little Rouge	to Hwy 48 culvert
Storm Event 24-hr SCS	Peak Flow Rate (m3/s)	Peak Flow Rate (m3/s)
2-year	0.070	0.042
5-year	0.119	0.073
	0.148	0.092
25-year	0.197	0.122
50-year	0.230	0.143
100-year	0.262	0.163

Uncontrolled Post Development Discharge		
	To Little Rouge	to Hwy 48 culvert
Storm Event 4-hr Chicago	Peak Flow Rate (m3/s)	Peak Flow Rate (m3/s)
2-year	0.304	0.104
5-year	0.477	0.151
10-year	0.610	0.186
25-year	0.776	0.229
50-year	0.931	0.263
100-year	1.064	0.300

	To Little Rouge	to Hwy 48 culvert
Storm Event 6-hr AES	Peak Flow Rate (m3/s)	Peak Flow Rate (m3/s)
2-year	0.198	0.058
5-year	0.305	0.086
10-year	0.375	0.107
25-year	0.472	0.135
50-year	0.546	0.156
100-year	0.620	0.179

	To Little Rouge	to Hwy 48 culvert
Storm Event 24-hr SCS	Peak Flow Rate (m3/s)	Peak Flow Rate (m3/s)
2-year	0.305	0.094
5-year	0.448	0.133
10-year	0.537	0.156
25-year	0.676	0.192
50-year	0.766	0.216
100-year	0.848	0.240

Controlled Post Development Discharge					
	To Little Rouge (500+501)		to Hwy 48 culvert (502+503+504+505)		
Storm Event 4-hr Chicago	Peak Flow Rate (m3/s)	Volume (m3)	Peak Flow Rate (m3/s)	505-Vol (m3)	502-Vol (m3)
2-year	0.030	439.00	0.025	35	130
5-year	0.054	653.00	0.049	50	181
10-year	0.078	778.00	0.068	59	213
25-year	0.113	943.00	0.095	71	256
50-year	0.147	1061.00	0.116	80	288
100-year	0.184	1170.00	0.136	88	321

	To Little Rouge		to Hwy 48 culvert		
Storm Event 6-hr AES	Peak Flow Rate (m3/s)	Vol (m3)	Peak Flow Rate (m3/s)	505-Vol (m3)	502-Vol (m3)
2-year	0.035	510.00	0.031	39	148
5-year	0.067	718.00	0.058	53	200
10-year	0.091	849.00	0.078	61	237
25-year	0.132	1008.00	0.105	72	282
50-year	0.167	1120.00	0.125	80	318
100-year	0.203	1226.00	0.146	88	356

	To Little Rouge		to Hwy 48 culvert		
Storm Event 24-hr SCS	Peak Flow Rate (m3/s)	Vol (m3)	Peak Flow Rate (m3/s)	505-Vol (m3)	502-Vol (m3)
2-year	0.037	528.00	0.038	42	149
5-year	0.069	733.00	0.067	56	199
10-year	0.089	842.00	0.084	64	227
25-year	0.130	1003.00	0.112	76	270
50-year	0.161	1104.00	0.130	85	299
100-year	0.191	1193.00	0.148	88	327

The results demonstrate that the controlled post-development flows can adequately meet the pre-development flow conditions. Further refinement of the stormwater management design during the detailed design stage will allow for a more cost-effective solution.

4.3.2. Major Overland Flow

The major drainage system for the subject site has been designed to safely convey and manage runoff from the 100-year storm event. Major overland flow will be conveyed along the internal roadway network and designated overland flow routes toward the stormwater management (SWM) facility.

Major overland flow will be fully captured at the southern limit of the proposed townhouse development, near the Main Street entrance, and conveyed to the underground SWM facility. An emergency overflow pipe will be provided to safely discharge runoff to the Little Rouge Creek tributary in the event that the tank becomes plugged.

Major overland flow will also be fully captured at the west limit of the proposed townhouse development, near Highway 48 entrance, and conveyed to the underground SWM facility. An emergency overflow pipe will be provided to safely discharge runoff to the existing ditch along Highway 48 and ultimately to the existing 1.0 m diameter CSP culvert crossing Highway 48 in the event that the tank becomes plugged.

Similarly, major overland flow from the future hotel site will be fully captured at the southwest corner of the site and conveyed to the underground SWM facility. An emergence overflow will be provided through the grate to safely discharge runoff to the existing ditch along Highway 48 and ultimately to existing 1.0 m diameter CSP culvert crossing Highway 48 in the event that the tank becomes plugged.

4.3.3. QUALITY CONTROL

In accordance with the Ontario Ministry of the Environment, Conservation and Parks (MECP) Stormwater Management Planning and Design Manual, the water quality objective is to achieve a long-term average removal of 80% of Total Suspended Solids (TSS) on an annual loading basis from all runoff leaving the proposed development Site, based on the level of imperviousness.

Water quality control for the Subject Lands will be addressed using sediment-style OGS units, in accordance with the manufacturer’s recommendations, for both the townhouse development and the future hotel site. The proposed OGS units will be selected from the ETV Verification Program and will provide Enhanced-level treatment for water quality control. Two OGS units will be provided within the proposed townhouse development, with one OGS unit associated with each underground SWM tank.

Catchbasin shields will also be provided at the total-capture catchbasins to provide treatment for runoff conveyed to the SWM tanks.

For the west portion of the townhouse development and the future hotel site, one OGS unit will be provided downstream of each underground SWM facility to provide stormwater quality treatment prior to discharge.

5.0. WATER SUPPLY

The water supply capacity must be confirmed to ensure that the proposed development can be adequately serviced. An existing 400 mm diameter watermain currently runs along Highway 48 to the west and Main Street to the south boundaries of the development, respectively.

A 200 mm diameter connection is proposed to the existing municipal watermain within Main Street and Highway 48 right-of-way to provide domestic water supply and fire flow protection for the stacked townhouses and the hotel building. Refer to Figures 1A and 1B in Appendix ‘A’ for the Conceptual Servicing Plan.

The water demand calculation for 120 persons for the Hotel site is included in Appendix ‘D’. The maximum daily demand is 0.97 l/s. Fire flow demand for the proposed development is estimated at 83.3 l/s, based on the guidelines specified by the Fire Underwriters Survey (FUS) Water Supply for Public Fire Protection (2020). Therefore, the total water demand (domestic + fire flow) will be 84.3 l/s.

The water demand calculation for 479 persons for townhouse development is included in Appendix ‘D’. The maximum daily demand is 3.88 l/s. Fire flow demand for the proposed development is estimated at 133.3 l/s, based on the guidelines specified by the Fire Underwriters Survey (FUS) Water Supply for Public Fire Protection (2020). Therefore, the total water demand (domestic + fire flow) will be 137.2 l/s.

A detailed fire flow analysis will be completed once the hydrant flow test results are available.

6.0. FLOODPLAIN ANALYSIS

6.1.1 BACKROUND INFORMATION

There is a Regional Storm floodplain located within the tributary of the Little Rouge Creek that traverses the subject lands. In the past there have been various analyses using "HecRas" model to determine the extent of the floodplain. More recently SCS, 2024, established the floodplain to support a previously approved Draft Plan of Subdivision application of a mixed mid-high and low-rise residential Blocks. A ground truthed survey completed by Rady-Pentek & Edward Surveyors was recently done to confirm the ground survey previously done in 2013 by the same company.

SCS had updated the model from a previous version by Cole Engineering in 2008. The HEC-RAS model was updated to reflect the detailed topographic survey information. Model coding was updated to reflect culvert upsizing crossings on Main Street and Highway 48 by the MTO, and reflect the updated grading of Main Street over the culvert crossing. The SCS project file name was "Rouge_FPUMU-SCS_Update_2024" and the associated Geometric File name "Railway_underpass_SCS_PR_2024". Regional Flow Discharges were also updated by the "Rouge River Watershed Hydrology Study Update by Wood Environment & Infrastructure Solutions", dated September 2018 and adopted by the TRCA.

The aforementioned file represents the base condition for our analysis.

6.1.2 UPDATED MODEL

Using the aforementioned base model and the proposed grading plan, we provided a new Geometric file named as "Condeland Proposed_City Park_Aug_2026" and updated the project file name to "Rouge_Condeland proposed_2026". The Regional Flow Rates were maintained in accordance with the "Rouge River Watershed Hydrology Study Update by Wood Environment & Infrastructure Solutions", dated September 2018.

The proposed road connection in the City Park Proposal is proposed east to the development abutting the boundary. When comparing the floodplain established with the 2008 Cole Engineering results and the 2024 SCS results, both impact the proposed Hotel site. We then updated the cross sections of "River Hwy 48 Trib", Reach 5, Sections 732.2251 through to 840.4836, to reflect the proposed grading of the development. The sections below and above this area were not modified as the floodplain is contained well within the valley area. The results of the 2024 SCS floodplain are shown below in Table 6.1.

Table 6.1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Flow Area	Top Width
			(m3/s)	(m)	(m)	(m/s)	(m2)	(m)
Reach 5	1346.537	REGIONAL	35.37	256.98	258.96	0.42	166.34	167.23
Reach 5	1335.571	REGIONAL	35.37	257.04	258.92	1.17	55.47	148.65
Reach 5	1310.951		Bridge					
Reach 5	1286.272	REGIONAL	35.37	256.53	257.82	3.09	21.44	85.87
Reach 5	1266.57	REGIONAL	35.37	256.4	257.44	2.78	35.74	101.16
Reach 5	1216.349	REGIONAL	35.37	256.01	257.49	0.4	89.51	101.25
Reach 5	1188.288	REGIONAL	35.37	255.76	257.49	0.69	114.77	107.64
Reach 5	1128.016	REGIONAL	35.37	255.46	257.45	1.01	86.28	83.53
Reach 5	1083.079	REGIONAL	35.37	255.67	257.43	0.83	114.21	104.38
Reach 5	1006.548	REGIONAL	35.37	255.44	257.38	0.78	53.59	38.6
Reach 5	959.5	REGIONAL	35.37	255.42	257.2	1.58	27.77	39.89
Reach 5	912.3788	REGIONAL	35.37	255.46	256.61	3.24	12.33	13.38
Reach 5	840.4836	REGIONAL	35.37	253.7	255.93	2.81	18.83	13.73
Reach 5	777.4386	REGIONAL	35.37	253.39	255.84	2.33	26.9	18.58
Reach 5	749.0354	REGIONAL	35.37	253.18	255.82	2.07	31.86	20.05
Reach 5	732.2251	REGIONAL	35.37	252.69	255.86	1.23	69.92	95.67
Reach 5	702.1899		Bridge					
Reach 5	682.7999	REGIONAL	35.37	252.75	254.48	3.68	11.1	48.15
Reach 5	663.0955	REGIONAL	35.37	252.9	254.55	3	40.4	80.47
Reach 5	639.1494	REGIONAL	35.37	252.8	254.36	2.95	39.46	91.31
Reach 5	584.9039	REGIONAL	35.37	252.47	253.84	1.83	54.2	96.28
Reach 5	493.5314	REGIONAL	35.37	252.02	253.43	2.87	38.16	67.88
Reach 5	415.7568	REGIONAL	35.37	251.76	253.12	2.26	44.29	85.28
Reach 5	351.8255	REGIONAL	35.37	251.67	252.89	1.85	56.14	117.44
Reach 5	320.9344		Culvert					
Reach 5	299.9244	REGIONAL	35.37	251.68	252.55	2.39	32.52	52.3
Reach 5	257.5373	REGIONAL	35.37	250.72	252.21	2.69	43.66	97.61
Reach 5	168.0652	REGIONAL	35.37	250.64	251.93	2.14	55.05	112.2
Reach 5	117.824	REGIONAL	35.37	250.47	251.85	1.71	62.72	91.51
Reach 5	65.31847	REGIONAL	35.37	250.53	251.53	2.96	30.37	51.03

The results of the Geometric file, “Condeland Proposed_City Park_Aug_2026” are shown below in Table 6.2. The results indicate the same water surface elevation (WSL) for the most part, but for sections 912.3788 to 749.0354, the WSL is slightly lower by 2-3 centimetres.

The floodplain, as illustrated in Figure 6 is proposed outside the proposed building and following up to the low point of the Road at elevation 255.79.

The HecRas file model will be submitted separately as part of this report.

Table 6.2

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Flow Area	Top Width
			(m3/s)	(m)	(m)	(m/s)	(m2)	(m)
Reach 5	1346.537	REGIONAL	35.37	256.98	258.96	0.42	166.34	167.23
Reach 5	1335.571	REGIONAL	35.37	257.04	258.92	1.17	55.47	148.65
Reach 5	1310.951		Bridge					
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Reach 5	1266.57	REGIONAL	35.37	256.4	257.44	2.78	35.74	101.16
Reach 5	1216.349	REGIONAL	35.37	256.01	257.49	0.4	89.51	101.25
Reach 5	1188.288	REGIONAL	35.37	255.76	257.49	0.69	114.77	107.64
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Reach 5	840.4836	REGIONAL	35.37	253.7	255.91	2.84	18.56	13.65
Reach 5	777.4386	REGIONAL	35.37	253.39	255.81	2.37	26.4	18.43
Reach 5	749.0354	REGIONAL	35.37	253.18	255.79	2.1	31.3	19.9
Reach 5	732.2251	REGIONAL	35.37	252.69	255.82	1.3	69.31	70.58
Reach 5	702.1899		Bridge					
Reach 5	682.7999	REGIONAL	35.37	252.75	254.48	3.68	11.1	48.15
Reach 5	663.0955	REGIONAL	35.37	252.9	254.55	3	40.4	80.47
Reach 5	639.1494	REGIONAL	35.37	252.8	254.36	2.95	39.46	91.31
Reach 5	584.9039	REGIONAL	35.37	252.47	253.84	1.83	54.2	96.28
Reach 5	493.5314	REGIONAL	35.37	252.02	253.43	2.87	38.16	67.88
Reach 5	415.7568	REGIONAL	35.37	251.76	253.12	2.26	44.29	85.28
Reach 5	351.8255	REGIONAL	35.37	251.67	252.89	1.85	56.14	117.44
Reach 5	320.9344		Culvert					
Reach 5	299.9244	REGIONAL	35.37	251.68	252.55	2.39	32.52	52.3
Reach 5	257.5373	REGIONAL	35.37	250.72	252.21	2.69	43.66	97.61
Reach 5	168.0652	REGIONAL	35.37	250.64	251.93	2.14	55.05	112.2
Reach 5	117.824	REGIONAL	35.37	250.47	251.85	1.71	62.72	91.51
Reach 5	65.31847	REGIONAL	35.37	250.53	251.53	2.96	30.37	51.03

7.0. CONCLUSIONS AND RECOMMENDATIONS

On the basis of our investigation and examination, it is the conclusion of the writer that:

- The existing sanitary has sufficient capacity to service the proposed development.
- The subject development can be drained for sanitary sewage purposes.
- The total water demand (domestic and fire) for the development has been confirmed through two 200 mm connections to the existing 400 mm watermain on Main Street and Highway 48, fronting the site. Hydrant flow testing will be provided and the Site Plan stage to confirm adequacy of fire and domestic demands
- Adequate storm drainage and stormwater management facilities, addressing both quantity and quality, will be provided within the development area to mitigate the impact of urban runoff, as detailed in the separate Stormwater Management Report.
- Floodplain analysis and configuration will ensure that the Proposed Buildings are not compromised

Respectfully Submitted by:

CONDELAND ENGINEERING LIMITED

LICENSED PROFESSIONAL ENGINEER
R.P. DE ANGELIS
PROVINCE OF ONTARIO

Muwaffaq Al-Awad, P.Eng.

Design Engineer

Robert De Angelis, P. Eng.

Principal

8.0.0. STANDARD LIMITATIONS

This report was prepared by Condeland Engineering Ltd. for the client in accordance with the agreement between Condeland Engineering Ltd. and the client. This report is based on information provided to Condeland Engineering Ltd. which has not been independently verified.

