Stantec

Memo

To:	Eric Surprenant 110 Laurier Ave W Ottawa ON, K1P 1J1	From:	Warren Johnson 400-1331 Clyde Avenue Ottawa, ON K2C 3G4
File:	160401718	Date:	August 11, 2022

Reference: Cavanagh Trails West: Blocks 24, 43, 46 & 104 – Adequacy of Services Memo

Dear Mr. Surprenant,

BACKGROUND

Stantec Consulting Ltd. has been commissioned to prepare an Adequacy of Services Memo in support of a Zoning By-law Amendment Application for Blocks 24, 43, 46 and 104 within the Cavanagh Trails West development. The proposed development will consist of 96 residential units and associated access roads and servicing infrastructure. The zoning amendment application seeks to add semi-detached units as an additional permitted land use for the subject properties. The current site is zoned as “GM[2353 H(14)”: General Mixed Use Zone. The site has previously received approval through the Site Plan Application process under City file number D07-12-15-0163, during which, multi-storey apartment buildings with underground parking were proposed. The site is currently undeveloped.

The intent of this letter is to provide an engineering rationale for the modifications with respect to any proposed changes in local infrastructure demands or loading, while adhering to City of Ottawa design guidelines and recommendations and utilizing the existing local infrastructure in accordance with any known servicing restrictions.

POTABLE WATER SERVICING

The subject site lies within the City of Ottawa’s 3W water pressure zone. The proposed blocks will be serviced as follows: Block 24 will be serviced from the existing 150 mm diameter PVC water stub along Templeford Avenue, Block 43 will be serviced from the existing 300 mm diameter PVC watermain along Cope Drive, Block 46 will be serviced from the existing 200 mm diameter PVC watermain along Northgraves Crescent (with an alternate connection option along Cope Drive), and Block 104 will be serviced from the existing 150 mm diameter PVC water stub along Carronbridge Crescent. The daily demands were calculated using the City of Ottawa’s Water Design Guidelines, a residential consumption rate of **280 L/cap/day,** and a density of 2.7 persons per unit (PPU) for traditional townhomes and back-to-back townhomes. **Table 1.1** shows the estimated population and water demands for each building in comparison to the previously approved 2016 Trail West – Cope Drive report.

Reference: Cavanagh Trails West: Blocks 24, 43, 46 & 104 – Adequacy of Services Memo

Table 1.1: Estimated Population and Demand for Each Block

Area	Description	Population	AVDY (L/s)	AVDY (L/s) (Stantec 2016)	MXDY (L/s)	MXDY (L/s) (Stantec 2016)	PKHR (L/s)	PKHR (L/s) (Stantec 2016)
Block 24	16 x town; 16 x B2B	86	0.28	0.48	0.70	1.20	1.54	2.62
Block 43	2 x town; 6 x B2B	22	0.07	0.11	0.18	0.28	0.39	0.62
Block 46	20 x town; 20 x B2B	108	0.35	0.64	0.88	1.60	1.93	3.52
Block 104	8 x town; 8 x B2B	43	0.14	0.28	0.35	0.71	0.77	1.56
Total			0.84	1.51	2.10	3.79	4.62	8.32

In regards to the fire flow required, the Fire Underwriter Survey (FUS) method was used and the resulting flows are presented in **Table 1.2** in comparison to the previously approved 2016 Trail West – Cope Drive report. Detailed FUS calculations are included in **Appendix A**.

Table 1.2: FUS Fire Flow

Area	Building	FUS FF (L/min)	Worst case FUS FF (L/min) (Stantec 2016)
Block 24	Block 1	13,000	15,000
Block 43	Block 1	8,000	8,000
Block 46	Block 1	12,000	17,000
Block 104	Block 1	13,000	12,000

The boundary conditions provided by the City and resulting pressures at the connection points for the previously approved 2016 Trail West – Cope Drive report are shown in **Table 1.3**. Given that there has been a reduction in the proposed estimated water demands from the 2016 study it can be concluded that the minimum pressures during peak hourly (PKHR) demands are still not anticipated to drop below the City's objective minimum of 276 kPa (40 psi) even at the highest storey. However, during basic day (BSDY) demands, the pressures are expected to be greater than 552 kPa (80 psi) and as per the OBC, pressure reducing measures will be required to service all the proposed buildings.

For maximum day plus fire flow (MXDY+FF), the boundary conditions provided at the required fire flow rate by City staff correspond to residual pressures well above 138 kPa (20 psi). Therefore, the existing water distribution system is capable of providing sufficient FUS fire flows to the proposed buildings as per the City's Water Design Guidelines.

Table 1.3: 2016 Boundary Conditions and Resulting Pressures at Connections Points

		Boundary Conditions			Resulting Pressures		
Area	**Connection No.**	**Max HGL during BSDY (m)**	**Min HGL during PKHR (m)**	**HGL for MXDY+ FF (m)**	**Max Pressure (psi)**	**Min Pressure (psi)**	**MXDY+ FF Pressure (psi)**
Block 46	1	163.4	155.5	131.1	96	85	50
Block 24	2	163.4	155.5	138.4	95	84	60
Block 104	3	163.4	155.5	151.8	98	87	82
Block 43	4	163.4	155.8	151.8	96	85	80

Please refer to **Appendix B** for the functional water servicing plan.

SANITARY WATER SERVICING

The proposed development will consist of 96 residential units and associated access roads and servicing infrastructure. As illustrated on **Figure 3.0 in Appendix B**, sanitary servicing for the proposed blocks will be provided through existing sanitary sewers on Northgraves Crescent (with an alternate connection option along Cope Drive) for Block 46, existing sanitary sewers on Cope Drive for Block 43, an existing sanitary stub on Carronbridge Drive for Block 104, and a servicing corridor for Block 24.

As outlined in the City of Ottawa Sewer Design Guidelines and the Ministry of the Environment, Conservation and Parks (MECP) Design Guidelines for Sewage Works, the following criteria were used to calculate the estimated wastewater flow rates:

- Minimum Velocity – 0.6 m/s (0.8 m/s for upstream sections)
- Maximum Velocity – 3.0 m/s
- Manning roughness coefficient for all smooth wall pipes – 0.013
- 2.7 persons/unit for townhomes
- Harmon's Formula for Peaking Factor – Max = 4.0
- Extraneous Flow Allowance – 0.33 L/s/ha (conservative value)
- Average residential flow based on 280 L/p/day

The anticipated wastewater peak flows generated from the proposed Trail West – Cope Drive Units are summarized and compared to the previously approved 2016 Trail West – Cope Drive report in the table below:

Table 2.1: Estimated Wastewater Peak Flows

Residential Units					Infiltration Flow (L/s)	Proposed Total Peak Flow (L/s)	Previous Total Peak Flow (L/s) (Stantec, 2016)
Block Number	# of Units	Population	Peak Factor	Peak Flow (L/s)			
Block 46	40	108	3.59	1.26	0.24	1.50	2.74
Block 24	32	86	3.61	1.01	0.18	1.20	2.07
Block 43	8	22	3.70	0.26	0.05	0.31	0.26
Block 104	16	43	3.66	0.51	0.11	0.62	1.22
Total Estimated Wastewater Peak Flow (L/s):						**3.63**	**6.29**

This indicates a 2.66 L/s reduction in the total peak flows when compared to the previously approved 2016 Trail West – Cope Drive report, and so no negative impacts are anticipated on the downstream sanitary sewer infrastructure based on the proposed additional permitted use.

STORMWATER SERVICING/MANAGEMENT

The proposed development will consist of 92 residential units and associated access roads and servicing infrastructure. The proposed buildings are located within Private Blocks 46, 24 and 104.

Block 46 will be serviced through an existing storm sewer on Northgraves Crescent. Block 43 will be serviced through an existing storm sewer on Cope Drive. Block 24 will be serviced through an existing storm sewer in the existing servicing corridor. Block 104 will be serviced through an existing storm stub on Carronbridge Drive (see **Appendix B**).

The proposed Blocks 46, 43, and 24 are located within the existing Phase 1 of the Trail West development which is located southwest of the Monahan Drain between First Line Road and Fernbank Road (see **Appendix B**). The major flow from Phase 1 and future lands to the south is generally safely conveyed to Cell 1 of the Monahan Drain. The minor system from Phase 1 outlets to Cell 1 of the Monahan Drain, approximately 40 m south of Cope Drive via a 1200x2400 concrete box complete with an armour stone headwall and rip-rap outfall structure.

The proposed Block 104 is located within the existing Phase 2 of the Trail West development which is located northeast of the Monahan Drain, south of Cope Drive, west of Eagleson Road, and north of Fernbank Road. The minor system from Phase 2 outlets to Cell 1 of the Monahan Drain, approximately 130 m north of Fernbank Road via a 900 mm dia. concrete circular sewer complete with an armour stone headwall and rip-rap outfall structure.

The following criteria were established based on background resources for the Trail West development, supplemented with current design practices outlined by the City of Ottawa as outlined in the previously approved 2016 Trail West – Cope Drive report.

- Use of the dual drainage principle

- Size storm sewers to convey 5 year storm event under free-flow conditions using 2012 City of Ottawa I-D-F parameters
- Maximum 100 year flow depth (static plus dynamic) of 0.30 m in road sags
- Assess major system adequacy during the climate change event (100 year storm increased by 20%)
- Standing water depths at road sags not to cause surface flooding on any building or structure
- Minor system peak flows from Block 46 to be restricted to 88 L/s
- Minor system peak flows from Block 24 to be restricted to 66 L/s
- Minor system peak flows from Block 104 to be restricted to 44 L/s
- Runoff from Block 43 to be directed to Cope Drive and directly to the Monahan Drain through sheet drainage
- 100 year HGL to be a minimum of 0.30 m below building foundation footing
- Major flow is to be stored on the surface in road sags or conveyed by surface routing to Cell 1 of the Monahan Drain
- Provide adequate emergency overflow conveyance off-site
- Water quality control will be provided in the existing Vortechs oil/grit separator units at the storm outlets for Phase 1 and for Phase 2

The anticipated stormwater discharge generated from the proposed Trail West – Cope Drive Units are summarized and compared to the targets set in the previously approved 2016 Trail West – Cope Drive report in the table below. The required storage volume will be provided using a combination of surface and underground storage which will be determined during detailed design.

Table 3.1: Estimated Stormwater Discharge

Block Number	Area	Runoff Coefficient	5-Year Storm		100-Year Storm		Previous Target (L/s) (Stantec 2016)
			Volume Required (m3)	Release Rate (L/s)	Volume Required (m3)	Release Rate (L/s)	
Block 46	0.73	0.70	36.0	88.0	150.0	88.0	88.0
Block 24	0.56	0.70	28.5	66.0	116.9	66.0	66.0
Block 43	0.16	0.63	-	39.6	-	62.6	-
Block 104	0.33	0.60	8.0	44.0	47.3	44.0	44.0

Water quality control for the proposed development will be provided in the existing Vortech systems located upstream of the Phase 1 and 2 outlets from the Trails West development. The Vortech units were sized for a minimum of 80% total net annual TSS removal based on the previously assumed imperviousness of the development blocks. As no increase in impervious area is proposed based on the proposed additional land use, no negative effects on operation of the existing Vortech units are anticipated.

Table 3.2: Estimated Site Imperviousness

Block Number	Area	Approved Runoff Coefficient	Approved AxC	Proposed Runoff Coefficient	Proposed AxC
Block 46	0.73	0.67	0.48	0.70	0.50
Block 24	0.56	0.67	0.37	0.70	0.39
Block 43	0.16	0.71	0.11	0.63	0.10
Block 104	0.33	0.68	0.22	0.60	0.19
Total			**1.18**		**1.18**

UTILITIES

As the subject site lies within a developed residential community, Hydro, Bell, Gas and Cable servicing for the proposed buildings should be readily available. It is anticipated that existing infrastructure will be sufficient to provide a means of distribution for the proposed site. No off-site works are anticipated to be required for redevelopment of the subject site.

RECOMMENDATIONS

Based on the above findings, it is anticipated that the current servicing infrastructure for Blocks 24, 43, 46 and 104 within the Cavanagh Trails West development will be adequate for rezoning purposes and to permit the construction of the proposed dwellings.

Reference: Cavanagh Trails West: Blocks 24, 43, 46 & 104 – Adequacy of Services Memo

Stantec Consulting Ltd.

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Attachments: Appendix A

- A.1 - Sanitary Sewer Design Sheet
- A.2 – Domestic Water Demand Calculations
- A.3 – FUS Calculations
- A.4 – Storm Sewer Design Sheet
- A.5 – Modified Rational Method Calculations

Appendix B

- B.1 – Site Plans
- B.2 – Proposed Development Location Plan
- B.3 – Functional Water Servicing Plan
- B.4 – Functional Sanitary Servicing Plan
- B.5 – Functional Storm Servicing Plan

Stantec

SUBDIVISION:
Cavanagh Trails West
Blocks 24, 43, 46 &104

DATE: 8/11/2022
REVISION: 1
DESIGNED BY: WAJ
CHECKED BY: DCT

SANITARY SEWER DESIGN SHEET
(City of Ottawa)

FILE NUMBER: 160401718

DESIGN PARAMETERS

MAX PEAK FACTOR (RES.)=	4.0	AVG. DAILY FLOW / PERSON	280 l/p/day	MINIMUM VELOCITY	0.60 m/s
MIN PEAK FACTOR (RES.)=	2.0	COMMERCIAL	28,000 l/ha/day	MAXIMUM VELOCITY	3.00 m/s
PEAKING FACTOR (INDUSTRIAL):	2.4	INDUSTRIAL (HEAVY)	55,000 l/ha/day	MANNINGS n	0.013
PEAKING FACTOR (ICI >20%):	1.5	INDUSTRIAL (LIGHT)	35,000 l/ha/day	BEDDING CLASS	B
PERSONS / SINGLE	3.4	INSTITUTIONAL	28,000 l/ha/day	MINIMUM COVER	2.50 m
PERSONS / TOWNHOME	2.7	INFILTRATION	0.33 l/s/Ha	HARMON CORRECTION FACTOR	0.8
PERSONS / APARTMENT	1.8				