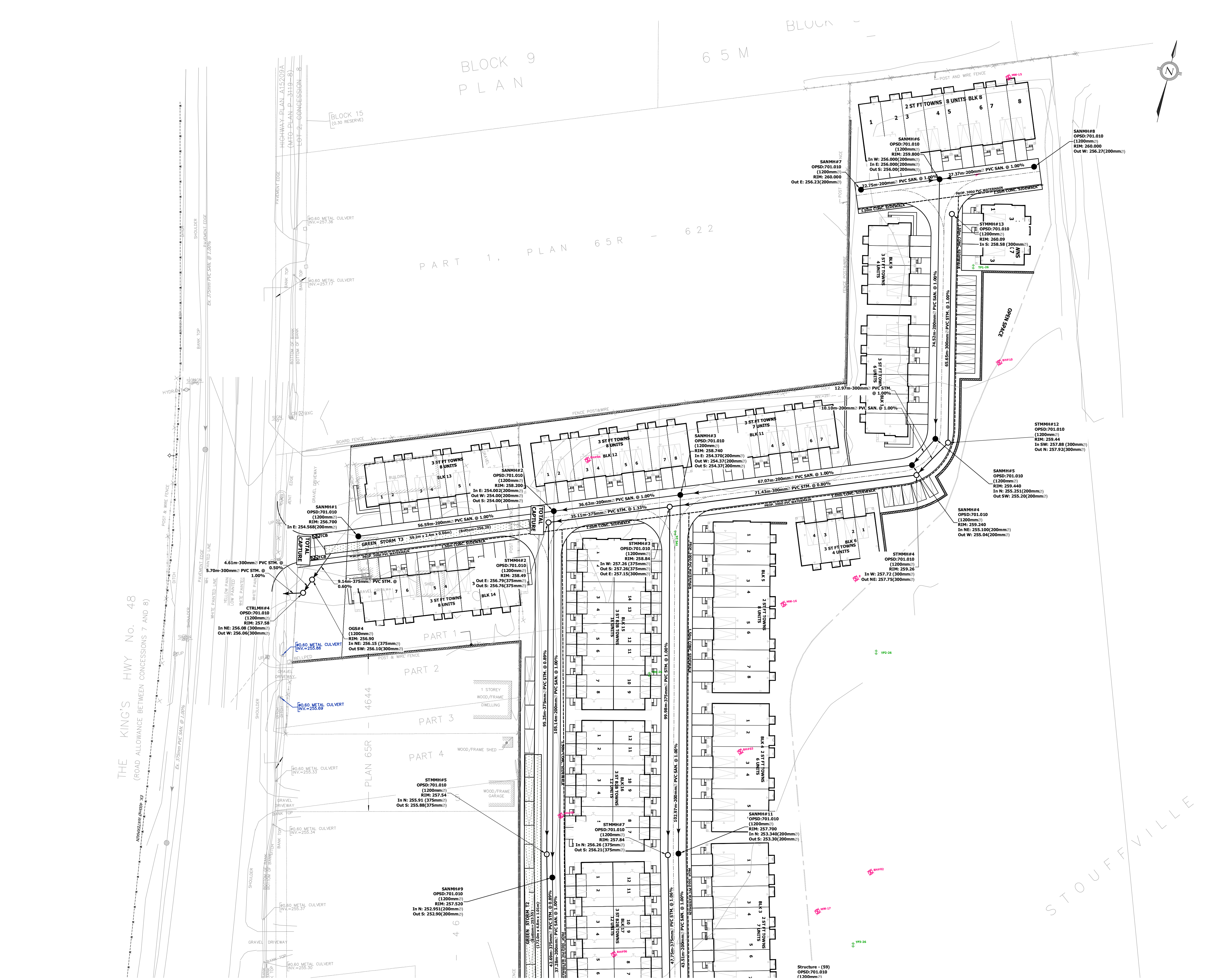
The disclosure of any information contained in this report is the sole responsibility of the client. The material in this report, accompanying spreadsheets and all information relating to this activity reflect Condeland's judgment in light of the information available to us at the time of preparation of this report. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Condeland Engineering Ltd. accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or actions based on this report. Condeland Engineering Ltd. warrants that it performed services hereunder with that degree of care, skill, and diligence normally provided in the performance of such services in respect of projects of similar nature at the time and place those services were rendered. Condeland Engineering Ltd. disclaims all other warranties, representations, or conditions, either express or implied, including, without limitation, warranties, representations, or conditions of merchantability or profitability, or fitness for a particular purpose.

This Standard Limitations statement is considered part of this report.

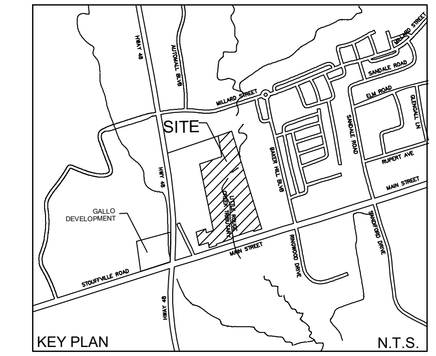
APPENDIX 'A'

FIGURE 1A AND 1B CONCEPTUAL SERVICING PLAN

FIGURE 2A AND 2B CONCEPTUAL GRADING PLAN



SEE DWG. 26-011-04



PLAN OF SURVEY AND TOPOGRAPHY OF

TOWN OF STOUFFVILLE
REGIONAL MUNICIPALITY OF YORK

LEGEND

EX.200mm PVC WATERMAIN	EXISTING WATERMAIN	R(QL'D')	EXISTING ROGERS
EX. 50m–200mm PVC STM	EXISTING STORM DIRECTION OF FLOW	OH	EXISTING OVERHEAD HYDRO
EX. 50m–200mm PVC SAN	EXISTING SANITARY DIRECTION OF FLOW	SL	EXISTING STREET LIGHT LINE
EX. D.I.	EXISTING DITCH INLET	E	EXISTING ELECTRIC LINE
EX. DCB	EXISTING DOUBLE CATCHBASIN	100m-200mm PVC SAN @ 1.00%	PROPOSED SANITARY SEWER DIRECTION OF FLOW
EX. CB	EXISTING CATCHBASIN	100m-600mm CONC STM @ 1.00%	PROPOSED STORM SEWER DIRECTION OF FLOW
EX.SANMH	EXISTING SANITARY MANHOLE	150mmØ PVC WATERMAIN	PROPOSED WATERMAIN
EX.MH	EXISTING STORM MANHOLE		PROPOSED CENTERLINE/STA
EX.HYD	EXISTING HYDRANT & VALVE		LOT LINE
V&B	EXISTING WATER VALVE & BOX	MH20A	PROPOSED SANITARY MANHOLE & NUMBER
	EXISTING WATERMAIN PLUG	MH20	PROPOSED STORM MANHOLE & NUMBER
	EXISTING LIGHT POLE	CB	PROPOSED CATCHBASIN
UP	EXISTING UTILITY/HYDRO POLE	DCB	PROPOSED DOUBLE CATCHBASIN
JNBX	EXISTING JUNCTION BOX	DICB	PROPOSED DITCH INLET CATCHBASIN
	EXISTING ROGERS/BELL BOX	HYD.	PROPOSED HYDRANT & VALVE
	EXISTING HYDRO TRANSFORMER	V&B	PROPOSED WATER VALVE & BOX
H	EXISTING HYDRO	CBMH	PROPOSED CATCHBASIN MANHOLE & NUMBER
TV	EXISTING TV CABLE	RLCB	PROPOSED REAR LOT CATCHBASIN
B	EXISTING BELL		
BT(QL'D')	EXISTING BELL		
BT–FO	EXISTING BELL FIBRE OPTIC		
G	EXISTING GAS		
G(QL'D')	EXISTING GAS		

BEARINGS
XXX

INTEGRATION NOTE
XXX

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

REVISION	BLOCK	DATE	APPR. BY
1	1st SUBMISSION FOR DRAFT PLAN APPROVAL	AUG/26/2026	R.P.D.

CITY PARK HOMES INC.

12371 HIGHWAY 48 AND 5262-5318 MAIN ST, STOUFFVILLE, ON

MUNICIPAL

DESIGN APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO TOWN OF WHITCHURCH–STOUFFVILLE STANDARDS AND SPECIFICATIONS.

SIGNED________________________
ENGINEERING & PUBLIC WORKS

DATE______________

REGIONAL MUNICIPALITY OF YORK

DESIGN OF WASTEWATER AND WATER SERVICES APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO YORK STANDARDS AND SPECIFICATIONS AND LOCATION APPROVAL FROM AREA MUNICIPALITY.

SIGNED______________________________
PLANNING & PUBLIC WORKS DEPARTMENT

DATE_____________

APPROVED:

REGISTERED PROFESSIONAL ENGINEER
R.P. DE ANGELIS
AUG/26/2026
PROVINCE OF ONTARIO

NOT FOR CONSTRUCTION

PRELIMINARY

CONSULTING ENGINEERS & PROJECT MANAGERS

350 Creditstone Road, Unit 200
Concord, Ontario L4K 3Z2

P: (905) 695-2096
www.condeland.com

Town of Whitchurch-Stouffville

CONCEPTUAL SERVICING PLAN (1 OF 2)

DESIGNED BY: R.P.D.	DATE: AUGUST 2026	CHECKED BY: R.P.D.
DRAWN BY: G.M.	DRAWING NO. FIGURE#1 A	CITY FILE:
SCALE 1:500	Sheet: 01 OF 08	REGION FILE:

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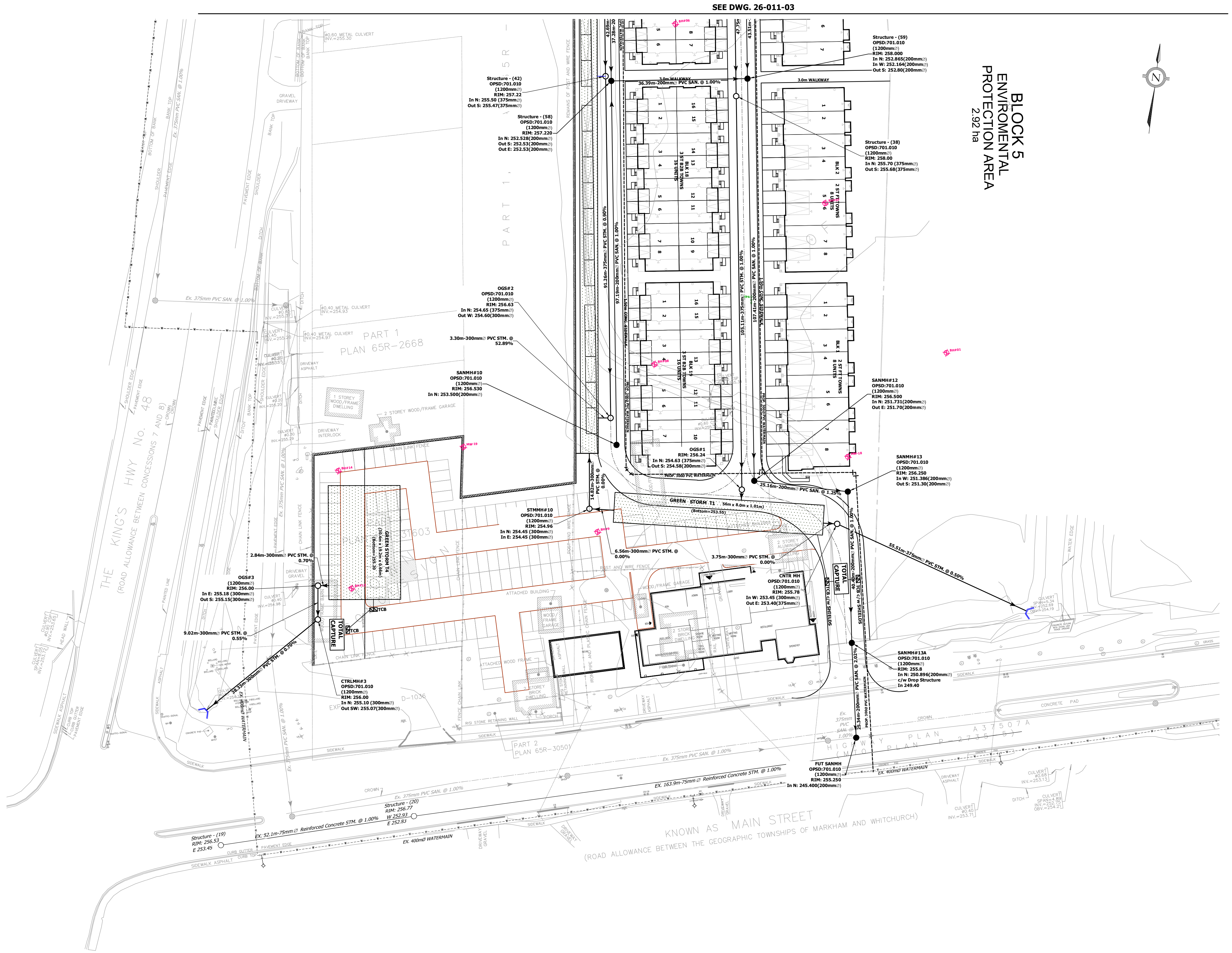

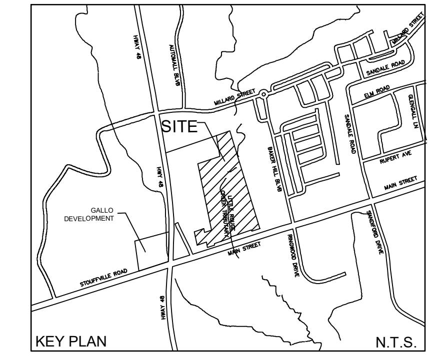

PLAN OF SURVEY AND TOPOGRAPHY OF

TOWN OF STOUFFVILLE
REGIONAL MUNICIPALITY OF YORK

LEGEND

EX.200mm PVC WATERMAIN	EXISTING WATERMAIN	R(QL'D')	EXISTING ROGERS
EX. 50m–200mm PVC STM	EXISTING STORM DIRECTION OF FLOW	OH	EXISTING OVERHEAD HYDRO
EX. 50m–200mm PVC SAN	EXISTING SANITARY DIRECTION OF FLOW	SL	EXISTING STREET LIGHT LINE
EX. D.I.	EXISTING DITCH INLET	E	EXISTING ELECTRIC LINE
EX. DCB	EXISTING DOUBLE CATCHBASIN	100m-200mm PVC SAN @ 1.00%	PROPOSED SANITARY SEWER DIRECTION OF FLOW
EX. CB	EXISTING CATCHBASIN	100m-600mm CONC STM @ 1.00%	PROPOSED STORM SEWER DIRECTION OF FLOW
EX.SANMH	EXISTING SANITARY MANHOLE	150mmØ PVC WATERMAIN	PROPOSED WATERMAIN
EX.MH	EXISTING STORM MANHOLE		PROPOSED CENTERLINE/STA
EX.HYD	EXISTING HYDRANT & VALVE		LOT LINE
V&B	EXISTING WATER VALVE & BOX	MH20A	PROPOSED SANITARY MANHOLE & NUMBER
	EXISTING WATERMAIN PLUG	MH20	PROPOSED STORM MANHOLE & NUMBER
	EXISTING LIGHT POLE	CB	PROPOSED CATCHBASIN
UP	EXISTING UTILITY/HYDRO POLE	DCB	PROPOSED DOUBLE CATCHBASIN
JNBX	EXISTING JUNCTION BOX	DICB	PROPOSED DITCH INLET CATCHBASIN
	EXISTING ROGERS/BELL BOX	HYD.	PROPOSED HYDRANT & VALVE
	EXISTING HYDRO TRANSFORMER	V&B	PROPOSED WATER VALVE & BOX
H	EXISTING HYDRO	CBMH	PROPOSED CATCHBASIN MANHOLE & NUMBER
TV	EXISTING TV CABLE	RLCB	PROPOSED REAR LOT CATCHBASIN
B	EXISTING BELL		
BT(QL'D')	EXISTING BELL		
BT–FO	EXISTING BELL FIBRE OPTIC		
G	EXISTING GAS		
G(QL'D')	EXISTING GAS		

BEARINGS
XXX
INTEGRATION NOTE
XXX
DISTANCES AND/OR COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

1	1st SUBMISSION FOR DRAFT PLAN APPROVAL	AUG/26/2026	R.P.D.
REVISION BLOCK		DATE	APPR. BY

CITY PARK HOMES INC.