LOCATION			RESIDENTIAL AREA AND POPULATION									COMMERCIAL		INDUSTRIAL (L)		INDUSTRIAL (H)		INSTITUTIONAL		GREEN / UNUSED		C+I+I	INFILTRATION			TOTAL	PIPE								
AREA ID NUMBER	FROM M.H.	TO M.H.	AREA	SINGLE	UNITS TOWN	APT	POP.	CUMULATIVE AREA	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW	AREA	ACCU. AREA	AREA	ACCU. AREA	AREA	ACCU. AREA	AREA	ACCU. AREA	AREA	ACCU. AREA	PEAK FLOW	TOTAL AREA	ACCU. AREA	INFILT. FLOW	FLOW	LENGTH	DIA	MATERIAL	CLASS	SLOPE	CAP. (FULL)	CAP. V PEAK FLOW	VEL. (FULL)	VEL. (ACT.)
			(ha)					(ha)			(l/s)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(l/s)	(ha)	(ha)	(l/s)	(l/s)	(m)	(mm)			(%)	(l/s)	(%)	(m/s)	(m/s)
BLOCK 24	BLK 24	MAIN	0.56	0	32	0	86	0.56	86	3.61	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.56	0.56	0.2	1.2	140.0	200	PVC	SDR 35	0.50	23.6	**5.05%**	0.74	0.33
																												200							
BLOCK 43	BLK 43	MAIN	0.16	0	8	0	22	0.16	22	3.70	0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.16	0.16	0.1	0.3	40.0	200	PVC	SDR 35	0.50	23.6	**1.32%**	0.74	0.21
																												525							
BLOCK 46	BLK 46	MAIN	0.73	0	40	0	108	0.73	108	3.59	1.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.73	0.73	0.2	1.5	200.0	200	PVC	SDR 35	0.50	23.6	**6.33%**	0.74	0.35
																												200							
BLOCK 104	BLK 104	MAIN	0.33	0	16	0	43	0.33	43	3.66	0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.33	0.33	0.1	0.6	70.0	200	PVC	SDR 35	0.50	23.6	**2.63%**	0.74	0.27
																												200							

Trailwest Cope Drive - Domestic Water Demand Estimates

Based on Site PlanS from M. David Blakely Architect Inc. Dated September 2021, May 2022, and June 2022.

Densities as per City Guidelines:		
Townhomes (Row)	2.7	ppu
Back-to-Back Townhomes	2.7	ppu

Building ID	No. of Units	Population	Daily Rate of Demand [1] (L/cap/day)	Avg Day Demand		Max Day Demand [2]		Peak Hour Demand [2]	
				(L/min)	(L/s)	(L/min)	(L/s)	(L/min)	(L/s)
Block 24									
Back-to-Back Townhomes									
Block 1	8	22	280	4.2	0.07	10.5	0.18	23.1	0.39
Block 2	4	11	280	2.1	0.04	5.3	0.09	11.6	0.19
Block 3	4	11	280	2.1	0.04	5.3	0.09	11.6	0.19
Townhouse Blocks									
Block 4	6	16	280	3.2	0.05	7.9	0.13	17.3	0.29
Block 5	6	16	280	3.2	0.05	7.9	0.13	17.3	0.29
Block 6	4	11	280	2.1	0.04	5.3	0.09	11.6	0.19
Total	**32.0**	**86**		**16.8**	**0.28**	**42.0**	**0.70**	**92.4**	**1.54**
Block 43									
Back-to-Back Townhomes									
Block 1	6	16	280	3.2	0.05	7.9	0.13	17.3	0.29
Townhouse Blocks									
Block 2	2	5	280	1.1	0.02	2.6	0.04	5.8	0.10
Total	**8.0**	**22**		**4.2**	**0.07**	**10.5**	**0.18**	**23.1**	**0.39**
Block 46									
Back-to-Back Townhomes									
Block 1	8	22	280	4.2	0.07	10.5	0.18	23.1	0.39
Block 2	4	11	280	2.1	0.04	5.3	0.09	11.6	0.19
Block 3	4	11	280	2.1	0.04	5.3	0.09	11.6	0.19
Block 4	4	11	280	2.1	0.04	5.3	0.09	11.6	0.19
Townhouse Blocks									
Block 5	4	11	280	2.1	0.04	5.3	0.09	11.6	0.19
Block 6	4	11	280	2.1	0.04	5.3	0.09	11.6	0.19
Block 7	6	16	280	3.2	0.05	7.9	0.13	17.3	0.29
Block 8	6	16	280	3.2	0.05	7.9	0.13	17.3	0.29
Total	**40.0**	**108**		**21.0**	**0.35**	**52.5**	**0.88**	**115.5**	**1.93**
Block 104									
Back-to-Back Townhomes									
Block 1	8	22	280	4.2	0.07	10.5	0.18	23.1	0.39
Townhouse Blocks									
Block 2	8	22	280	4.2	0.07	10.5	0.18	23.1	0.39
Total	**16.0**	**43**		**8.4**	**0.14**	**21.0**	**0.35**	**46.2**	**0.77**
Total Site :	**96.0**	**259**		**50.4**	**0.84**	**126.0**	**2.10**	**277.2**	**4.62**

1 Average day water demand for residential areas: 280 L/cap/d

2 The City of Ottawa water demand criteria used to estimate peak demand rates for residential areas are as follows:

maximum day demand rate = 2.5 x average day demand rate for residential

peak hour demand rate = 2.2 x maximum day demand rate for residential

FUS Fire Flow Calculation Sheet - 2020 FUS Guidelines

Stantec Project #: 160401718
Project Name: Cavanagh Trails West
Date: 8/12/2022
Fire Flow Calculation #: 1
Description: Block 24: 8-unit back-to-back townhouse block (Block 1)

Notes: 3-storey 8 unit back-to-back townhomes with 429.1 m2 footprint. No fire seperation provided.

Step	Task	Notes							Value Used	Req'd Fire Flow (L/min)
1	Determine Type of Construction	Type V - Wood Frame / Type IV-D - Mass Timber Construction							1.5	-
2	Determine Effective Floor Area	Sum of All Floor Areas							-	-
		429.1	429.1	429.1					1287.3	-
3	Determine Required Fire Flow	($F = 220 \times C \times A^{1/2}$). Round to nearest 1000 L/min							-	12000
4	Determine Occupancy Charge	Limited Combustible							-15%	10200
5	Determine Sprinkler Reduction	None							0%	0
		Non-Standard Water Supply or N/A							0%	
		Not Fully Supervised or N/A							0%	
		% Coverage of Sprinkler System							0%	
6	Determine Increase for Exposures (Max. 75%)	Direction	Exposure Distance (m)	Exposed Length (m)	Exposed Height (Stories)	Length-Height Factor (m x stories)	Construction of Adjacent Wall	Firewall / Sprinklered ?	-	-
		North	20.1 to 30	17.6	3	41-60	Type V	NO	4%	2550
		East	10.1 to 20	25	3	61-80	Type V	NO	13%	
		South	20.1 to 30	17.6	2	21-49	Type V	NO	2%	
		West	20.1 to 30	25	3	61-80	Type V	NO	6%	
7	Determine Final Required Fire Flow	Total Required Fire Flow in L/min, Rounded to Nearest 1000L/min								13000
		Total Required Fire Flow in L/s								216.7
		Required Duration of Fire Flow (hrs)								2.50
		Required Volume of Fire Flow (m^3)								1950

FUS Fire Flow Calculation Sheet - 2020 FUS Guidelines

Stantec Project #: 160401718
Project Name: Cavanagh Trails West
Date: 8/12/2022
Fire Flow Calculation #: 2
Description: Block 43: 6-unit townhouse block (Block 1)

Notes: 3-storey 6-unit townhomes with 340 m2 footprint. Fire separation provided in the middle of the block.