12371 HIGHWAY 48 AND 5262-5318 MAIN ST, STOUFFVILLE, ON

MUNICIPAL
DESIGN APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO TOWN OF WHITCHURCH–STOUFFVILLE STANDARDS AND SPECIFICATIONS.
SIGNED____________________
ENGINEERING & PUBLIC WORKS
DATE____________

REGIONAL MUNICIPALITY OF YORK
DESIGN OF WASTEWATER AND WATER SERVICES APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO YORK STANDARDS AND SPECIFICATIONS AND LOCATION APPROVAL FROM AREA MUNICIPALITY.
SIGNED__________________________
PLANNING & PUBLIC WORKS DEPARTMENT
DATE____________

APPROVED:
REGISTERED PROFESSIONAL ENGINEER
R.P. DE ANGELIS
AUG/26/2026
PROVINCE OF ONTARIO

NOT FOR CONSTRUCTION

PRELIMINARY

CONDELAND
CONSULTING ENGINEERS & PROJECT MANAGERS
350 Creditstone Road, Unit 200
Concord, Ontario L4K 3Z2
P: (905) 695-2096
www.condeland.com

York Region

Town of Whitchurch-Stouffville

CONCEPTUAL SERVICING PLAN (2 OF 2)

DESIGNED BY: R.P.D.	DATE: AUGUST 2026	CHECKED BY: R.P.D.
DRAWN BY: G.M.	DRAWING NO. FIGURE#1 B	CITY FILE:
SCALE 1:500	Sheet: 02 OF 08	REGION FILE:

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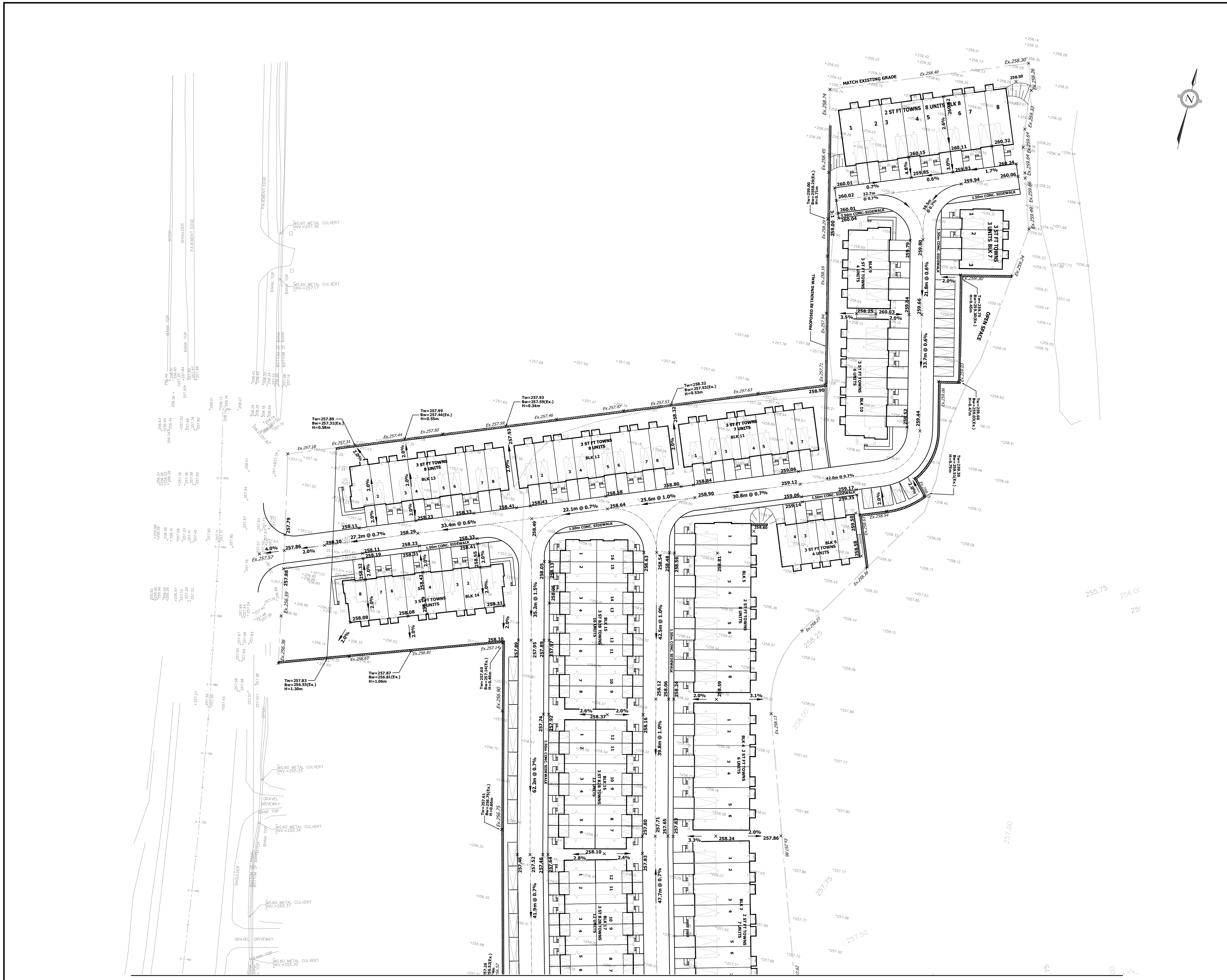

PLAN OF SURVEY AND TOPOGRAPHY OF

TOWN OF STOUFFVILLE
REGIONAL MUNICIPALITY OF YORK

LEGEND

EX. D.I.	EXISTING DITCH INLET	MH20A	PROPOSED SANITARY MANHOLE & NUMBER
EX. DCB	EXISTING DOUBLE CATCHBASIN	MH20	PROPOSED STORM MANHOLE & NUMBER
EX. CB	EXISTING CATCHBASIN	CB	PROPOSED CATCHBASIN
EX.SANMH	EXISTING SANITARY MANHOLE	DCB	PROPOSED DOUBLE CATCHBASIN
EX.MH	EXISTING STORM MANHOLE	HYD.	PROPOSED HYDRANT & VALVE
EX.HYD	EXISTING HYDRANT & VALVE	V&B	PROPOSED WATER VALVE & BOX
V&B	EXISTING WATER VALVE & BOX	CBMH	PROPOSED CATCHBASIN MANHOLE & NUMBER
	EXISTING LIGHT POLE	BH-6	BOREHOLE
UP	EXISTING UTILITY/HYDRO POLE		
JNBX	EXISTING JUNCTION BOX		
	EXISTING ROGERS/BELL BOX		
	EXISTING HYDRO TRANSFORMER		
+ 191.84	EXISTING TOPO ELEVATION		
+191.84	PROPOSED ELEVATION		
+ EX:191.84	EXISTING ELEVATION		
HP 191.84	PROPOSED HIGH POINT ELEVATION		
	PROPOSED SWALE		
	LOT LINE		
0+000	PROPOSED CENTERLINE/STA		
273.00	GROUND WATER LEVEL		

BEARINGS
XXX
INTEGRATION NOTE
XXX
DISTANCES AND/OR COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

1	1st SUBMISSION FOR DRAFT PLAN APPROVAL	AUG/26/2026	R.P.D.
REVISION	BLOCK	DATE	APPR. BY

CITY PARK HOMES INC.

12371 HIGHWAY 48 AND 5262-5318 MAIN ST, STOUFFVILLE, ON

MUNICIPAL
DESIGN APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO TOWN OF WHITCHURCH–STOUFFVILLE STANDARDS AND SPECIFICATIONS.
SIGNED____________
ENGINEERING & PUBLIC WORKS
DATE________

REGIONAL MUNICIPALITY OF YORK
DESIGN OF WASTEWATER AND WATER SERVICES APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO YORK STANDARDS AND SPECIFICATIONS AND LOCATION APPROVAL FROM AREA MUNICIPALITY.
SIGNED____________
PLANNING & PUBLIC WORKS DEPARTMENT
DATE________

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R.P. DE ANGELIS
AUG/26/2026
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P: (905) 695-2096
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Town of Whitchurch-Stouffville

CONCEPTUAL GRADING PLAN (1 OF 2)

DESIGNED BY:	R.P.D.	DATE:	AUGUST 2026	CHECKED BY:	R.P.D.
DRAWN BY:	G.M.	DRAWING NO.		CITY FILE:	
SCALE 1:500		FIGURE#2 A	Sheet: 03 OF 08	REGION FILE:	

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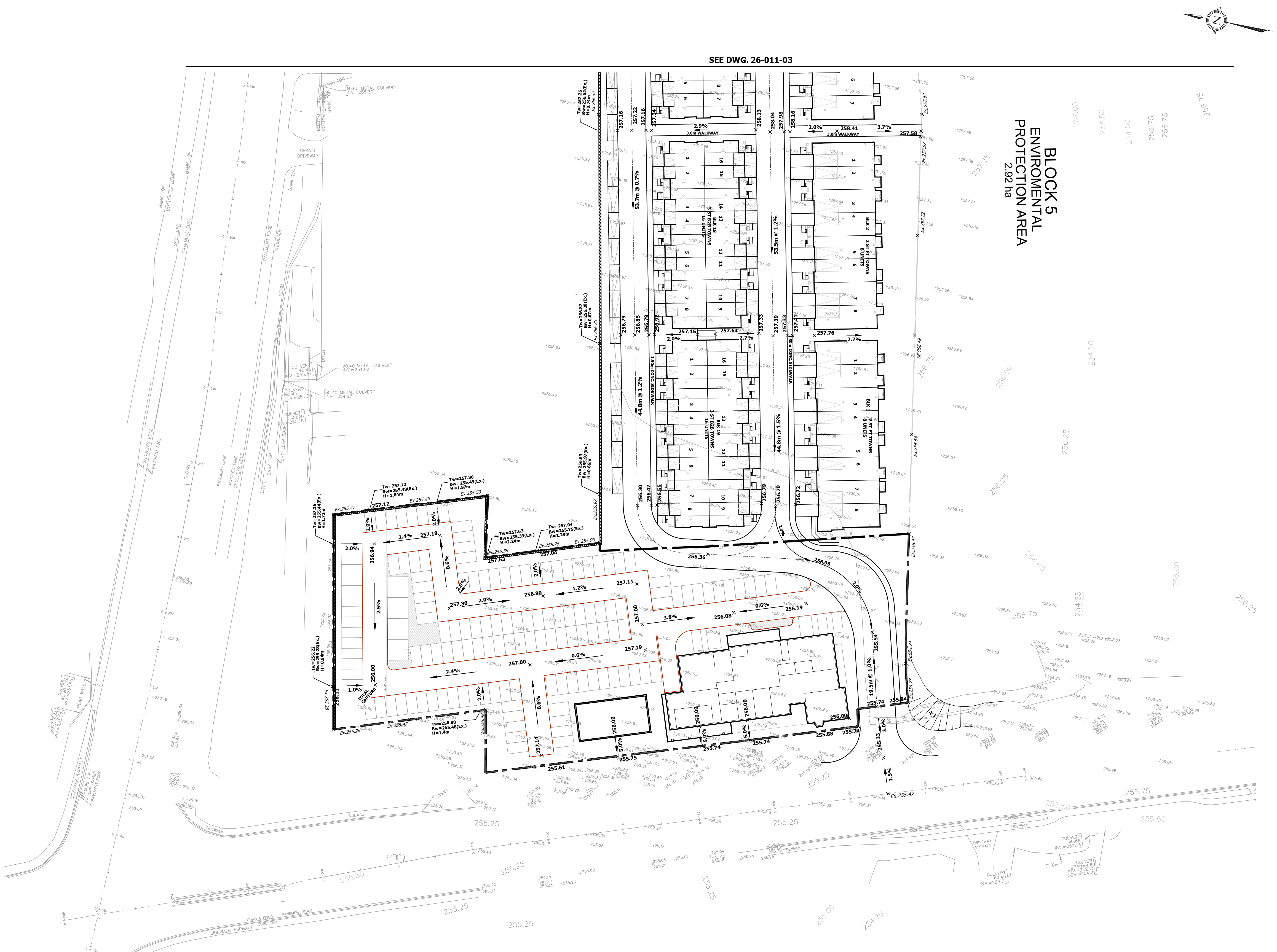

PLAN OF SURVEY AND TOPOGRAPHY OF

TOWN OF STOUFFVILLE
REGIONAL MUNICIPALITY OF YORK

LEGEND

EX. D.I.	EXISTING DITCH INLET	MH20A	PROPOSED SANITARY MANHOLE & NUMBER
EX. DCB	EXISTING DOUBLE CATCHBASIN	MH20	PROPOSED STORM MANHOLE & NUMBER
EX. CB	EXISTING CATCHBASIN	CB	PROPOSED CATCHBASIN
EX.SANMH	EXISTING SANITARY MANHOLE	DCB	PROPOSED DOUBLE CATCHBASIN
EX.MH	EXISTING STORM MANHOLE	HYD.	PROPOSED HYDRANT & VALVE
EX.HYD	EXISTING HYDRANT & VALVE	V&B	PROPOSED WATER VALVE & BOX
V&B	EXISTING WATER VALVE & BOX	CBMH	PROPOSED CATCHBASIN MANHOLE & NUMBER
	EXISTING LIGHT POLE	BH-6	BOREHOLE
UP	EXISTING UTILITY/HYDRO POLE		
JNBX	EXISTING JUNCTION BOX		
	EXISTING ROGERS/BELL BOX		
	EXISTING HYDRO TRANSFORMER		
+ 191.84	EXISTING TOPO ELEVATION		
+191.84	PROPOSED ELEVATION		
+ EX:191.84	EXISTING ELEVATION		
HP 191.84	PROPOSED HIGH POINT ELEVATION		
	PROPOSED SWALE		
	LOT LINE		
0+000	PROPOSED CENTERLINE/STA		
273.00	GROUND WATER LEVEL		

BEARINGS
XXX
INTEGRATION NOTE
XXX
DISTANCES AND/OR COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

1	1st SUBMISSION FOR DRAFT PLAN APPROVAL	AUG/26/2026	R.P.D.
REVISION BLOCK		DATE	APPR. BY

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12371 HIGHWAY 48 AND 5262-5318 MAIN ST, STOUFFVILLE, ON

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SIGNED______________________
ENGINEERING & PUBLIC WORKS

DATE____________

REGIONAL MUNICIPALITY OF YORK
DESIGN OF WASTEWATER AND WATER SERVICES APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO YORK STANDARDS AND SPECIFICATIONS AND LOCATION APPROVAL FROM AREA MUNICIPALITY.

SIGNED__________________________
PLANNING & PUBLIC WORKS DEPARTMENT
DATE____________

APPROVED:

REGISTERED PROFESSIONAL ENGINEER
R.P. DE ANGELIS
AUG/26/2026
PROVINCE OF ONTARIO

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York Region

Town of Whitchurch-Stouffville

CONCEPTUAL GRADING PLAN (2 OF 2)

DESIGNED BY: R.P.D.	DATE: AUGUST 2026		CHECKED BY: R.P.D.
DRAWN BY: G.M.	DRAWING NO.		CITY FILE:
SCALE 1:500	FIGURE#2 B Sheet: 04 OF 08		REGION FILE:

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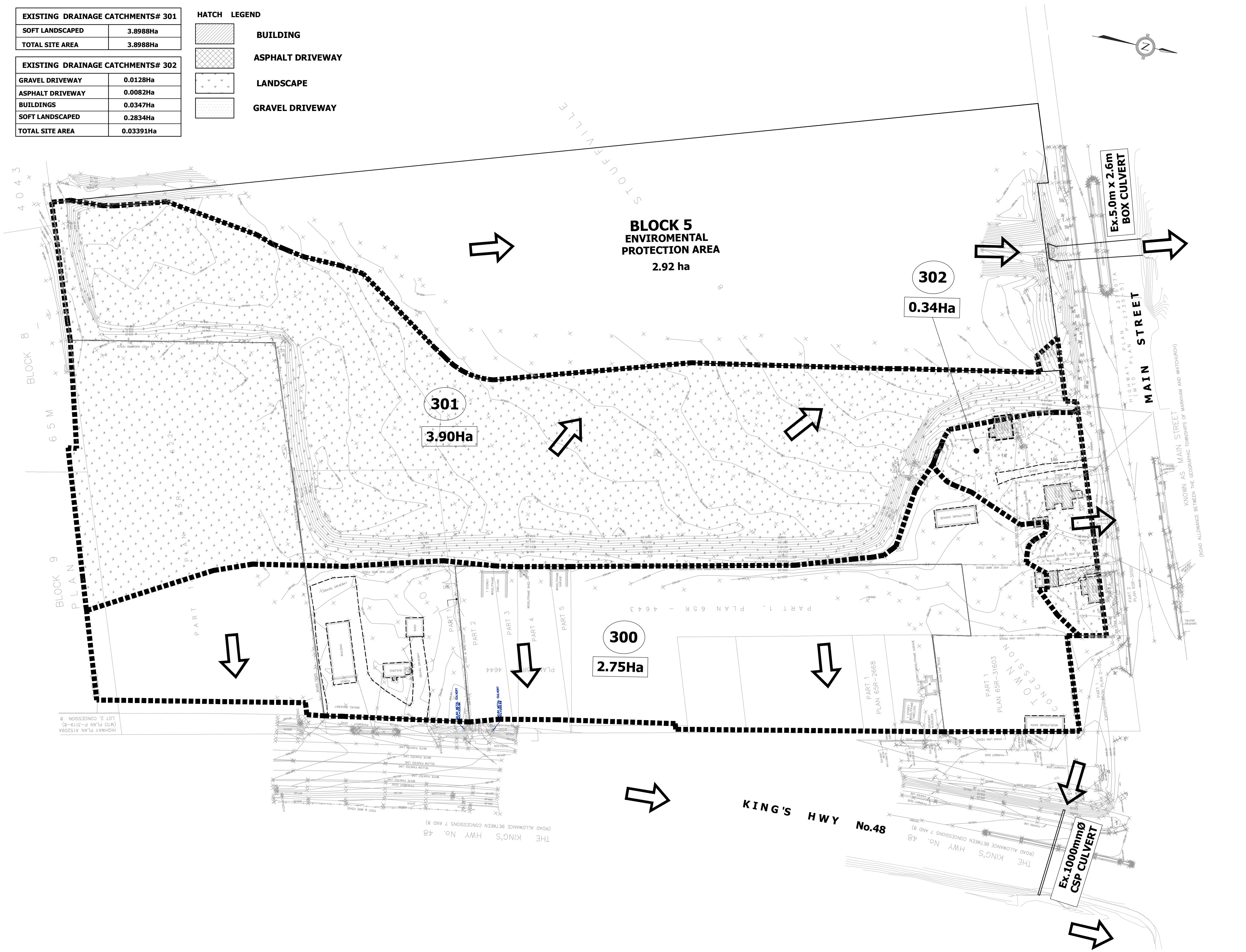
APPENDIX 'B'

FIGURE 3 PRE DEVELOPMENT TRIBUTARY PLAN

FIGURE 4 POST DEVELOPMENT TRIBUTARY PLAN

EXISTING DRAINAGE CATCHMENTS# 301	
SOFT LANDSCAPED	3.8988Ha
TOTAL SITE AREA	3.8988Ha

EXISTING DRAINAGE CATCHMENTS# 302	
GRAVEL DRIVEWAY	0.0128Ha
ASPHALT DRIVEWAY	0.0082Ha
BUILDINGS	0.0347Ha
SOFT LANDSCAPED	0.2834Ha
TOTAL SITE AREA	0.03391Ha



KEY PLAN N.T.S.