Step	Task	Notes								Value Used	Req'd Fire Flow (L/min)
1	Determine Type of Construction	Type V - Wood Frame / Type IV-D - Mass Timber Construction								1.5	-
2	Determine Effective Floor Area	Sum of All Floor Areas								-	-
		170	170	170						510	-
3	Determine Required Fire Flow	($F = 220 \times C \times A^{1/2}$). Round to nearest 1000 L/min								-	7000
4	Determine Occupancy Charge	Limited Combustible								-15%	5950
5	Determine Sprinkler Reduction	None								0%	0
		Non-Standard Water Supply or N/A								0%	
		Not Fully Supervised or N/A								0%	
		% Coverage of Sprinkler System								0%	
6	Determine Increase for Exposures (Max. 75%)	Direction	Exposure Distance (m)	Exposed Length (m)	Exposed Height (Stories)	Length-Height Factor (m x stories)	Construction of Adjacent Wall	Firewall / Sprinklered ?		-	-
		North	> 30	12.4	2	21-49	Type V	NO		0%	1666
		East	10.1 to 20	27.5	3	81-100	Type V	NO		14%	
		South	0 to 3	12.4	3	21-49	Type V	YES		0%	
		West	10.1 to 20	27.5	3	81-100	Type V	NO		14%	
7	Determine Final Required Fire Flow	Total Required Fire Flow in L/min, Rounded to Nearest 1000L/min									8000
		Total Required Fire Flow in L/s									133.3
		Required Duration of Fire Flow (hrs)									2.00
		Required Volume of Fire Flow (m^3)									960

FUS Fire Flow Calculation Sheet - 2020 FUS Guidelines

Stantec Project #: 160401718
Project Name: Cavanagh Trails West
Date: 8/12/2022
Fire Flow Calculation #: 3
Description: Block 46: 8-unit back-to-back townhouse block (Block 1)

Notes: 3-storey 8 unit back-to-back townhomes with 429.1 m2 footprint. No fire seperation provided.

Step	Task	Notes							Value Used	Req'd Fire Flow (L/min)
1	Determine Type of Construction	Type V - Wood Frame / Type IV-D - Mass Timber Construction							1.5	-
2	Determine Effective Floor Area	Sum of All Floor Areas							-	-
		429.1	429.1	429.1					1287.3	-
3	Determine Required Fire Flow	($F = 220 \times C \times A^{1/2}$). Round to nearest 1000 L/min							-	12000
4	Determine Occupancy Charge	Limited Combustible							-15%	10200
5	Determine Sprinkler Reduction	None							0%	0
		Non-Standard Water Supply or N/A							0%	
		Not Fully Supervised or N/A							0%	
		% Coverage of Sprinkler System							0%	
6	Determine Increase for Exposures (Max. 75%)	Direction	Exposure Distance (m)	Exposed Length (m)	Exposed Height (Stories)	Length-Height Factor (m x stories)	Construction of Adjacent Wall	Firewall / Sprinklered ?	-	-
		North	20.1 to 30	17.6	2	21-49	Type V	NO	2%	1938
		East	10.1 to 20	25	3	61-80	Type V	NO	13%	
		South	> 30	17.6	3	41-60	Type V	NO	0%	
		West	20.1 to 30	25	2	41-60	Type V	NO	4%	
7	Determine Final Required Fire Flow	Total Required Fire Flow in L/min, Rounded to Nearest 1000L/min								12000
		Total Required Fire Flow in L/s								200.0
		Required Duration of Fire Flow (hrs)								2.50
		Required Volume of Fire Flow (m^3)								1800

FUS Fire Flow Calculation Sheet - 2020 FUS Guidelines

Stantec Project #: 160401718
Project Name: Cavanagh Trails West
Date: 8/12/2022
Fire Flow Calculation #: 4
Description: Block 104: 8-unit back-to-back townhouse block (Block 1)

Notes: 3-storey 8 unit back-to-back townhomes with 429.1 m2 footprint. No fire seperation provided.

Step	Task	Notes							Value Used	Req'd Fire Flow (L/min)
1	Determine Type of Construction	Type V - Wood Frame / Type IV-D - Mass Timber Construction							1.5	-
2	Determine Effective Floor Area	Sum of All Floor Areas							-	-
		429.1	429.1	429.1					1287.3	-
3	Determine Required Fire Flow	($F = 220 \times C \times A^{1/2}$). Round to nearest 1000 L/min							-	12000
4	Determine Occupancy Charge	Limited Combustible							-15%	10200
5	Determine Sprinkler Reduction	None							0%	0
		Non-Standard Water Supply or N/A							0%	
		Not Fully Supervised or N/A							0%	
		% Coverage of Sprinkler System							0%	
6	Determine Increase for Exposures (Max. 75%)	Direction	Exposure Distance (m)	Exposed Length (m)	Exposed Height (Stories)	Length-Height Factor (m x stories)	Construction of Adjacent Wall	Firewall / Sprinklered ?	-	-
		North	> 30	17.6	2	21-49	Type V	NO	0%	2448
		East	> 30	25	2	41-60	Type V	NO	0%	
		South	10.1 to 20	17.6	2	21-49	Type V	NO	11%	
		West	10.1 to 20	25	3	61-80	Type V	NO	13%	
7	Determine Final Required Fire Flow	Total Required Fire Flow in L/min, Rounded to Nearest 1000L/min								13000
		Total Required Fire Flow in L/s								216.7
		Required Duration of Fire Flow (hrs)								2.50
		Required Volume of Fire Flow (m^3)								1950

Stantec

Cavanagh Trails West
Blocks 24, 43, 46 & 104

DATE: 2022-08-11
REVISION: 1
DESIGNED BY: WAJ
CHECKED BY: DCT

STORM SEWER DESIGN SHEET
(City of Ottawa)

FILE NUMBER: 160401718

DESIGN PARAMETERS

$I = a / (t+b)^c$ (As per City of Ottawa Guidelines, 2012)

	1:2 yr	1:5 yr	1:10 yr	1:100 yr
a =	732.951	998.071	1174.184	1735.688
b =	6.199	6.053	6.014	6.014
c =	0.810	0.814	0.816	0.820

MANNING'S n = 0.013
MINIMUM COVER: 2.00 m
TIME OF ENTRY 10 min
BEDDING CLASS = B

LOCATION			DRAINAGE AREA																						PIPE SELECTION										
AREA ID NUMBER	FROM M.H.	TO M.H.	AREA (2-YEAR) (ha)	AREA (5-YEAR) (ha)	AREA (10-YEAR) (ha)	AREA (100-YEAR) (ha)	AREA (ROOF) (ha)	C (2-YEAR) (-)	C (5-YEAR) (-)	C (10-YEAR) (-)	C (100-YEAR) (-)	A x C (2-YEAR) (ha)	ACCUM AxC (2YR) (ha)	A x C (5-YEAR) (ha)	ACCUM. AxC (5YR) (ha)	A x C (10-YEAR) (ha)	ACCUM. AxC (10YR) (ha)	A x C (100-YEAR) (ha)	ACCUM. AxC (100YR) (ha)	T of C (min)	$I_{2\text{-YEAR}}$ (mm/h)	$I_{5\text{-YEAR}}$ (mm/h)	$I_{10\text{-YEAR}}$ (mm/h)	$I_{100\text{-YEAR}}$ (mm/h)	$Q_{CONTROL}$ (L/s)	ACCUM. $Q_{CONTROL}$ (L/s)	Q_{ACT} (CIA/360) (L/s)	LENGTH (m)	PIPE WIDTH OR DIAMETEI (mm)	PIPE HEIGHT (mm)	PIPE SHAPE (-)	MATERIAL (-)	CLASS (-)	SLOPE %	Q_{CAP} (FULL) (L/s)	% FULL (-)	VEL. (FULL) (m/s)	VEL. (ACT) (m/s)	TIME OF FLOW (min)
BLOCK 24	BLK 24	MAIN	0.00	0.56	0.00	0.00	0.00	0.00	0.70	0.00	0.00	0.000	0.000	0.392	0.392	0.000	0.000	0.000	0.000	10.00	76.81	104.19	122.14	178.56	0.0	0.0	113.5	140.0	375	375	CIRCULAR	PVC	SDR 35	0.50	116.6	**97.34%**	1.11	1.15	2.02
																				12.02									375	375									
BLOCK 43	BLK 43	MAIN	0.00	0.16	0.00	0.00	0.00	0.00	0.63	0.00	0.00	0.000	0.000	0.101	0.101	0.000	0.000	0.000	0.000	10.00	76.81	104.19	122.14	178.56	0.0	0.0	29.2	40.0	300	300	CIRCULAR	PVC	SDR 35	0.50	68.0	**42.91%**	0.97	0.79	0.85
																				10.85									300	300									
BLOCK 46	BLK 46	MAIN	0.00	0.73	0.00	0.00	0.00	0.00	0.70	0.00	0.00	0.000	0.000	0.511	0.511	0.000	0.000	0.000	0.000	10.00	76.81	104.19	122.14	178.56	0.0	0.0	147.9	200.0	450	450	CIRCULAR	CONCRETE	100-D	0.35	176.0	**84.05%**	1.07	1.07	3.11
																				13.11									450	450									
BLOCK 104	BLK 104	MAIN	0.00	0.33	0.00	0.00	0.00	0.00	0.60	0.00	0.00	0.000	0.000	0.198	0.198	0.000	0.000	0.000	0.000	10.00	76.81	104.19	122.14	178.56	0.0	0.0	57.3	70.0	300	300	CIRCULAR	PVC	SDR 35	0.50	68.0	**84.29%**	0.97	0.97	1.21
																				11.21									300	300									

Stormwater Management Calculations

File No: **160401718**
Project: **Cavanagh Trails West Blocks 24, 43, 46 & 104**
Date: **DATE**

SWM Approach:
Target flows outlined in Trails West - Cope Drive Units, Site Servicing and Stormwater Management Report prepared by Stantec Consulting, dated April 20, 2016.

Post-Development Site Conditions:

Overall Runoff Coefficient for Site and Sub-Catchment Areas

Runoff Coefficient Table

Catchment Type	Sub-catchment Area ID / Description		Area (ha) "A"		Runoff Coefficient "C"	"A x C"		Overall Runoff Coefficient
Uncontrolled - Non-Tributary	BLK43	Hard	0.098		0.9	0.088		
		Soft	0.062		0.2	0.012		
		Subtotal		0.16			0.1008	0.630
Controlled - Tributary	BLK104	Hard	0.189		0.9	0.170		
		Soft	0.141		0.2	0.028		
		Subtotal		0.33			0.198	0.600
Controlled - Tributary	BLK46	Hard	0.521		0.9	0.469		
		Soft	0.209		0.2	0.042		
		Subtotal		0.73			0.511	0.700
Controlled - Tributary	BLK24	Hard	0.400		0.9	0.360		
		Soft	0.160		0.2	0.032		
		Subtotal		0.56			0.392	0.700
Total			**1.780**				**1.202**	
Overall Runoff Coefficient= C:								**0.68**

Total Roof Areas	**0.000 ha**
Total Tributary Surface Areas (Controlled and Uncontrolled)	**1.620 ha**
Total Tributary Area to Outlet	**1.620 ha**
Total Uncontrolled Areas (Non-Tributary)	**0.160 ha**
Total Site	**1.780 ha**

Stormwater Management Calculations

Project #160401718, Cavanagh Trails West Blocks 24, 43, 46 & 104
Modified Rational Method Calculatons for Storage

5 yr Intensity
City of Ottawa

$I = a/(t + b)^c$

a =	998.071
b =	6.053
c =	0.814

t (min)	I (mm/hr)
10	104.19
20	70.25
30	53.93
40	44.18
50	37.65
60	32.94
70	29.37
80	26.56
90	24.29
100	22.41
110	20.82
120	19.47

5 YEAR Predevelopment Target Release from Portion of Site

Area	Target Release Rate (L/s)
Block 24	66
Block 43	Runoff to be directed to Cope Drive and the Monahan Drain through sheet drianage
Block 46	88
Block 104	44
Total*	198

*Total excludes uncontrolled drainage from Block 43

5 YEAR Modified Rational Method for Entire Site

Subdrainage Area: BLK43 — Uncontrolled - Non-Tributary
Area (ha): 0.16
C: 0.63

tc (min)	I (5 yr) (mm/hr)	Qactual (L/s)	Qrelease (L/s)	Qstored (L/s)	Vstored (m^3)
5	141.18	39.56	39.56		
10	104.19	29.20	29.20		
15	83.56	23.41	23.41		
20	70.25	19.69	19.69		
25	60.90	17.06	17.06		
30	53.93	15.11	15.11		
35	48.52	13.60	13.60		
40	44.18	12.38	12.38		
45	40.63	11.39	11.39		
50	37.65	10.55	10.55		
55	35.12	9.84	9.84		
60	32.94	9.23	9.23		

Subdrainage Area: BLK104 — Controlled - Tributary
Area (ha): 0.33
C: 0.60

tc (min)	I (5 yr) (mm/hr)	Qactual (L/s)	Qrelease (L/s)	Qstored (L/s)	Vstored (m^3)
10	104.19	57.35	44.00	13.35	**8.01**
20	70.25	38.67	38.67	0.00	0.00
30	53.93	29.68	29.68	0.00	0.00
40	44.18	24.32	24.32	0.00	0.00
50	37.65	20.73	20.73	0.00	0.00
60	32.94	18.13	18.13	0.00	0.00
70	29.37	16.17	16.17	0.00	0.00
80	26.56	14.62	14.62	0.00	0.00
90	24.29	13.37	13.37	0.00	0.00
100	22.41	12.33	12.33	0.00	0.00
110	20.82	11.46	11.46	0.00	0.00
120	19.47	10.72	10.72	0.00	0.00