PLAN OF SURVEY AND TOPOGRAPHY OF
TOWN OF STOUFFVILLE
REGIONAL MUNICIPALITY OF YORK

LEGEND

TRIBUTARY AREA BOUNDARY
1.050HA 501 0.55 — STORM TRIBUTARY AREA (HA)
RUNOFF COEFFICIENT
AREA NUMBER
EXTERNAL TRIBUTARY AREA BOUNDARY
1.050HA 501 0.55 — EXTERNAL STORM TRIBUTARY AREA (HA)
EXTERNAL RUNOFF COEFFICIENT
EXTERNAL AREA NUMBER
OVERLAND FLOW ARROW
EXISTING OVERLAND FLOW ARROW
100m-600mm CONC STM @ 1.00% — PROPOSED STORM SEWER DIRECTION OF FLOW
HW HW — PROPOSED HEADWALLS
EX. 50m-200mm PVC STM — EXISTING STORM DIRECTION OF FLOW
PROPOSED STORM SERVICE
MH20 — PROPOSED STORM MANHOLE & NUMBER
CB — PROPOSED CATCHBASIN
DCB — PROPOSED DOUBLE CATCHBASIN
DICB — PROPOSED DITCH INLET CATCHBASIN
MH 1B — PROPOSED BYPASS STORM MANHOLE & NUMBER
CBMH — PROPOSED CATCHBASIN MANHOLE & NUMBER
RLCB — PROPOSED REAR LOT CATCHBASIN
EX. D.I. — EXISTING DITCH INLET
EX. DCB — EXISTING DOUBLE CATCHBASIN
EX. CB — EXISTING CATCHBASIN
EX.DCBMH — EXISTING CATCHBASIN MANHOLE
EX.MH — EXISTING STORM MANHOLE

BEARINGS
XXX
INTEGRATION NOTE
XXX
DISTANCES AND/OR COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

1	1st SUBMISSION FOR DRAFT PLAN APPROVAL	AUG/26/2026	R.P.D.
REVISION BLOCK		DATE	APPR. BY

CITY PARK HOMES INC.
12371 HIGHWAY 48 AND 5262-5318 MAIN ST, STOUFFVILLE, ON

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SIGNED________________
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DATE__________

REGIONAL MUNICIPALITY OF YORK
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PLANNING & PUBLIC WORKS DEPARTMENT
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York Region
Town of Whitchurch-Stouffville

PRE DEVELOPMENT DRAINAGE PLAN

DESIGNED BY: R.P.D.	DATE: AUGUST 2026	CHECKED BY: R.P.D.
DRAWN BY: G.M.	DRAWING NO. FIGURE#3	CITY FILE:
SCALE 1:750	Sheet: 05 OF 08	REGION FILE:

Z:\JOB DIRECTORY\26-011\DRAWINGS\CADD\TRIBUTARY PLANS\STORM TRIBUTARY PLANS\PRE DEVELOPMENT STORM TRIBUTARY PLAN.dwg 2026-08-26

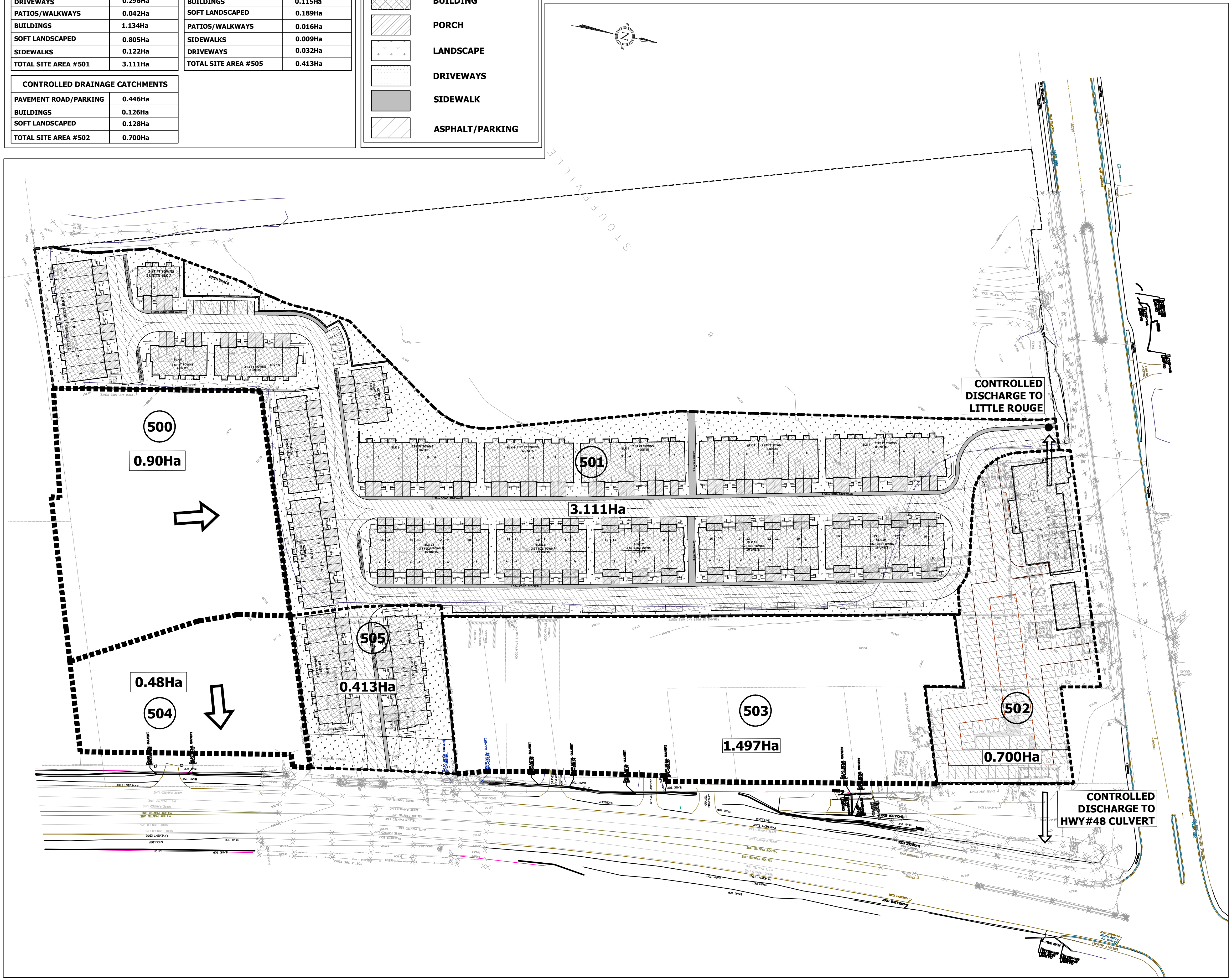
CONTROLLED DRAINAGE CATCHMENTS	
PAVEMENT ROAD/PARKING	0.712Ha
DRIVEWAYS	0.296Ha
PATIOS/WALKWAYS	0.042Ha
BUILDINGS	1.134Ha
SOFT LANDSCAPED	0.805Ha
SIDEWALKS	0.122Ha
TOTAL SITE AREA #501	3.111Ha

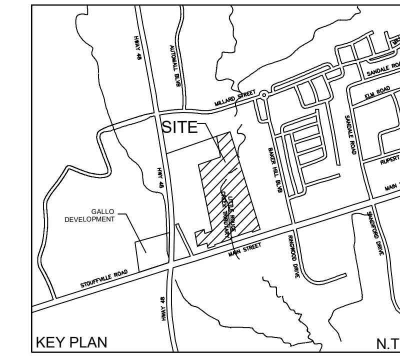
CONTROLLED DRAINAGE CATCHMENTS	
PAVEMENT ROAD/PARKING	0.446Ha
BUILDINGS	0.126Ha
SOFT LANDSCAPED	0.128Ha
TOTAL SITE AREA #502	0.700Ha

CONTROLLED DRAINAGE CATCHMENTS	
PAVEMENT ROAD/PARKING	0.052Ha
BUILDINGS	0.115Ha
SOFT LANDSCAPED	0.189Ha
PATIOS/WALKWAYS	0.016Ha
SIDEWALKS	0.009Ha
DRIVEWAYS	0.032Ha
TOTAL SITE AREA #505	0.413Ha

HATCH LEGEND

- BUILDING
- PORCH
- LANDSCAPE
- DRIVEWAYS
- SIDEWALK
- ASPHALT/PARKING





PLAN OF SURVEY AND TOPOGRAPHY OF TOWN OF STOUFFVILLE REGIONAL MUNICIPALITY OF YORK

LEGEND

- TRIBUTARY AREA BOUNDARY
- STORM TRIBUTARY AREA (HA) — 1.050HA / 501 / 0.55
- RUNOFF COEFFICIENT
- AREA NUMBER
- EXTERNAL TRIBUTARY AREA BOUNDARY
- EXTERNAL STORM TRIBUTARY AREA (HA) — 1.050HA / 501 / 0.55
- EXTERNAL RUNOFF COEFFICIENT
- EXTERNAL AREA NUMBER
- OVERLAND FLOW ARROW
- EXISTING OVERLAND FLOW ARROW
- 100m-600mm CONC STM @ 1.00% — PROPOSED STORM SEWER DIRECTION OF FLOW
- HW HW — PROPOSED HEADWALLS
- EX. 50m-200mm PVC STM — EXISTING STORM DIRECTION OF FLOW
- PROPOSED STORM SERVICE
- MH20 — PROPOSED STORM MANHOLE & NUMBER
- CB — PROPOSED CATCHBASIN
- DCB — PROPOSED DOUBLE CATCHBASIN
- DICB — PROPOSED DITCH INLET CATCHBASIN
- MH 1B — PROPOSED BYPASS STORM MANHOLE & NUMBER
- CBMH — PROPOSED CATCHBASIN MANHOLE & NUMBER
- RLCB — PROPOSED REAR LOT CATCHBASIN
- EX. D.I. — EXISTING DITCH INLET
- EX. DCB — EXISTING DOUBLE CATCHBASIN
- EX. CB — EXISTING CATCHBASIN
- EX.DCBMH — EXISTING CATCHBASIN MANHOLE
- EX.MH — EXISTING STORM MANHOLE

BEARINGS
XXX
INTEGRATION NOTE
XXX
DISTANCES AND/OR COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

1	1st SUBMISSION FOR DRAFT PLAN APPROVAL	AUG/26/2026	R.P.D.
REVISION BLOCK		DATE	APPR. BY

CITY PARK HOMES INC.

12371 HIGHWAY 48 AND 5262-5318 MAIN ST, STOUFFVILLE, ON

MUNICIPAL
DESIGN APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO TOWN OF WHITCHURCH–STOUFFVILLE STANDARDS AND SPECIFICATIONS.

SIGNED____________________
ENGINEERING & PUBLIC WORKS

DATE____________

REGIONAL MUNICIPALITY OF YORK
DESIGN OF WASTEWATER AND WATER SERVICES APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO YORK STANDARDS AND SPECIFICATIONS AND LOCATION APPROVAL FROM AREA MUNICIPALITY.

SIGNED____________________
PLANNING & PUBLIC WORKS DEPARTMENT

DATE____________

APPROVED:

REGISTERED PROFESSIONAL ENGINEER
R.P. DE ANGELIS
AUG/26/2026
PROVINCE OF ONTARIO

NOT FOR CONSTRUCTION

PRELIMINARY

York Region

Town of Whitchurch-Stouffville

POST DEVELOPMENT STORM TRIBUTARY PLAN

DESIGNED BY: R.P.D.	DATE: AUGUST 2026	CHECKED BY: R.P.D.
DRAWN BY: G.M.	DRAWING NO.	CITY FILE:
SCALE 1:750	FIGURE#4 Sheet: 06 OF 08	REGION FILE:

Z:\JOB DIRECTORY\26-011\DRAWINGS\CADD\TRIBUTARY PLANS\STORM TRIBUTARY PLANS\POST DEVELOPMENT STORM TRIBUTARY PLAN.dwg 2026-08-26

APPENDIX 'C'

ESTABLISHED PARAMETERS- VISUALOTTHYMO MODEL

OUTPUT FILES FORM THE VO MODEL

MODEL UNDER SEPARATE COVER

Pre-Development Parameters-NASH										
Catchment	Area	Flow Length	Slope	Runoff C	CN	IA	Tc	Tp	U/s	D/S
ID	Hectares	m	%			mm	min.	hr	m	m
300	2.750	391.53	1.34	0.27	78.00	8.00	49.8	0.56	259.25	254.00
301	3.899	300.36	1.17	0.27	78.00	8.00	45.7	0.51	257.75	254.25

1.3.3 Airport Method

For catchments where the runoff coefficient, C, is less than 0.40, the Airport formula may provide a better estimate of the time of concentration. This method was developed for airfields and calculates time of concentration as a function of runoff coefficient, length, and slope as follows:

$$t_c = \frac{3.26 * (1.1 - C) * L^{0.5}}{S_w^{0.33}} \quad (2)$$

where:
t_c = time of concentration (min)
C= runoff coefficient
L = catchment length, (m)
S_w = catchment slope (%)

Determining XIMP and TIMP

			Catchment Labels
Areas			**302**
Gross Area (measured)		Ha	0.339
Pavement	**(measured)**	Ha	0.000
Sidewalks	**(measured)**	Ha	0.013
Driveways	**(measured)**	Ha	0.008
Patios&Walkways	**(2.7% Res & Measured)**	Ha	0.000
Roofs	**(measured)**	Ha	0.035
Hardscaped		Ha	0.056
XIMP	**(Pavement,Sidewalks&Driveways)**		0.062
TIMP	**(All Hardsurfaces)**		0.164
Hardscaped	**(All Hardsurfaces)**		0.056
Softscaped			0.283
coefficients			0.315

Post-Development Parameters-NASH										
Catchment	Area	Flow Length	Slope	Runoff C	CN	IA	Tc	Tp	U/s	D/S
ID	Hectares	m	%			mm	min.	hr	m	m
500	0.900	85.66	0.89	0.27	78.00	8.00	26.7	0.30	258.26	257.50
503	1.497	293.69	0.60	0.27	78.00	8.00	56.3	0.63	257	255.25
504	0.480	391.53	0.77	0.27	78.00	8.00	59.9	0.67	258.25	255.25

1.3.3 Airport Method

For catchments where the runoff coefficient, C, is less than 0.40, the Airport formula may provide a better estimate of the time of concentration. This method was developed for airfields and calculates time of concentration as a function of runoff coefficient, length, and slope as follows:

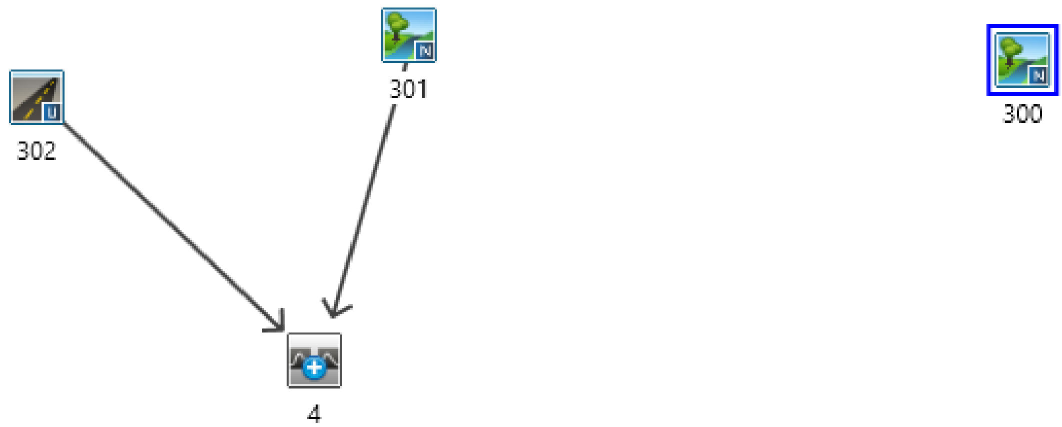
$$t_c = \frac{3.26 * (1.1 - C) * L^{0.5}}{S_w^{0.33}} \quad (2)$$

where:
t_c = time of concentration (min)
C= runoff coefficient
L = catchment length, (m)
S_w = catchment slope (%)