Storage: Surface Storage Above CB

Relative Invert Elevation	98.62	m
Relative T/G Elevation	100.00	m
Max Ponding Depth	0.00	m
Downstream W/L	0.00	m

	Stage	Head (m)	Discharge (L/s)	Vreq (cu. m)	Vavail (cu. m)	Volume Check
5-year Water Level	100.00	1.38	44.00	8.01	48.00	OK

Subdrainage Area: BLK46 — Controlled - Tributary
Area (ha): 0.73
C: 0.70

tc (min)	I (5 yr) (mm/hr)	Qactual (L/s)	Qrelease (L/s)	Qstored (L/s)	Vstored (m^3)
10	104.19	148.01	88.00	60.01	**36.01**
20	70.25	99.80	88.00	11.80	14.16
30	53.93	76.61	76.61	0.00	0.00
40	44.18	62.77	62.77	0.00	0.00
50	37.65	53.49	53.49	0.00	0.00
60	32.94	46.80	46.80	0.00	0.00
70	29.37	41.73	41.73	0.00	0.00
80	26.56	37.73	37.73	0.00	0.00
90	24.29	34.50	34.50	0.00	0.00
100	22.41	31.83	31.83	0.00	0.00
110	20.82	29.58	29.58	0.00	0.00
120	19.47	27.66	27.66	0.00	0.00

Storage: Surface Storage Above CB

Relative Invert Elevation	98.62	m
Relative T/G Elevation	100.00	m
Max Ponding Depth	0.00	m
Downstream W/L	0.00	m

Project #160401718, Cavanagh Trails West Blocks 24, 43, 46 & 104
Modified Rational Method Calculatons for Storage

100 yr Intensity
City of Ottawa

$I = a/(t + b)^c$

a =	1735.688
b =	6.014
c =	0.820

t (min)	I (mm/hr)
10	178.56
20	119.95
30	91.87
40	75.15
50	63.95
60	55.89
70	49.79
80	44.99
90	41.11
100	37.90
110	35.20
120	32.89

100 YEAR Predevelopment Target Release from Portion of Site

Area	Target Release Rate (L/s)
Block 24	66
Block 43	Runoff to be directed to Cope Drive and the Monahan Drain through sheet drianage
Block 46	88
Block 104	44
Total*	198

*Total excludes uncontrolled drainage from Block 43

100 YEAR Modified Rational Method for Entire Site

Subdrainage Area: BLK43 — Uncontrolled - Non-Tributary
Area (ha): 0.16
C: 0.79

tc (min)	I (100 yr) (mm/hr)	Qactual (L/s)	Qrelease (L/s)	Qstored (L/s)	Vstored (m^3)
10	178.56	62.55	62.55		
20	119.95	42.02	42.02		
30	91.87	32.18	32.18		
40	75.15	26.32	26.32		
50	63.95	22.40	22.40		
60	55.89	19.58	19.58		
70	49.79	17.44	17.44		
80	44.99	15.76	15.76		
90	41.11	14.40	14.40		
100	37.90	13.28	13.28		
110	35.20	12.33	12.33		
120	32.89	11.52	11.52		

Subdrainage Area: BLK104 — Controlled - Tributary
Area (ha): 0.33
C: 0.75

tc (min)	I (100 yr) (mm/hr)	Qactual (L/s)	Qrelease (L/s)	Qstored (L/s)	Vstored (m^3)
10	178.56	122.86	44.00	78.86	**47.31**
20	119.95	82.53	44.00	38.53	46.24
30	91.87	63.21	44.00	19.21	34.58
40	75.15	51.70	44.00	7.70	18.49
50	63.95	44.00	44.00	0.00	0.01
60	55.89	38.46	38.46	0.00	0.00
70	49.79	34.26	34.26	0.00	0.00
80	44.99	30.96	30.96	0.00	0.00
90	41.11	28.29	28.29	0.00	0.00
100	37.90	26.08	26.08	0.00	0.00
110	35.20	24.22	24.22	0.00	0.00
120	32.89	22.63	22.63	0.00	0.00

Storage: Surface Storage Above CB

Relative Invert Elevation	98.62	m
Relative T/G Elevation	100.00	m
Max Ponding Depth	0.20	m
Downstream W/L	0.00	m

	Stage	Head (m)	Discharge (L/s)	Vreq (cu. m)	Vavail (cu. m)	Volume Check
100-year Water Level	100.20	1.58	44.00	47.31	48.00	OK
					0.69	

Subdrainage Area: BLK46 — Controlled - Tributary
Area (ha): 0.73
C: 0.88

tc (min)	I (100 yr) (mm/hr)	Qactual (L/s)	Qrelease (L/s)	Qstored (L/s)	Vstored (m^3)
10	178.56	317.07	88.00	229.07	137.44
20	119.95	213.00	88.00	125.00	**150.00**
30	91.87	163.13	88.00	75.13	135.24
40	75.15	133.44	88.00	45.44	109.05
50	63.95	113.56	88.00	25.56	76.69
60	55.89	99.25	88.00	11.25	40.51
70	49.79	88.41	88.00	0.41	1.73
80	44.99	79.89	79.89	0.00	0.00
90	41.11	73.00	73.00	0.00	0.00
100	37.90	67.31	67.31	0.00	0.00
110	35.20	62.51	62.51	0.00	0.00
120	32.89	58.41	58.41	0.00	0.00

Storage: Surface Storage Above CB

Relative Invert Elevation	98.62	m
Relative T/G Elevation	100.00	m
Max Ponding Depth	0.20	m
Downstream W/L	0.00	m

Stormwater Management Calculations

Project #160401718, Cavanagh Trails West Blocks 24, 43, 46 & 104
Modified Rational Method Calculatons for Storage

	Stage	Head (m)	Discharge (L/s)	Vreq (cu. m)	Vavail (cu. m)	Volume Check
5-year Water Level	100.00	1.38	88.00	36.01	150.00	OK

Subdrainage Area: BLK24 — Controlled - Tributary
Area (ha): 0.56
C: 0.70

tc (min)	I (5 yr) (mm/hr)	Qactual (L/s)	Qrelease (L/s)	Qstored (L/s)	Vstored (m^3)
10	104.19	113.55	66.00	47.55	**28.53**
20	70.25	76.56	66.00	10.56	12.67
30	53.93	58.77	58.77	0.00	0.00
40	44.18	48.15	48.15	0.00	0.00
50	37.65	41.03	41.03	0.00	0.00
60	32.94	35.90	35.90	0.00	0.00
70	29.37	32.01	32.01	0.00	0.00
80	26.56	28.95	28.95	0.00	0.00
90	24.29	26.47	26.47	0.00	0.00
100	22.41	24.42	24.42	0.00	0.00
110	20.82	22.69	22.69	0.00	0.00
120	19.47	21.21	21.21	0.00	0.00

Storage: Surface Storage Above CB

Relative Invert Elevation	98.62	m
Relative T/G Elevation	100.00	m
Max Ponding Depth	0.00	m
Downstream W/L	0.00	m

	Stage	Head (m)	Discharge (L/s)	Vreq (cu. m)	Vavail (cu. m)	Volume Check
5-year Water Level	100.00	1.38	66.00	28.53	117.00	OK

SUMMARY TO OUTLET

			Vrequired	Vavailable*	
Tributary Area	1.620	ha			
Total 5yr Flow to Sewer	110	L/s	73	315 m^3	Ok
Non-Tributary Area	0.160	ha			
Total 5yr Flow Uncontrolled	40	L/s			
Total Area	1.780	ha			
Total 5yr Flow	150	L/s			
Target	238	L/s			
(including uncontrolled flow from Block 43)					

Project #160401718, Cavanagh Trails West Blocks 24, 43, 46 & 104
Modified Rational Method Calculatons for Storage

	Stage	Head (m)	Discharge (L/s)	Vreq (cu. m)	Vavail (cu. m)	Volume Check
100-year Water Level	100.20	1.58	88.00	150.00	150.00	OK
					0.00	

Subdrainage Area: BLK24 — Controlled - Tributary
Area (ha): 0.56
C: 0.88

tc (min)	I (100 yr) (mm/hr)	Qactual (L/s)	Qrelease (L/s)	Qstored (L/s)	Vstored (m^3)
10	178.56	243.23	66.00	177.23	106.34
20	119.95	163.40	66.00	97.40	**116.88**
30	91.87	125.14	66.00	59.14	106.46
40	75.15	102.36	66.00	36.36	87.27
50	63.95	87.12	66.00	21.12	63.35
60	55.89	76.14	66.00	10.14	36.50
70	49.79	67.82	66.00	1.82	7.66
80	44.99	61.29	61.29	0.00	0.00
90	41.11	56.00	56.00	0.00	0.00
100	37.90	51.63	51.63	0.00	0.00
110	35.20	47.95	47.95	0.00	0.00
120	32.89	44.81	44.81	0.00	0.00

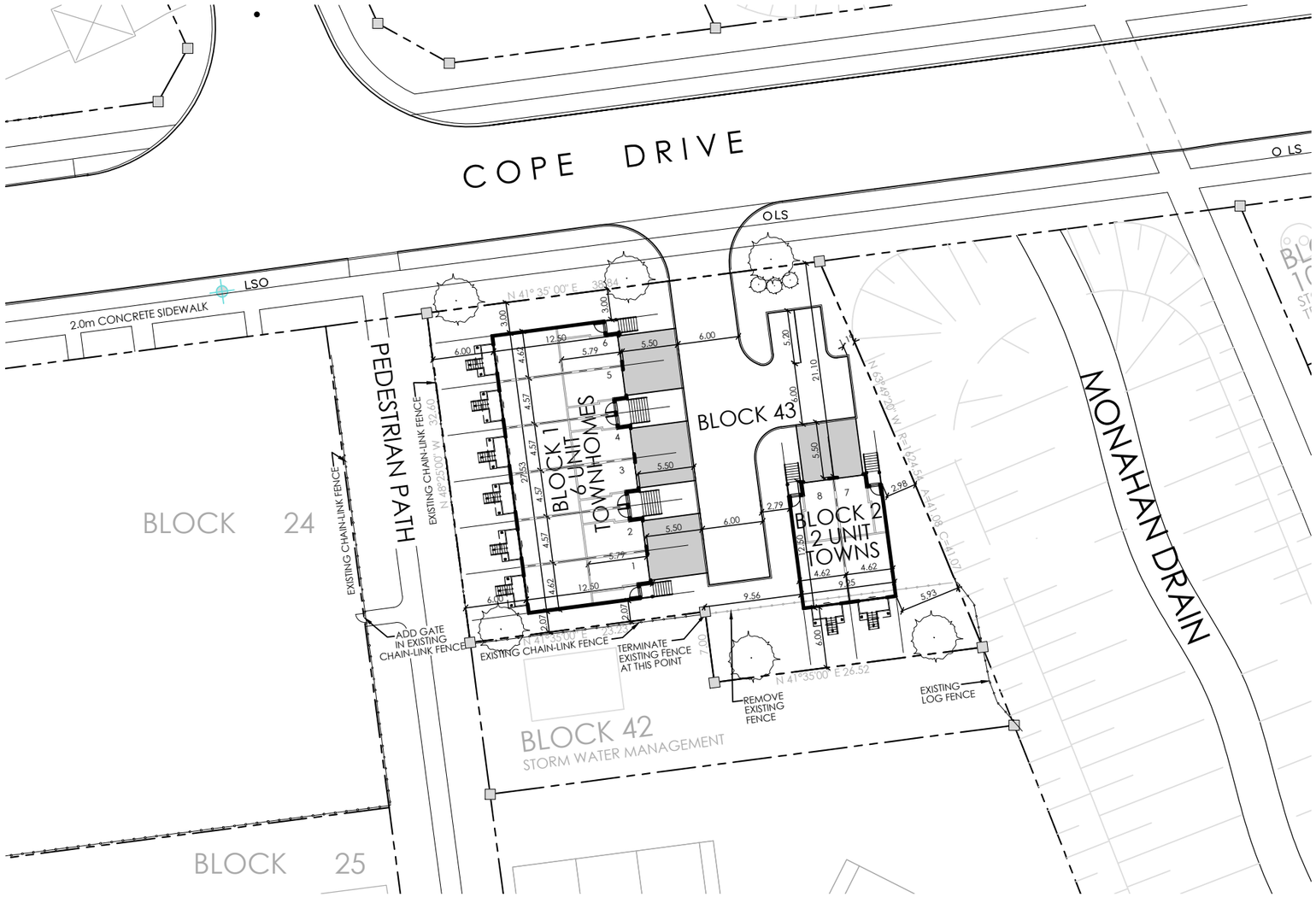
Storage: Surface Storage Above CB

Relative Invert Elevation	98.62	m
Relative T/G Elevation	100.00	m
Max Ponding Depth	0.20	m
Downstream W/L	0.00	m

	Stage	Head (m)	Discharge (L/s)	Vreq (cu. m)	Vavail (cu. m)	Volume Check
100-year Water Level	100.20	1.58	66.00	116.88	117.00	OK
					0.12	

SUMMARY TO OUTLET

			Vrequired	Vavailable*	
Tributary Area	1.620	ha			
Total 100yr Flow to Sewer	198	L/s	314	315 m^3	Ok
Non-Tributary Area	0.160	ha			
Total 100yr Flow Uncontrolled	63	L/s			
Total Area	1.780	ha			
Total 100yr Flow	261	L/s			
Target	261	L/s			
(including uncontrolled flow from Block 43)					



SCALE 0 10 20 30m

M. David Blakely
Architect Inc.
2200 Prince of Wales Dr. - Suite 101
Ottawa, Ontario K2E 6Z9
Phone (613) 226-8811 Fax (613) 226-7942

GENERAL NOTES:
1. THE CONTRACTOR IS RESPONSIBLE FOR CHECKING AND VERIFYING ALL DIMENSIONS, ANY DISCREPANCY MUST BE REPORTED TO M. DAVID BLAKELY ARCHITECT INC.
2. ALL WORK AND MATERIALS TO BE IN COMPLIANCE WITH ALL CODES, REGULATIONS, AND BY-LAWS.
3. ADDITIONAL DRAWINGS MAY BE ISSUED FOR CLARIFICATION TO ASSIST THE PROPER EXECUTION OF WORK. SUCH DRAWINGS WILL HAVE THE SAME MEANING AND INTENT AS IF THEY WERE INCLUDED WITH THE PLANS IN CONTRACT DOCUMENTS.
4. DO NOT SCALE DRAWINGS.
5. THIS DRAWING SHALL NOT BE USED OR COPIED WITHOUT THE AUTHORIZATION OF THE ARCHITECT.
6. THIS DRAWING SHALL NOT BE USED FOR PERMIT OR CONSTRUCTION UNLESS THE DRAWING BEARS THE ARCHITECT'S SEAL AND SIGNATURE.