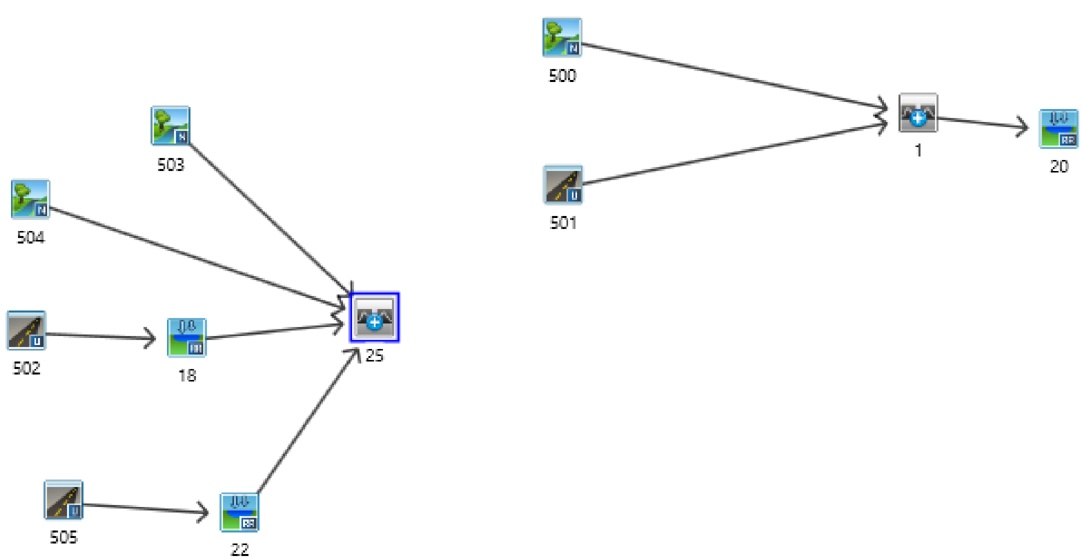
Determining XIMP and TIMP

			Catchment Lab	Catchment Labels	
Areas			**501**	**502**	**505**
Gross Area (measured)		Ha	3.111	0.700	0.413
Pavement	**(measured)**	Ha	0.712	0.446	0.052
Sidewalks	**(measured)**	Ha	0.122	0.000	0.009
Driveways	**(measured)**	Ha	0.296	0.000	0.032
Patios&Walkways (2.7% Res & Measured)		Ha	0.042	0.000	0.016
Roofs	**(measured)**	Ha	1.134	0.126	0.115
Hardscaped		Ha	2.306	0.572	0.224
XIMP	**(Pavement,Sidewalks&Driveways)**		0.363	0.637	0.225
TIMP	**(All Hardsurfaces)**		0.741	0.817	0.542
Hardscaped	**(All Hardsurfaces)**		2.306	0.572	0.224
Softscaped			0.805	0.128	0.189
coefficients			0.719	0.772	0.580

Pre-Development Schematic - VOH Model



Post-Development Schematic - VOH Model



Pre-Development VO Results- 24-hr SCS

```
*****************************************
** SIMULATION:Run 01: 2yr 24hr SCS II **
*****************************************

--------------------
| ADD HYD  (  0004)|
|  1 +  2 =  3     |         AREA     QPEAK     TPEAK      R.V.
--------------------         (ha)     (cms)     (hrs)      (mm)
        ID1= 1 (  0301):     3.90     0.064     12.70     13.04
      + ID2= 2 (  0302):     0.34     0.010     12.27     15.55
        ====================================================
        ID = 3 (  0004):     4.24     0.070     12.67     13.24

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
*****************************************
** SIMULATION:Run 02: 5yr 24hr SCS II **
*****************************************

--------------------
| ADD HYD  (  0004)|
|  1 +  2 =  3     |         AREA     QPEAK     TPEAK      R.V.
--------------------         (ha)     (cms)     (hrs)      (mm)
        ID1= 1 (  0301):     3.90     0.111     12.70     21.76
      + ID2= 2 (  0302):     0.34     0.018     12.30     24.31
        ====================================================
        ID = 3 (  0004):     4.24     0.119     12.67     21.97

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
******************************************
** SIMULATION:Run 03: 10yr 24hr SCS II **
******************************************

--------------------
| ADD HYD  (  0004)|
|  1 +  2 =  3     |         AREA     QPEAK     TPEAK      R.V.
--------------------         (ha)     (cms)     (hrs)      (mm)
        ID1= 1 (  0301):     3.90     0.139     12.70     27.04
      + ID2= 2 (  0302):     0.34     0.024     12.27     29.54
        ====================================================
        ID = 3 (  0004):     4.24     0.148     12.67     27.24

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
******************************************
** SIMULATION:Run 04: 25yr 24hr SCS II **
******************************************

--------------------
| ADD HYD  (  0004)|
|  1 +  2 =  3     |         AREA     QPEAK     TPEAK      R.V.
--------------------         (ha)     (cms)     (hrs)      (mm)
        ID1= 1 (  0301):     3.90     0.185     12.67     35.58
      + ID2= 2 (  0302):     0.34     0.033     12.30     37.99
        ====================================================
        ID = 3 (  0004):     4.24     0.197     12.63     35.77

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
*******************************************
** SIMULATION:Run 05: 50yr 24hr SCS II  **
*******************************************

--------------------
| ADD HYD  (  0004)|
|  1 +  2 =  3     |         AREA     QPEAK     TPEAK      R.V.
--------------------         (ha)     (cms)     (hrs)      (mm)
        ID1= 1 (  0301):     3.90     0.218     12.67     41.58
      + ID2= 2 (  0302):     0.34     0.041     12.27     43.90
        ====================================================
        ID = 3 (  0004):     4.24     0.230     12.63     41.76

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
--------------------------------------------------------------------------------
********************************************
** SIMULATION:Run 06: 100yr 24hr SCS II **
********************************************

--------------------
| ADD HYD  (  0004)|
|   1 +  2 =  3    |           AREA    QPEAK    TPEAK     R.V.
--------------------           (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0301):       3.90    0.248    12.67    47.15
```

```
      + ID2= 2 (  0302):       0.34    0.047    12.27    49.39
        ==================================================
        ID = 3 (  0004):       4.24    0.262    12.63    47.33

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
```

```
********************************************
** SIMULATION:Run 01: 2yr 24hr SCS II **
********************************************
    READ STORM                  15.0
    [ Ptot= 45.77 mm ]
    fname : C:\Users\muwaffaq\AppData\Local\Temp\9d9f2d73-0376-4606-8a57-845ffb249d61\b11fa408-7e34-41e6-b83a-8a
    remark: 2yr 24hr 15min SCS Type II (MTO)
*
 *  CALIB NASHYD          0300  1  5.0    2.75    0.04 12.75  13.04 0.28   0.000
    [CN=78.0          ]
    [ N = 3.0:Tp 0.56]
*
********************************************
** SIMULATION:Run 02: 5yr 24hr SCS II **
********************************************
    READ STORM                  15.0
    [ Ptot= 59.84 mm ]
    fname : C:\Users\muwaffaq\AppData\Local\Temp\9d9f2d73-0376-4606-8a57-845ffb249d61\ded43c2f-bacd-45d1-b177-ec
    remark: 5yr 24hr 15min SCS Type II (MTO)
*
 *  CALIB NASHYD          0300  1  5.0    2.75    0.07 12.75  21.76 0.36   0.000
    [CN=78.0          ]
    [ N = 3.0:Tp 0.56]
*
*********************************************
** SIMULATION:Run 03: 10yr 24hr SCS II **
*********************************************
    READ STORM                  15.0
    [ Ptot= 67.56 mm ]
    fname : C:\Users\muwaffaq\AppData\Local\Temp\9d9f2d73-0376-4606-8a57-845ffb249d61\8a4b6969-cbc3-440b-9e5f-f5
    remark: 10yr 24hr 15min SCS Type II (MTO)
*
 *  CALIB NASHYD          0300  1  5.0    2.75    0.09 12.75  27.04 0.40   0.000
    [CN=78.0          ]
    [ N = 3.0:Tp 0.56]
*
*********************************************
** SIMULATION:Run 04: 25yr 24hr SCS II **
*********************************************
    READ STORM                  15.0
    [ Ptot= 79.32 mm ]
    fname : C:\Users\muwaffaq\AppData\Local\Temp\9d9f2d73-0376-4606-8a57-845ffb249d61\1e0383f5-9693-4e13-bfbf-97
    remark: 25yr 24hr 15min SCS Type II (MTO)
*
 *  CALIB NASHYD          0300  1  5.0    2.75    0.12 12.75  35.58 0.45   0.000
    [CN=78.0          ]
    [ N = 3.0:Tp 0.56]
*
```

```
*********************************************
** SIMULATION:Run 05: 50yr 24hr SCS II  **
*********************************************
    READ STORM                    15.0
    [ Ptot= 87.19 mm ]
    fname : C:\Users\muwaffaq\AppData\Local\Temp\9d9f2d73-0376-4606-8a57-845ffb249d61\026a11be-175d-4f5d-9b08-e0
    remark: 50yr 24hr 15min SCS Type II (MTO)
*
 *  CALIB NASHYD         0300  1  5.0    2.75    0.14 12.75  41.58 0.48   0.000
    [CN=78.0          ]
    [ N = 3.0:Tp 0.56]
*
*********************************************
** SIMULATION:Run 06: 100yr 24hr SCS II **
*********************************************
    READ STORM                    15.0
    [ Ptot= 94.30 mm ]
    fname : C:\Users\muwaffaq\AppData\Local\Temp\9d9f2d73-0376-4606-8a57-845ffb249d61\f1088957-4539-4a0c-a9cf-b2
    remark: 100yr 24hr 15min SCS Type II (MTO)
*
 *  CALIB NASHYD         0300  1  5.0    2.75    0.16 12.75  47.15 0.50   0.000
    [CN=78.0          ]
    [ N = 3.0:Tp 0.56]
*
```

Pre-Development VO Results- 6-hr AES

```
 ********************************
 ** SIMULATION:Run 01          **
 ********************************

 --------------------
 | ADD HYD  (  0004)|
 |   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
 --------------------          (ha)     (cms)     (hrs)      (mm)
         ID1= 1 (  0301):      3.90     0.048     3.33       7.87
       + ID2= 2 (  0302):      0.34     0.006     2.77      10.23
         ==================================================
         ID = 3 (  0004):      4.24     0.052     3.30       8.06

      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 --------------------------------------------------------------------------------
 ********************************
 ** SIMULATION:Run 02          **
 ********************************

 --------------------
 | ADD HYD  (  0004)|
 |   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
 --------------------          (ha)     (cms)     (hrs)      (mm)
         ID1= 1 (  0301):      3.90     0.089     3.27      14.22
       + ID2= 2 (  0302):      0.34     0.012     2.77      16.75
         ==================================================
         ID = 3 (  0004):      4.24     0.096     3.23      14.42

      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 --------------------------------------------------------------------------------
 ********************************
 ** SIMULATION:Run 03          **
 ********************************

 --------------------
 | ADD HYD  (  0004)|
 |   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
 --------------------          (ha)     (cms)     (hrs)      (mm)
         ID1= 1 (  0301):      3.90     0.120     3.23      19.06
       + ID2= 2 (  0302):      0.34     0.016     2.77      21.61
         ==================================================
         ID = 3 (  0004):      4.24     0.130     3.20      19.26

      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 --------------------------------------------------------------------------------
 ********************************
 ** SIMULATION:Run 04          **
 ********************************

 --------------------
 | ADD HYD  (  0004)|
 |   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
 --------------------          (ha)     (cms)     (hrs)      (mm)
         ID1= 1 (  0301):      3.90     0.164     3.23      25.66
       + ID2= 2 (  0302):      0.34     0.023     2.77      28.18
         ==================================================
         ID = 3 (  0004):      4.24     0.177     3.20      25.87

      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 --------------------------------------------------------------------------------
```

```
*********************************
** SIMULATION:Run 01           **
*********************************
    READ STORM                 15.0
    [ Ptot= 36.00 mm ]
    fname : C:\Users\muwaffaq\AppData\Local\Temp\fa2d8884-76bd-4f5d-9342-0dea6f1b49ed\88b42751-9bb0-464f-b7b1-d6
    remark: AES 6hr - 2 yr
*
 *  CALIB NASHYD          0300  1  5.0    2.75    0.03  3.33   7.87 0.22   0.000
    [CN=78.0         ]
    [ N = 3.0:Tp 0.56]
*
*********************************
** SIMULATION:Run 02           **
*********************************
    READ STORM                 15.0
    [ Ptot= 47.81 mm ]
    fname : C:\Users\muwaffaq\AppData\Local\Temp\fa2d8884-76bd-4f5d-9342-0dea6f1b49ed\cc9edc74-615c-4977-a3a7-3c
    remark: AES 6hr - 5 yr
*
 *  CALIB NASHYD          0300  1  5.0    2.75    0.06  3.33  14.22 0.30   0.000
    [CN=78.0         ]
    [ N = 3.0:Tp 0.56]
*
*********************************
** SIMULATION:Run 03           **
*********************************
    READ STORM                 15.0
    [ Ptot= 55.69 mm ]
    fname : C:\Users\muwaffaq\AppData\Local\Temp\fa2d8884-76bd-4f5d-9342-0dea6f1b49ed\d393c1ec-675b-4de0-a785-48
    remark: AES 6hr - 10 yr
*
 *  CALIB NASHYD          0300  1  5.0    2.75    0.08  3.33  19.06 0.34   0.000
    [CN=78.0         ]
    [ N = 3.0:Tp 0.56]
*

*********************************
** SIMULATION:Run 04           **
*********************************
    READ STORM                 15.0
    [ Ptot= 65.59 mm ]
    fname : C:\Users\muwaffaq\AppData\Local\Temp\fa2d8884-76bd-4f5d-9342-0dea6f1b49ed\854b18f9-246a-48bc-ab3a-c6
    remark: AES 6hr - 25 yr
*
 *  CALIB NASHYD          0300  1  5.0    2.75    0.11  3.25  25.66 0.39   0.000
    [CN=78.0         ]
    [ N = 3.0:Tp 0.56]
*
*********************************
** SIMULATION:Run 05           **
*********************************
    READ STORM                 15.0
    [ Ptot= 73.00 mm ]
    fname : C:\Users\muwaffaq\AppData\Local\Temp\fa2d8884-76bd-4f5d-9342-0dea6f1b49ed\5921f0c2-a44d-4abe-bda4-bf
    remark: AES 6hr - 50 yr
*
 *  CALIB NASHYD          0300  1  5.0    2.75    0.13  3.25  30.92 0.42   0.000
    [CN=78.0         ]
    [ N = 3.0:Tp 0.56]
*
*********************************
** SIMULATION:Run 06           **
*********************************
    READ STORM                 15.0
    [ Ptot= 80.31 mm ]
    fname : C:\Users\muwaffaq\AppData\Local\Temp\fa2d8884-76bd-4f5d-9342-0dea6f1b49ed\a4d066f9-7b60-4277-8f5f-8b
    remark: AES 6hr - 100 yr
*
 *  CALIB NASHYD          0300  1  5.0    2.75    0.16  3.25  36.32 0.45   0.000
    [CN=78.0         ]
    [ N = 3.0:Tp 0.56]
*
```

Pre-Development VO Results- Chicago 4-hr

```
*****************************************
** SIMULATION:100yr 4hr 10min Chicago **
*****************************************

--------------------
| ADD HYD  (  0004)|
|   1 +  2 =  3    |          AREA    QPEAK     TPEAK     R.V.
--------------------          (ha)    (cms)     (hrs)     (mm)
        ID1= 1 (  0301):      3.90   0.225     1.93     30.22
      + ID2= 2 (  0302):      0.34   0.045     1.43     32.70
        ===================================================
        ID = 3 (  0004):      4.24   0.239     1.90     30.42

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
****************************************
** SIMULATION:10yr 4hr 10min Chicago **
****************************************

--------------------
| ADD HYD  (  0004)|
|   1 +  2 =  3    |          AREA    QPEAK     TPEAK     R.V.
--------------------          (ha)    (cms)     (hrs)     (mm)
        ID1= 1 (  0301):      3.90   0.108     1.97     15.50
      + ID2= 2 (  0302):      0.34   0.019     1.50     18.05
        ===================================================
        ID = 3 (  0004):      4.24   0.116     1.93     15.71

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
****************************************
** SIMULATION:25yr 4hr 10min Chicago **
****************************************

--------------------
| ADD HYD  (  0004)|
|   1 +  2 =  3    |          AREA    QPEAK     TPEAK     R.V.
--------------------          (ha)    (cms)     (hrs)     (mm)
        ID1= 1 (  0301):      3.90   0.152     1.93     21.26
      + ID2= 2 (  0302):      0.34   0.029     1.50     23.81
        ===================================================
        ID = 3 (  0004):      4.24   0.163     1.90     21.46

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
***************************************
** SIMULATION:2yr 4hr 10min Chicago **
***************************************

--------------------
| ADD HYD  (  0004)|
|   1 +  2 =  3    |          AREA    QPEAK     TPEAK     R.V.
--------------------          (ha)    (cms)     (hrs)     (mm)
        ID1= 1 (  0301):      3.90   0.038     2.03      6.10
      + ID2= 2 (  0302):      0.34   0.006     1.63      8.36
        ===================================================
        ID = 3 (  0004):      4.24   0.041     2.00      6.28

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
```

```
******************************************
** SIMULATION:50yr 4hr 10min Chicago **
******************************************

 --------------------
| ADD HYD  (  0004)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
 --------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0301):      3.90   0.189     1.93    25.82
      + ID2= 2 (  0302):      0.34   0.037     1.47    28.34
        ===================================================
        ID = 3 (  0004):      4.24   0.201     1.90    26.02

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-------------------------------------------------------------------------------
*****************************************
** SIMULATION:5yr 4hr 10min Chicago **
*****************************************

 --------------------
| ADD HYD  (  0004)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
 --------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0301):      3.90   0.077     2.00    11.57
```

```
      + ID2= 2 (  0302):      0.34   0.013     1.53    14.06
        ===================================================
        ID = 3 (  0004):      4.24   0.084     1.93    11.77

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-------------------------------------------------------------------------------
```

```
*******************************************
** SIMULATION:100yr 4hr 10min Chicago **
*******************************************
    CHIC STORM                10.0
    [ Ptot= 72.03 mm ]
*
 *  CALIB NASHYD          0300  1   5.0    2.75    0.15  2.00  30.22 0.42   0.000
    [CN=78.0          ]
    [ N = 3.0:Tp 0.56]
*
******************************************
** SIMULATION:10yr 4hr 10min Chicago **
******************************************
    CHIC STORM                10.0
    [ Ptot= 49.97 mm ]
*
 *  CALIB NASHYD          0300  1   5.0    2.75    0.07  2.00  15.50 0.31   0.000
    [CN=78.0          ]
    [ N = 3.0:Tp 0.56]
*
******************************************
** SIMULATION:25yr 4hr 10min Chicago **
******************************************
    CHIC STORM                10.0
    [ Ptot= 59.08 mm ]
*
 *  CALIB NASHYD          0300  1   5.0    2.75    0.10  2.00  21.26 0.36   0.000
    [CN=78.0          ]
    [ N = 3.0:Tp 0.56]
*
*****************************************
** SIMULATION:2yr 4hr 10min Chicago **
*****************************************
    CHIC STORM                10.0
    [ Ptot= 32.17 mm ]
*
 *  CALIB NASHYD          0300  1   5.0    2.75    0.02  2.08   6.10 0.19   0.000
    [CN=78.0          ]
    [ N = 3.0:Tp 0.56]
*
```

```
*****************************************
** SIMULATION:50yr 4hr 10min Chicago **
*****************************************
    CHIC STORM                  10.0
    [ Ptot= 65.82 mm ]
*
 *  CALIB NASHYD          0300  1   5.0    2.75    0.12   2.00   25.82 0.39    0.000
    [CN=78.0         ]
    [ N = 3.0:Tp 0.56]
*
****************************************
** SIMULATION:5yr 4hr 10min Chicago **
****************************************
    CHIC STORM                  10.0
    [ Ptot= 43.15 mm ]
*
 *  CALIB NASHYD          0300  1   5.0    2.75    0.05   2.00   11.57 0.27    0.000
    [CN=78.0         ]
    [ N = 3.0:Tp 0.56]
*
```

Post-Development VO Results- Little Rouge Creek- 24-hr SCS

```
*****************************************
** SIMULATION:Run 01: 2yr 24hr SCS II **
*****************************************
--------------------
| RESERVOIR(  0020)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |    0.1520     0.1077
                          0.0400     0.0577   |    0.1890     0.1186
                          0.0800     0.0790   |    0.2230     0.1283
                          0.1000     0.0900   |    0.0000     0.0000

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0001)     4.011     0.287     12.27      27.06
   OUTFLOW: ID= 1 (  0020)     4.011     0.037     13.13      26.75

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 12.78
                   TIME SHIFT OF PEAK FLOW        (min)= 52.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0528

     **** WARNING : SELECTED ROUTING TIME STEP DENIED.
------------------------------------------------------------------------------
*****************************************
** SIMULATION:Run 02: 5yr 24hr SCS II **
*****************************************
--------------------
| RESERVOIR(  0020)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |    0.1520     0.1077
                          0.0400     0.0577   |    0.1890     0.1186
                          0.0800     0.0790   |    0.2230     0.1283
                          0.1000     0.0900   |    0.0000     0.0000

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0001)     4.011     0.420     12.27      38.65
   OUTFLOW: ID= 1 (  0020)     4.011     0.069     12.93      38.21

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 16.51
                   TIME SHIFT OF PEAK FLOW        (min)= 40.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0733

     **** WARNING : SELECTED ROUTING TIME STEP DENIED.
------------------------------------------------------------------------------
*****************************************
```

```
*******************************************
** SIMULATION:Run 03: 10yr 24hr SCS II **
*******************************************
--------------------
| RESERVOIR(  0020)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000    |    0.1520     0.1077
                           0.0400     0.0577    |    0.1890     0.1186
                           0.0800     0.0790    |    0.2230     0.1283
                           0.1000     0.0900    |    0.0000     0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0001)      4.011      0.494     12.27       45.26
   OUTFLOW: ID= 1 (  0020)      4.011      0.089     12.90       44.77

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 18.11
                   TIME SHIFT OF PEAK FLOW         (min)= 38.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0842

     **** WARNING : SELECTED ROUTING TIME STEP DENIED.
-------------------------------------------------------------------------------
*******************************************
** SIMULATION:Run 04: 25yr 24hr SCS II  **
*******************************************
--------------------
| RESERVOIR(  0020)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000    |    0.1520     0.1077
                           0.0400     0.0577    |    0.1890     0.1186
                           0.0800     0.0790    |    0.2230     0.1283
                           0.1000     0.0900    |    0.0000     0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0001)      4.011      0.620     12.27       55.59
   OUTFLOW: ID= 1 (  0020)      4.011      0.130     12.82       55.02

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 21.01
                   TIME SHIFT OF PEAK FLOW         (min)= 33.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.1003

     **** WARNING : SELECTED ROUTING TIME STEP DENIED.
-------------------------------------------------------------------------------
*******************************************
```

```
*****************************************
** SIMULATION:Run 05: 50yr 24hr SCS II **
*****************************************
--------------------
| RESERVOIR(  0020)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000      0.0000   |     0.1520      0.1077
                          0.0400      0.0577   |     0.1890      0.1186
                          0.0800      0.0790   |     0.2230      0.1283
                          0.1000      0.0900   |     0.0000      0.0000

                                 AREA     QPEAK     TPEAK       R.V.
                                 (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0001)      4.011      0.701     12.27       62.64
   OUTFLOW: ID= 1 (  0020)      4.011      0.161     12.78       62.02

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 22.99
                   TIME SHIFT OF PEAK FLOW         (min)= 31.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.1104

     **** WARNING : SELECTED ROUTING TIME STEP DENIED.
-------------------------------------------------------------------------------
******************************************
** SIMULATION:Run 06: 100yr 24hr SCS II **
******************************************
--------------------
| RESERVOIR(  0020)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000      0.0000   |     0.1520      0.1077
                          0.0400      0.0577   |     0.1890      0.1186
                          0.0800      0.0790   |     0.2230      0.1283
                          0.1000      0.0900   |     0.0000      0.0000

                                 AREA     QPEAK     TPEAK       R.V.
                                 (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0001)      4.011      0.786     12.27       69.09
   OUTFLOW: ID= 1 (  0020)      4.011      0.191     12.73       68.43

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 24.36
                   TIME SHIFT OF PEAK FLOW         (min)= 28.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.1193

     **** WARNING : SELECTED ROUTING TIME STEP DENIED.
-------------------------------------------------------------------------------
```

Post-Development VO Results- HY 48- 24-hr SCS

```
******************************************
** SIMULATION:Run 01: 2yr 24hr SCS II **
******************************************
    ADD [  0018+  0022]  0025  3  1.0    1.11    0.01 12.88  29.45  n/a   0.000
*
    ADD [  0025+  0503]  0025  1  1.0    2.61    0.03 12.83  20.04  n/a   0.000
*
    ADD [  0025+  0504]  0025  3  1.0    3.09    0.04 12.83  18.95  n/a   0.000
*
******************************************
** SIMULATION:Run 02: 5yr 24hr SCS II **
******************************************
    ADD [  0018+  0022]  0025  3  1.0    1.11    0.02 12.63  41.01  n/a   0.000
*
    ADD [  0025+  0503]  0025  1  1.0    2.61    0.06 12.75  29.97  n/a   0.000
*
    ADD [  0025+  0504]  0025  3  1.0    3.09    0.07 12.80  28.70  n/a   0.000
*
*******************************************
** SIMULATION:Run 03: 10yr 24hr SCS II **
*******************************************
    ADD [  0018+  0022]  0025  3  1.0    1.11    0.03 12.57  47.59  n/a   0.000
*
    ADD [  0025+  0503]  0025  1  1.0    2.61    0.07 12.75  35.80  n/a   0.000
*
    ADD [  0025+  0504]  0025  3  1.0    3.09    0.08 12.75  34.44  n/a   0.000
*
********************************************
** SIMULATION:Run 04: 25yr 24hr SCS II  **
********************************************
    ADD [  0018+  0022]  0025  3  1.0    1.11    0.04 12.50  57.84  n/a   0.000
*
    ADD [  0025+  0503]  0025  1  1.0    2.61    0.09 12.75  45.07  n/a   0.000
*
    ADD [  0025+  0504]  0025  3  1.0    3.09    0.11 12.75  43.60  n/a   0.000
*
*******************************************
** SIMULATION:Run 05: 50yr 24hr SCS II **
*******************************************
    ADD [  0018+  0022]  0025  3  1.0    1.11    0.04 12.47  64.83  n/a   0.000
*
    ADD [  0025+  0503]  0025  1  1.0    2.61    0.11 12.67  51.49  n/a   0.000
*
    ADD [  0025+  0504]  0025  3  1.0    3.09    0.13 12.75  49.95  n/a   0.000
*
********************************************
** SIMULATION:Run 06: 100yr 24hr SCS II **
********************************************
    ADD [  0018+  0022]  0025  3  1.0    1.11    0.05 12.50  71.19  n/a   0.000
*
    ADD [  0025+  0503]  0025  1  1.0    2.61    0.12 12.67  57.41  n/a   0.000
*
    ADD [  0025+  0504]  0025  3  1.0    3.09    0.15 12.75  55.81  n/a   0.000
*
```

Post-Development VO Results- Little Rouge Creek- 6-hr AES

```
**********************************
** SIMULATION:Run 01            **
**********************************
---------------------
| RESERVOIR(  0020)|      OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |      OUTFLOW     STORAGE    |  OUTFLOW     STORAGE
---------------------       (cms)      (ha.m.)    |   (cms)      (ha.m.)
                            0.0000      0.0000     |   0.1520      0.1077
                            0.0400      0.0576     |   0.1890      0.1185
                            0.0800      0.0790     |   0.2230      0.1283
                            0.1030      0.0910     |   0.0000      0.0000

                                 AREA      QPEAK      TPEAK       R.V.
                                 (ha)      (cms)      (hrs)       (mm)
   INFLOW : ID= 2 (  0001)       4.011      0.184       2.77       19.52
   OUTFLOW: ID= 1 (  0020)       4.011      0.035       3.95       19.43

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)= 19.29
                    TIME SHIFT OF PEAK FLOW        (min)= 71.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=  0.0510

     **** WARNING : SELECTED ROUTING TIME STEP DENIED.
--------------------------------------------------------------------------------
**********************************
** SIMULATION:Run 02            **
**********************************
---------------------
| RESERVOIR(  0020)|      OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |      OUTFLOW     STORAGE    |  OUTFLOW     STORAGE
---------------------       (cms)      (ha.m.)    |   (cms)      (ha.m.)
                            0.0000      0.0000     |   0.1520      0.1077
                            0.0400      0.0576     |   0.1890      0.1185
                            0.0800      0.0790     |   0.2230      0.1283
                            0.1030      0.0910     |   0.0000      0.0000

                                 AREA      QPEAK      TPEAK       R.V.
                                 (ha)      (cms)      (hrs)       (mm)
   INFLOW : ID= 2 (  0001)       4.011      0.278       2.77       28.70
   OUTFLOW: ID= 1 (  0020)       4.011      0.067       3.75       28.61

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)= 23.92
                    TIME SHIFT OF PEAK FLOW        (min)= 59.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=  0.0718

     **** WARNING : SELECTED ROUTING TIME STEP DENIED.
--------------------------------------------------------------------------------
```

```
*********************************
** SIMULATION:Run 03           **
*********************************
--------------------
| RESERVOIR(  0020)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000    |   0.1520      0.1077
                           0.0400     0.0576    |   0.1890      0.1185
                           0.0800     0.0790    |   0.2230      0.1283
                           0.1030     0.0910    |   0.0000      0.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0001)       4.011      0.344      2.77      35.16
   OUTFLOW: ID= 1 (  0020)       4.011      0.091      3.58      35.07

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 26.50
                   TIME SHIFT OF PEAK FLOW        (min)= 49.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0849

     **** WARNING : SELECTED ROUTING TIME STEP DENIED.
-------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 04           **
*********************************
--------------------
| RESERVOIR(  0020)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000    |   0.1520      0.1077
                           0.0400     0.0576    |   0.1890      0.1185
                           0.0800     0.0790    |   0.2230      0.1283
                           0.1030     0.0910    |   0.0000      0.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0001)       4.011      0.433      2.77      43.56
   OUTFLOW: ID= 1 (  0020)       4.011      0.132      3.45      43.46

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 30.45
                   TIME SHIFT OF PEAK FLOW        (min)= 41.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.1008

     **** WARNING : SELECTED ROUTING TIME STEP DENIED.
-------------------------------------------------------------------------------
*********************************
```

```
*********************************
** SIMULATION:Run 05          **
*********************************
--------------------
| RESERVOIR(  0020)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000      0.0000   |    0.1520      0.1077
                          0.0400      0.0576   |    0.1890      0.1185
                          0.0800      0.0790   |    0.2230      0.1283
                          0.1030      0.0910   |    0.0000      0.0000

                               AREA      QPEAK      TPEAK        R.V.
                               (ha)      (cms)      (hrs)        (mm)
   INFLOW : ID= 2 (  0001)      4.011       0.502      2.77       50.00
   OUTFLOW: ID= 1 (  0020)      4.011       0.167      3.38       49.91

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 33.21
                  TIME SHIFT OF PEAK FLOW         (min)= 37.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.1120

     **** WARNING : SELECTED ROUTING TIME STEP DENIED.
-------------------------------------------------------------------------------
*********************************
** SIMULATION:Run 06          **
*********************************
--------------------
| RESERVOIR(  0020)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000      0.0000   |    0.1520      0.1077
                          0.0400      0.0576   |    0.1890      0.1185
                          0.0800      0.0790   |    0.2230      0.1283
                          0.1030      0.0910   |    0.0000      0.0000

                               AREA      QPEAK      TPEAK        R.V.
                               (ha)      (cms)      (hrs)        (mm)
   INFLOW : ID= 2 (  0001)      4.011       0.569      2.77       56.47
   OUTFLOW: ID= 1 (  0020)      4.011       0.203      3.35       56.38

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 35.69
                  TIME SHIFT OF PEAK FLOW         (min)= 35.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.1226

     **** WARNING : SELECTED ROUTING TIME STEP DENIED.
-------------------------------------------------------------------------------
```

Post-Development VO Results- HY 48- 6-hr AES

```
********************************
** SIMULATION:Run 01          **
********************************
    ADD [  0018+  0022]  0025  3  1.0     1.11     0.01  3.83  22.77  n/a    0.000
*
    ADD [  0025+  0503]  0025  1  1.0     2.61     0.03  3.50  14.22  n/a    0.000
*
    ADD [  0025+  0504]  0025  3  1.0     3.09     0.03  3.50  13.24  n/a    0.000
*
********************************
** SIMULATION:Run 02          **
********************************
    ADD [  0018+  0022]  0025  3  1.0     1.11     0.02  3.33  32.60  n/a    0.000
*
    ADD [  0025+  0503]  0025  1  1.0     2.61     0.05  3.40  22.06  n/a    0.000
*
    ADD [  0025+  0504]  0025  3  1.0     3.09     0.06  3.42  20.84  n/a    0.000
*
********************************
** SIMULATION:Run 03          **
********************************
    ADD [  0018+  0022]  0025  3  1.0     1.11     0.02  3.28  39.41  n/a    0.000
*
    ADD [  0025+  0503]  0025  1  1.0     2.61     0.07  3.33  27.74  n/a    0.000
*
    ADD [  0025+  0504]  0025  3  1.0     3.09     0.08  3.33  26.39  n/a    0.000
*
********************************
** SIMULATION:Run 04          **
********************************
    ADD [  0018+  0022]  0025  3  1.0     1.11     0.03  3.13  48.13  n/a    0.000
*
    ADD [  0025+  0503]  0025  1  1.0     2.61     0.09  3.33  35.24  n/a    0.000
*
    ADD [  0025+  0504]  0025  3  1.0     3.09     0.11  3.33  33.76  n/a    0.000
*
********************************
** SIMULATION:Run 05          **
********************************
    ADD [  0018+  0022]  0025  3  1.0     1.11     0.04  3.02  54.74  n/a    0.000
*
    ADD [  0025+  0503]  0025  1  1.0     2.61     0.10  3.25  41.08  n/a    0.000
*
    ADD [  0025+  0504]  0025  3  1.0     3.09     0.13  3.33  39.50  n/a    0.000
*
********************************
** SIMULATION:Run 06          **
********************************
    ADD [  0018+  0022]  0025  3  1.0     1.11     0.05  2.97  61.33  n/a    0.000
*
    ADD [  0025+  0503]  0025  1  1.0     2.61     0.12  3.25  46.99  n/a    0.000
*
    ADD [  0025+  0504]  0025  3  1.0     3.09     0.15  3.25  45.33  n/a    0.000
*
```

Post-Development VO Results- Little Rouge Creek- 4-hr Chicago

```
****************************************
** SIMULATION:100yr 4hr 10min Chicago **
****************************************
--------------------
| RESERVOIR(  0020)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000      0.0000  |     0.1520      0.1077
                           0.0400      0.0576  |     0.1890      0.1185
                           0.0800      0.0790  |     0.2230      0.1283
                           0.1030      0.0910  |     0.0000      0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0001)      4.011      0.978      1.37      49.15
   OUTFLOW: ID= 1 (  0020)      4.011      0.184      1.93      49.06

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 18.78
                  TIME SHIFT OF PEAK FLOW        (min)= 34.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.1170

     **** WARNING : SELECTED ROUTING TIME STEP DENIED.
-------------------------------------------------------------------------------
***************************************
** SIMULATION:10yr 4hr 10min Chicago **
***************************************
--------------------
| RESERVOIR(  0020)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000      0.0000  |     0.1520      0.1077
                           0.0400      0.0576  |     0.1890      0.1185
                           0.0800      0.0790  |     0.2230      0.1283
                           0.1030      0.0910  |     0.0000      0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0001)      4.011      0.565      1.37      30.44
   OUTFLOW: ID= 1 (  0020)      4.011      0.078      2.17      30.35

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 13.78
                  TIME SHIFT OF PEAK FLOW        (min)= 48.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0778

     **** WARNING : SELECTED ROUTING TIME STEP DENIED.
-------------------------------------------------------------------------------
```

```
****************************************
** SIMULATION:25yr 4hr 10min Chicago **
****************************************
--------------------
| RESERVOIR(  0020)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |    0.1520     0.1077
                          0.0400     0.0576   |    0.1890     0.1185
                          0.0800     0.0790   |    0.2230     0.1283
                          0.1030     0.0910   |    0.0000     0.0000

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0001)     4.011     0.734      1.37      38.00
   OUTFLOW: ID= 1 (  0020)     4.011     0.113      2.07      37.91

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 15.36
                   TIME SHIFT OF PEAK FLOW        (min)= 42.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0943

     **** WARNING : SELECTED ROUTING TIME STEP DENIED.
--------------------------------------------------------------------------------
***************************************
** SIMULATION:2yr 4hr 10min Chicago **
***************************************
--------------------
| RESERVOIR(  0020)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |    0.1520     0.1077
                          0.0400     0.0576   |    0.1890     0.1185
                          0.0800     0.0790   |    0.2230     0.1283
                          0.1030     0.0910   |    0.0000     0.0000

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0001)     4.011     0.283      1.37      16.71
   OUTFLOW: ID= 1 (  0020)     4.011     0.030      2.52      16.62

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 10.78
                   TIME SHIFT OF PEAK FLOW        (min)= 69.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0439

     **** WARNING : SELECTED ROUTING TIME STEP DENIED.
--------------------------------------------------------------------------------
```

```
*****************************************
** SIMULATION:50yr 4hr 10min Chicago **
*****************************************
--------------------
| RESERVOIR(  0020)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000      0.0000   |    0.1520      0.1077
                          0.0400      0.0576   |    0.1890      0.1185
                          0.0800      0.0790   |    0.2230      0.1283
                          0.1030      0.0910   |    0.0000      0.0000

                               AREA     QPEAK      TPEAK       R.V.
                               (ha)     (cms)      (hrs)       (mm)
   INFLOW : ID= 2 (  0001)     4.011      0.857       1.37       43.75
   OUTFLOW: ID= 1 (  0020)     4.011      0.147       2.00       43.66

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 17.19
                   TIME SHIFT OF PEAK FLOW         (min)= 38.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.1061

     **** WARNING : SELECTED ROUTING TIME STEP DENIED.
----------------------------------------------------------------------------
*****************************************
** SIMULATION:5yr 4hr 10min Chicago **
*****************************************
--------------------
| RESERVOIR(  0020)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000      0.0000   |    0.1520      0.1077
                          0.0400      0.0576   |    0.1890      0.1185
                          0.0800      0.0790   |    0.2230      0.1283
                          0.1030      0.0910   |    0.0000      0.0000

                               AREA     QPEAK      TPEAK       R.V.
                               (ha)     (cms)      (hrs)       (mm)
   INFLOW : ID= 2 (  0001)     4.011      0.442       1.37       24.99
   OUTFLOW: ID= 1 (  0020)     4.011      0.054       2.30       24.90

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 12.28
                   TIME SHIFT OF PEAK FLOW         (min)= 56.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0653

     **** WARNING : SELECTED ROUTING TIME STEP DENIED.
----------------------------------------------------------------------------
```

Post-Development VO Results- HY 48- 4-hr Chicago

```
****************************************
** SIMULATION:100yr 4hr 10min Chicago **
****************************************
    ADD [  0018+  0022]  0025  3  1.0    1.11    0.05  1.72  53.96  n/a    0.000
*
    ADD [  0025+  0503]  0025  1  1.0    2.61    0.11  1.92  40.34  n/a    0.000
*
    ADD [  0025+  0504]  0025  3  1.0    3.09    0.14  2.00  38.77  n/a    0.000
*
***************************************
** SIMULATION:10yr 4hr 10min Chicago **
***************************************
    ADD [  0018+  0022]  0025  3  1.0    1.11    0.02  1.88  34.45  n/a    0.000
*
    ADD [  0025+  0503]  0025  1  1.0    2.61    0.06  2.02  23.58  n/a    0.000
*
    ADD [  0025+  0504]  0025  3  1.0    3.09    0.07  2.08  22.33  n/a    0.000
*
********************************
** SIMULATION:25MM4HR        **
********************************
***************************************
** SIMULATION:25yr 4hr 10min Chicago **
***************************************
    ADD [  0018+  0022]  0025  3  1.0    1.11    0.03  1.82  42.38  n/a    0.000
*
    ADD [  0025+  0503]  0025  1  1.0    2.61    0.08  2.00  30.26  n/a    0.000
*
    ADD [  0025+  0504]  0025  3  1.0    3.09    0.09  2.00  28.87  n/a    0.000
*
**************************************
** SIMULATION:2yr 4hr 10min Chicago **
**************************************
    ADD [  0018+  0022]  0025  3  1.0    1.11    0.01  2.37  19.71  n/a    0.000
*
    ADD [  0025+  0503]  0025  1  1.0    2.61    0.02  2.17  11.90  n/a    0.000
*
    ADD [  0025+  0504]  0025  3  1.0    3.09    0.02  2.22  11.00  n/a    0.000
*
***************************************
** SIMULATION:50yr 4hr 10min Chicago **
***************************************
    ADD [  0018+  0022]  0025  3  1.0    1.11    0.04  1.77  48.37  n/a    0.000
*
    ADD [  0025+  0503]  0025  1  1.0    2.61    0.10  2.00  35.43  n/a    0.000
*
    ADD [  0025+  0504]  0025  3  1.0    3.09    0.12  2.00  33.94  n/a    0.000
*
**************************************
** SIMULATION:5yr 4hr 10min Chicago **
**************************************
    ADD [  0018+  0022]  0025  3  1.0    1.11    0.02  1.97  28.67  n/a    0.000
*
    ADD [  0025+  0503]  0025  1  1.0    2.61    0.04  2.08  18.86  n/a    0.000
*
    ADD [  0025+  0504]  0025  3  1.0    3.09    0.05  2.08  17.73  n/a    0.000
*
```

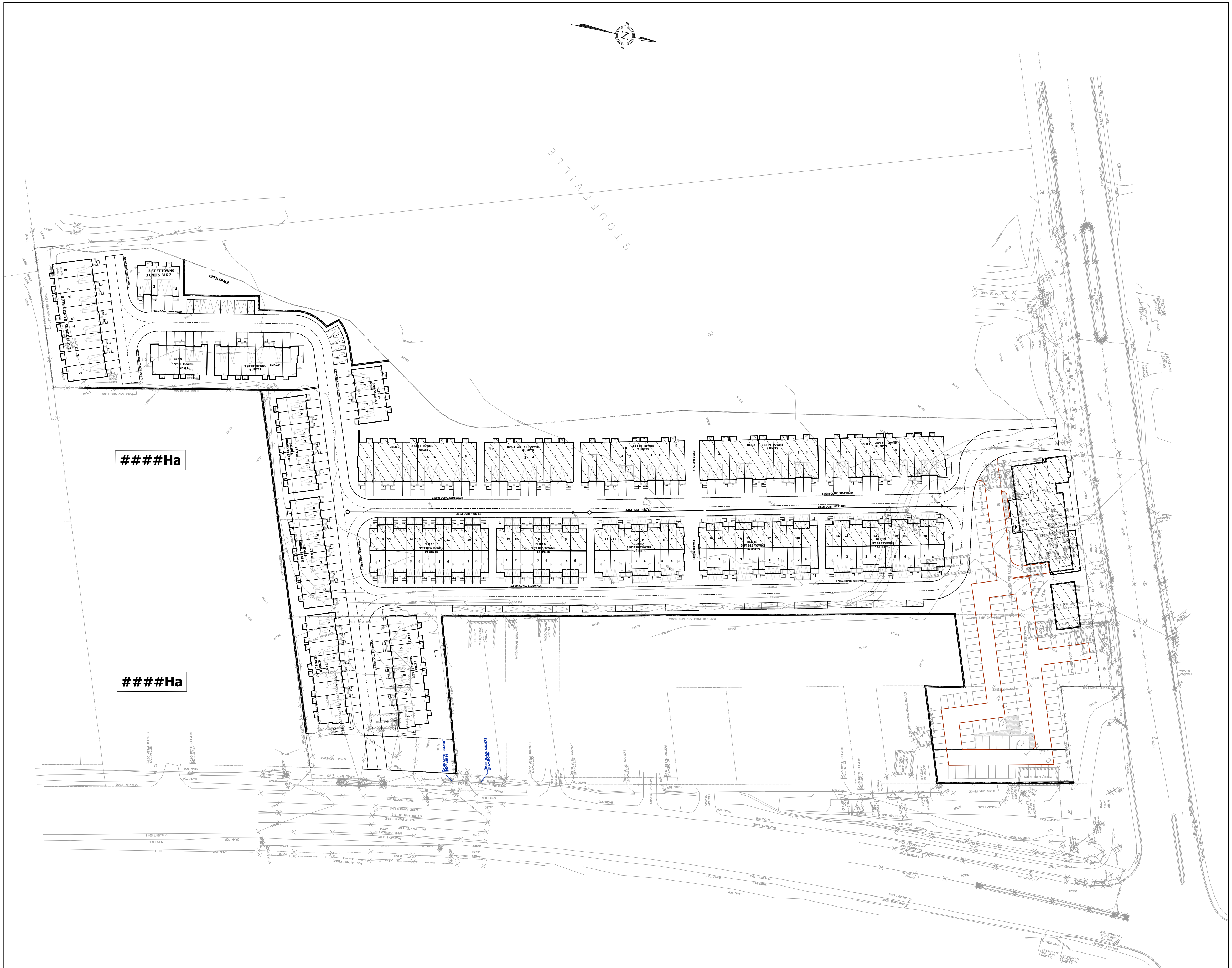
APPENDIX 'D'

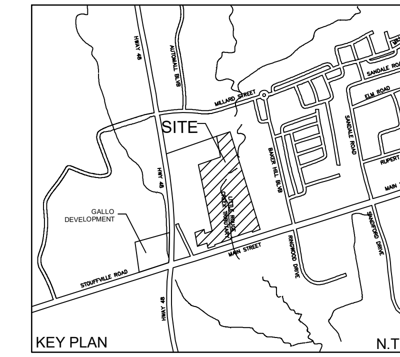
FIGURE 6 ROOF DRAINAGE PLAN

WATER BALANCE CALCULATIONS

FIGURE 1A OF THE CITY OF TORONTO WWFMP GUIDELINES, NOVEMBER 2006

WATER DEMAND CALCULATIONS





PLAN OF SURVEY AND TOPOGRAPHY OF TOWN OF STOUFFVILLE REGIONAL MUNICIPALITY OF YORK

LEGEND

TRIBUTARY AREA BOUNDARY	PROPOSED STORM SERVICE
STORM TRIBUTARY AREA (HA) (1.050HA)	MH20 — PROPOSED STORM MANHOLE & NUMBER
RUNOFF COEFFICIENT (0.55)	CB — PROPOSED CATCHBASIN
AREA NUMBER (501)	DCB — PROPOSED DOUBLE CATCHBASIN
EXTERNAL TRIBUTARY AREA BOUNDARY	DICB — PROPOSED DITCH INLET CATCHBASIN
EXTERNAL STORM TRIBUTARY AREA (HA) (1.050HA)	MH 1B — PROPOSED BYPASS STORM MANHOLE & NUMBER
EXTERNAL RUNOFF COEFFICIENT (0.55)	CBMH — PROPOSED CATCHBASIN MANHOLE & NUMBER
EXTERNAL AREA NUMBER (501)	RLCB — PROPOSED REAR LOT CATCHBASIN
OVERLAND FLOW ARROW	EX. D.I. — EXISTING DITCH INLET
EXISTING OVERLAND FLOW ARROW	EX. DCB — EXISTING DOUBLE CATCHBASIN
100m-600mm CONC STM @ 1.00% — PROPOSED STORM SEWER DIRECTION OF FLOW	EX. CB — EXISTING CATCHBASIN
HW — PROPOSED HEADWALLS	EX.DCBMH — EXISTING CATCHBASIN MANHOLE
EX. 50m–200mm PVC STM — EXISTING STORM DIRECTION OF FLOW	EX.MH — EXISTING STORM MANHOLE

BEARINGS
XXX

INTEGRATION NOTE
XXX

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

1	1st SUBMISSION FOR DRAFT PLAN APPROVAL	AUG/26/2026	R.P.D.
REVISION	BLOCK	DATE	APPR. BY

CITY PARK HOMES INC.

12371 HIGHWAY 48 AND 5262-5318 MAIN ST, STOUFFVILLE, ON

MUNICIPAL

DESIGN APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO TOWN OF WHITCHURCH–STOUFFVILLE STANDARDS AND SPECIFICATIONS.

SIGNED______________________
ENGINEERING & PUBLIC WORKS

DATE____________

REGIONAL MUNICIPALITY OF YORK

DESIGN OF WASTEWATER AND WATER SERVICES APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO YORK STANDARDS AND SPECIFICATIONS AND LOCATION APPROVAL FROM AREA MUNICIPALITY.

SIGNED______________________
PLANNING & PUBLIC WORKS DEPARTMENT

DATE____________

APPROVED:

REGISTERED PROFESSIONAL ENGINEER
R.P. DE ANGELIS
AUG/26/2026
PROVINCE OF ONTARIO

NOT FOR CONSTRUCTION

PRELIMINARY

CONDELAND
CONSULTING ENGINEERS & PROJECT MANAGERS
350 Creditstone Road, Unit 200
Concord, Ontario L4K 3Z2
P: (905) 695-2096
www.condeland.com

York Region

Town of Whitchurch-Stouffville

ROOF DRANAGE PLAN

DESIGNED BY: R.P.D.	DATE: AUGUST 2026	CHECKED BY: R.P.D.
DRAWN BY: G.M.	DRAWING NO. FIGURE#6 Sheet: 08 OF 08	CITY FILE:
SCALE 1:750		REGION FILE:

Z:\JOB DIRECTORY\26-011\DRAWINGS\CADD\TRIBUTARY PLANS\STORM TRIBUTARY PLANS\ROOF DRANAGE PLAN.dwg 2026-08-26

WATER BALANCE CALCULATION

Total Development Area = 42240.00 sq.m.

Townhouse Development and Future Hotel Site

Area breakdown

Building Roof Area	**13750.00**
Hardscape Areas	**17270.00**
Soft Lasndscape Area	**11220.00**

Based on an average annual rainfall depth for Toronto of 862.5 mm

Total Annual Average Rainfall volume for the site = 35260 sq.m. x 0.8625 m = 36432.00 cu.m.

Drainage Catchment Area (sq.m.)		Imperviousness (%)	Pervious (%)	Annual Volume Retained (cu.m.)	
Building / Roof Hard Surface Areas =	13750.00	90.0%	10.0%	13750 x 0.84 x 10% =	1146.75 cu.m.
Pavement & Hardscaping Area =	17270.00	90.0%	10.0%	17270 x 0.84 x 10% =	1440.32 cu.m.
Soft Landscaped / Planting Area=	11220.00	25.0%	75.0%	11220 x 0.84 x 75% =	7018.11 cu.m.
Annual rainwater reuse for irrigation					196.92 cu.m.
	42240.00		**Total =**		**9802.10 cu.m.**
			% =	**9802 / 36432**	**26.9%**

Based on the above calculation **about 26.9%** of the average annual rainfall will be retained on-site. Graphing 26.9% of the Total Annual Average Rainfall Depth on Figure 1(a), WWFMP Guidelines as attached yields a Daily Rainfall Depth of **2.1mm** that will be retained on-site.

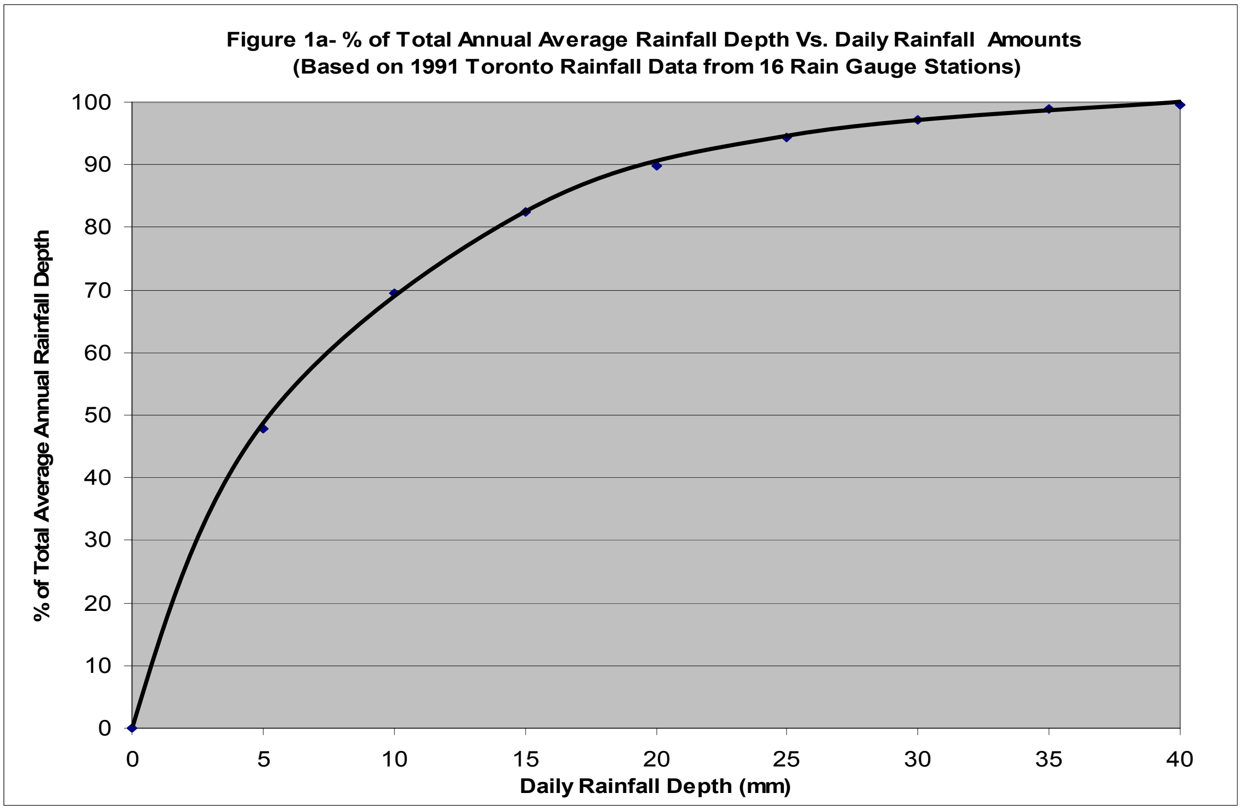


Figure 1a- % of Total Annual Average Rainfall Depth Vs. Daily Rainfall Amounts
(Based on 1991 Toronto Rainfall Data from 16 Rain Gauge Stations)
% of Total Average Annual Rainfall Depth
0
10
20
30
40
50
60
70
80
90
100
0
5
10
15
20
25
30
35
40
Daily Rainfall Depth (mm)

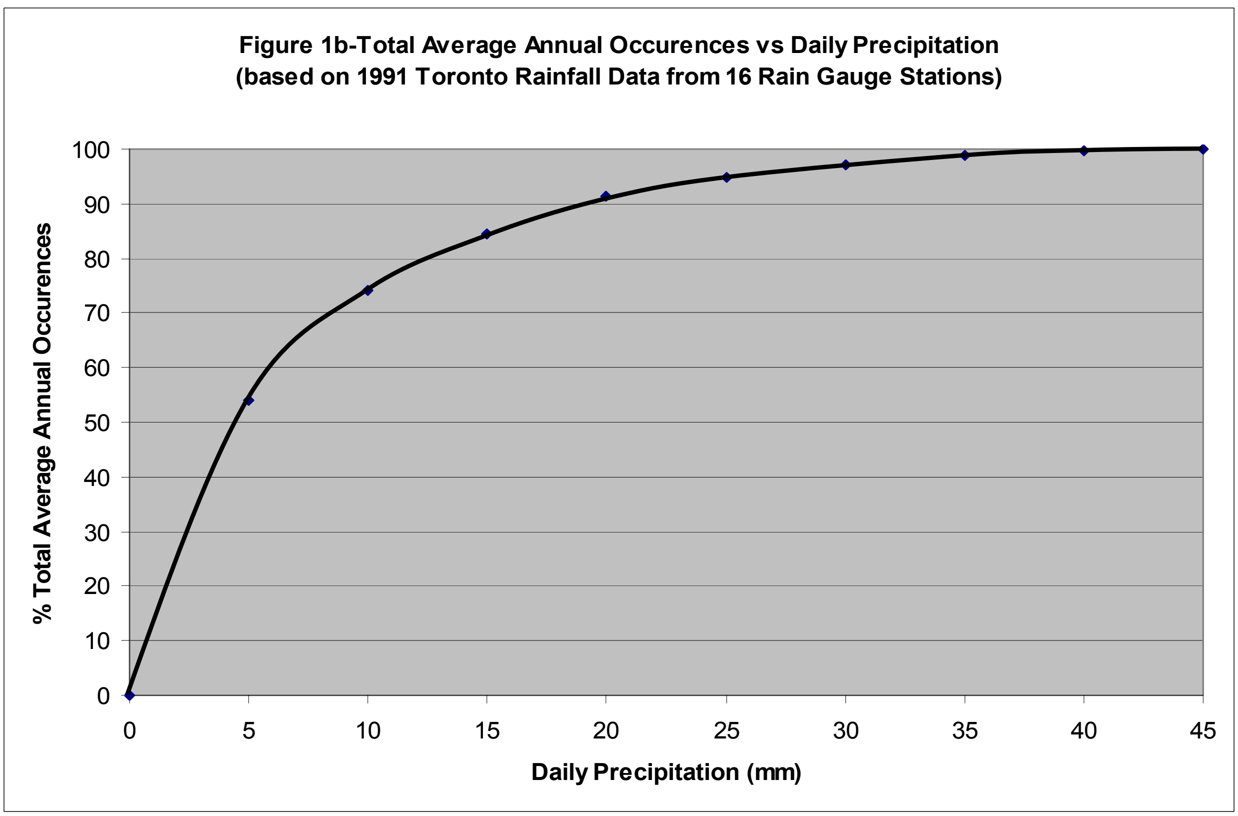


Figure 1b-Total Average Annual Occurences vs Daily Precipitation
(based on 1991 Toronto Rainfall Data from 16 Rain Gauge Stations)
% Total Average Annual Occurences
0
10
20
30
40
50
60
70
80
90
100
0
5
10
15
20
25
30
35
40
45
Daily Precipitation (mm)

CONDELAND

Hotel Site

Proposed Water Demand Calculations

Municipality: Whitchurch-Stouffville

Designed By: Muwaffaq Al-Awad, P. Eng.
Checked By: Rober Deangelis, P. Eng.
File Number: 26-011
Date: Aug. 25, 2026

Domestic Water Supply Demands:

Per City of Toronto Design Criteria for Sewers and Watermains

Average Daily Demand is 0.35 cubic metres / day	350	L/capita/day
Max Day Demand Peaking Factor =	2.00	
Peak Hour Demand Peaking Factor =	3.00	

Maximum Occupant Load / Equivalent Land Use Population= 120 persons

Average Day Demand	0.49	L/s
Maximum Day Demand	0.97	L/s
Peak Hour Demand	1.46	L/s

Fire Protection Supply Demands:

Required Fire Flow (RFF) Calculation
Fire Underwriters Survey (FUS) 2020

STEP 1: Calculate Required Fire Flow (RFF)

$$RFF = 220 \cdot C \cdot \sqrt{A} \cdot (\textit{various adjustments})\ L/min$$

C = Construction Coefficient (based on type of construction):

= 1.5 for **Type V** Wood Frame Construction
= 0.8 for **Type IV-A** Mass Timber Construction
= 0.9 for **Type IV-B** Mass Timber Construction
= 1.0 for **Type IV-C** Mass Timber Construction
= 1.5 for **Type IV-D** Mass Timber Construction
= 1.0 for **Type III** Ordinary Construction
= 0.8 for **Type II** Noncombustible Construction
= 0.6 for **Type I** Fire Resistive Construction

A = Total Effective Area

Largest single floor area of all floors (in square metres).
If C = 1.0 to 1.5 add 100% of all floor areas.
If C < 1.0 then:
Are vertical openings protected?
If NO then consider two largest adjoining floors + 50% of all floors immediately above upto 8 floors maximum.
If YES then include only single largest floor area + 25% of each of the two immediately adjoining floors.

C =	**0.8**		
Total Floor Area =	**1,458**	m2	`
F =	6,720	L/min	
F =	7,000	L/min	*Round to the nearest 1000*

STEP 2: Adjustment factor based on building occupancy and contents (Note: number shall not be less then 2000 L/min)

= - 25% (Noncombustable Contents)
= - 15% (Limited Combustable Contents)
= 0 (Combustable Contents)
= + 15% (Free Burning Contents)
= + 25% (Rapid Burning Contents)

Factor =	**-25%**	
F1 = F x Factor =	5,250	L/min

STEP 3: Decrease F1 if building contains fire supression (sprinkler protection) system

= - 30% Automatic sprinkler protection system throughout total effective floor area.
= - 10% Water supply is standard for both sprinkler system and fire department hose line.
= - 10% Sprinkler systerm is fully supervised.
= - 25% Community level automatic sprinkler protection.

Factor = **30%**

Hotel Site

Proposed Water Demand Calculations

Municipality: Whitchurch-Stouffville

F2 = F1 x Factor = 1,575 L/min

STEP 4: Increase F1 due to exposure / close proximity to other buildings (Note: Total shall not exceed 75%)

= 25% (0m to 3m)
= 20% (3.1m to 10m)
= 15% (10.1m to 20m)
= 10% (20.1m to 30m)
= 0% (greater than 30m)

Distances = **>30m / >30m / 25.0m / 4.0m**
Factors = **0% + 0% + 10% + 20%**

Factor = **30%** (max 75%)
F3 = F1 x Factor = 1,575 L/min

STEP 5: Calculate Fire Flow (Note: Fireflow shall not be less then 2000 L/min or greater then 45,000 L/min)

Fire Flow =	**F1-F2+F3**		
F1 =	5,250	L/min	
- F2 =	1,575	L/min	
+ F3 =	1,575	L/min	
Fire Flow =	5,250	L/min	
Fire Flow =	5,000	L/min	*Round to the nearest 1000*
Fire Flow =	83.3	L/s	

STEP 6: Calculate Total Water Demand (Max Day Demand + Fire Flow)

Max Day Demand =	**0.97**	L/s	*Based on applicable design criteria.*
Total Fire Demand =	84.3	L/s	*Max Day + Fire Flow*

CONDELAND

Stacked-Townhouses

Proposed Water Demand Calculations

Municipality: Whitchurch-Stouffville

Designed By: Muwaffaq Al-Awad, P. Eng.
Checked By: Rober Deangelis, P. Eng.
File Number: 26-011
Date: Aug. 25, 2026

Domestic Water Supply Demands:

Per City of Toronto Design Criteria for Sewers and Watermains

Average Daily Demand is 0.35 cubic metres / day	350	L/capita/day
Max Day Demand Peaking Factor =	2.00	
Peak Hour Demand Peaking Factor =	3.00	

Maximum Occupant Load / Equivalent Land Use Population= 478.5 persons 479

Average Day Demand	1.94	L/s
Maximum Day Demand	3.88	L/s
Peak Hour Demand	5.82	L/s

Fire Protection Supply Demands:

Required Fire Flow (RFF) Calculation
Fire Underwriters Survey (FUS) 2020

STEP 1: Calculate Required Fire Flow (RFF)

$$RFF = 220 \cdot C \cdot \sqrt{A} \cdot (various\ adjustments)\ L/min$$

C = Construction Coefficient (based on type of construction):

= 1.5 for **Type V** Wood Frame Construction
= 0.8 for **Type IV-A** Mass Timber Construction
= 0.9 for **Type IV-B** Mass Timber Construction
= 1.0 for **Type IV-C** Mass Timber Construction
= 1.5 for **Type IV-D** Mass Timber Construction
= 1.0 for **Type III** Ordinary Construction
= 0.8 for **Type II** Noncombustible Construction
= 0.6 for **Type I** Fire Resistive Construction

A = Total Effective Area

Largest single floor area of all floors (in square metres).
If C = 1.0 to 1.5 add 100% of all floor areas.
If C < 1.0 then:
Are vertical openings protected?
If NO then consider two largest adjoining floors + 50% of all floors immediately above upto 8 floors maximum.
If YES then include only single largest floor area + 25% of each of the two immediately adjoining floors.

C =	1		
Total Floor Area =	753	m2	`
F =	6,037	L/min	
F =	6,000	L/min	*Round to the nearest 1000*

STEP 2: Adjustment factor based on building occupancy and contents (Note: number shall not be less then 2000 L/min)

= - 25% (Noncombustable Contents)
= - 15% (Limited Combustable Contents)
= 0 (Combustable Contents)
= + 15% (Free Burning Contents)
= + 25% (Rapid Burning Contents)

Factor = -15%
F1 = F x Factor = 5,100 L/min

STEP 3: Decrease F1 if building contains fire supression (sprinkler protection) system

= - 30% Automatic sprinkler protection system throughout total effective floor area.
= - 10% Water supply is standard for both sprinkler system and fire department hose line.
= - 10% Sprinkler systerm is fully supervised.
= - 25% Community level automatic sprinkler protection.

Factor = 0%

Stacked-Townhouses

Proposed Water Demand Calculations

Municipality: Whitchurch-Stouffville

F2 = F1 x Factor = 0 L/min

STEP 4: Increase F1 due to exposure / close proximity to other buildings (Note: Total shall not exceed 75%)

= 25% (0m to 3m)	Distances =	**0m / >30m / 17.0m / 0m**	
= 20% (3.1m to 10m)	Factors =	**25% + 0% + 15% + 25%**	
= 15% (10.1m to 20m)			
= 10% (20.1m to 30m)	Factor =	**65%**	(max 75%)
= 0% (greater than 30m)	**F3** = F1 x Factor =	3,315	L/min

STEP 5: Calculate Fire Flow (Note: Fireflow shall not be less then 2000 L/min or greater then 45,000 L/min)

Fire Flow =	**F1-F2+F3**		
F1 =	5,100	L/min	
- F2 =	0	L/min	
+ F3 =	3,315	L/min	
Fire Flow =	8,415	L/min	
Fire Flow =	8,000	L/min	*Round to the nearest 1000*
Fire Flow =	133.3	L/s	

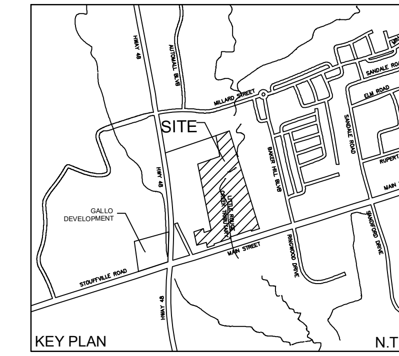
STEP 6: Calculate Total Water Demand (Max Day Demand + Fire Flow)

Max Day Demand =	**3.88**	L/s	*Based on applicable design criteria.*
Total Fire Demand =	137.2	L/s	*Max Day + Fire Flow*

APPENDIX 'E'

FIGURE 5 FLOODPLAIN MAPPING

HEC RAS MODEL PROVIDED SEPARATELY



LEGEND

	PROPOSED FLOOD LINE BY CONDELAND AT 255.82
	EXISTING FLOOD LINE 2008 BY COLE ENGENEERING BY SCS MODEL
	PROPOSED FLOOD LINE 2024 BY SCS MODEL
255.82 / 255.86	PROP FLOOD LINE ELEV EXISTING FLOOD LINE ELEV
732.2251	CROSS SECTION LINE

1	1st SUBMISSION FOR DRAFT PLAN APPROVAL	AUG/26/2026	R.P.D.
REVISION BLOCK		DATE	APPR. BY

CITY PARK HOMES INC.

12371 HIGHWAY 48 AND 5262-5318 MAIN ST, STOUFFVILLE, ON

MUNICIPAL

DESIGN APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO TOWN OF WHITCHURCH–STOUFFVILLE STANDARDS AND SPECIFICATIONS.

SIGNED____________________

ENGINEERING & PUBLIC WORKS

DATE____________

REGIONAL MUNICIPALITY OF YORK

DESIGN OF WASTEWATER AND WATER SERVICES APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO YORK STANDARDS AND SPECIFICATIONS AND LOCATION APPROVAL FROM AREA MUNICIPALITY.

SIGNED________________________

PLANNING & PUBLIC WORKS DEPARTMENT

DATE____________

APPROVED:

REGISTERED PROFESSIONAL ENGINEER
R.P. DE ANGELIS
AUG/26/2026
PROVINCE OF ONTARIO

NOT FOR CONSTRUCTION

PRELIMINARY

CONDELAND

CONSULTING ENGINEERS & PROJECT MANAGERS

350 Creditstone Road, Unit 200
Concord, Ontario L4K 3Z2

P: (905) 695-2096
www.condeland.com

York Region

Town of Whitchurch-Stouffville

FLOOD LINE PLAN

DESIGNED BY: R.P.D.	DATE: AUGUST 2026	CHECKED BY: R.P.D.
DRAWN BY: G.M.	DRAWING NO.	CITY FILE:
SCALE 1:750	FIGURE#5 Sheet: 07OF 08	REGION FILE:

Z:\JOB DIRECTORY\26-011\DRAWINGS\CADD\GRADING PLAN\GRADING PLAN with flood lines.dwg 2026-08-26