POST SCHEDULE:
P1- 3" DIA. ADJUSTALE STEEL TELEPOST
8500 POUND CAP. (MIN.)
P2- 2-2"x4.6 OR 8" (AS APPLICABLE)
P3- 3-2"x4.6 OR 8" (AS APPLICABLE)
P4- 4-2"x4.6 OR 8" (AS APPLICABLE)
P5- 5-2"x4.6 OR 8" (AS APPLICABLE)
P6- HSS 3"x3"x.188" c/w 5"x3/8"x8" B.P. & C.P.

BRICK LINTELS:

OPENINGS UP TO	L SIZE
5'-0"	L 3 1/2" x 3 1/2" x 5/16"
7'-0"	L 4" x 3 1/2" x 5/16"
8'-0"	L 5" x 3 1/2" x 5/16"
9'-0"	L 5" x 3 1/2" x 3/8"
10'-0"	L 6" x 4" x 3/8"

6"min. BEARING EACH END

SEAL:

No.	DATE	DESCRIPTION	INIT.
10.			
9.			
8.			
7.			
6.			
5.			
4.			
3.			
2.	05/05/22	FOR REVIEW	SM
1.	10/05/21	FOR REVIEW	JB

REVISIONS

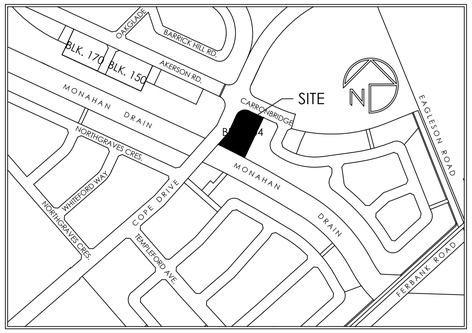
A - DETAIL NUMBER
B - SHEET NUMBER (DETAIL REQUIRED)
C - SHEET NUMBER (DETAIL LOCATION)

PROJECT:
BLOCK 43
COPE DRIVE
OTTAWA, ONTARIO

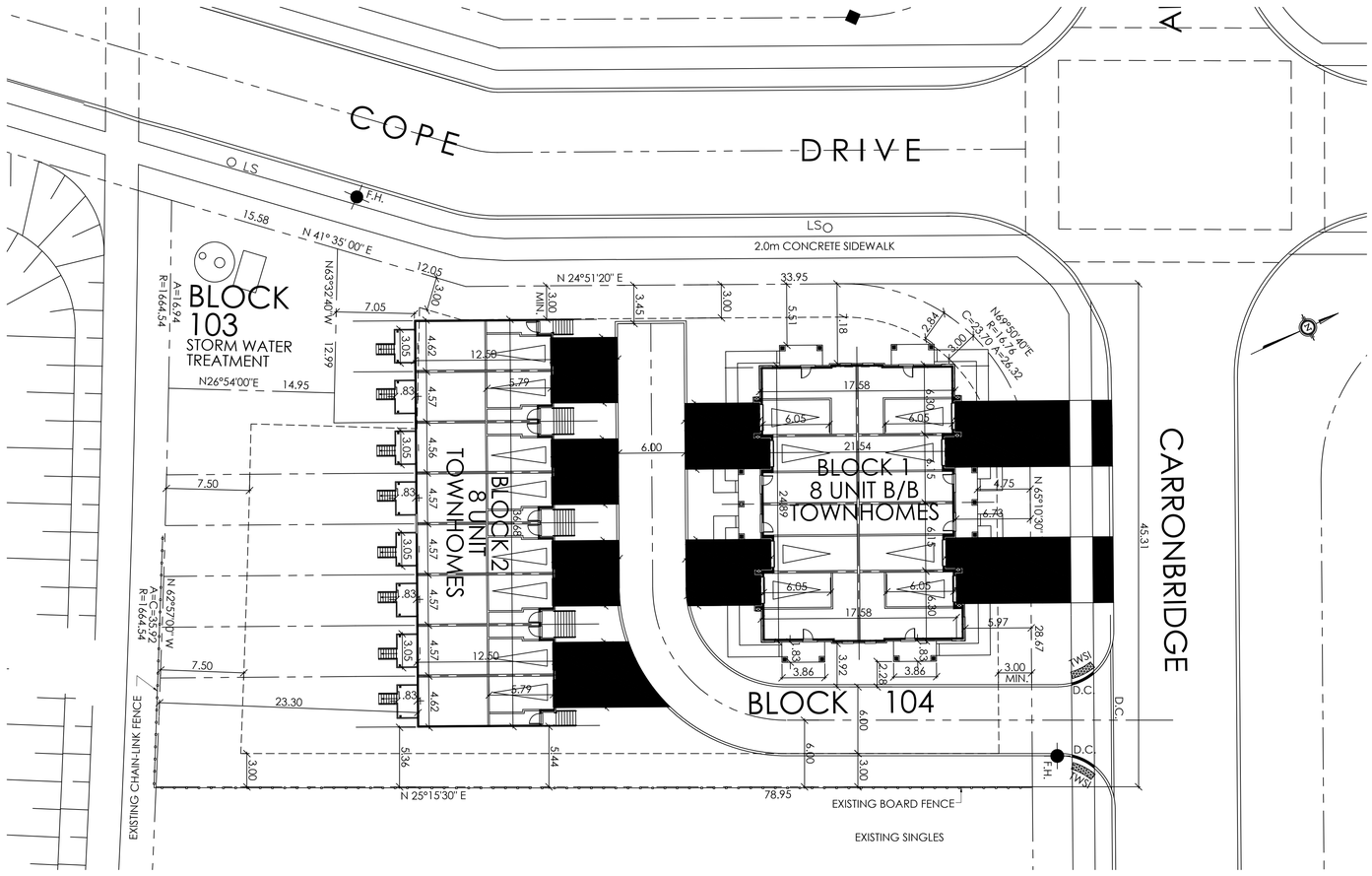
CLIENT: PATTEN HOMES 2000

DRAWING TITLE:
CONCEPT SITE PLAN

DATE: MAY, 2021
SCALE: 1:500
SHEET No.: SP-1
DRAWN BY: JB
CHECKED: MDB



KEY PLAN
NOT TO SCALE



SITE INFORMATION - BLOCK 104 :

ZONING : GM [2353] H (14) - PERMITTED USES : - PLANNED UNIT DEVELOPMENT

SITE AREA :	3,345.48 m²
TOTAL BUILDING AREA :	1,523.2 m²
TOTAL FINISHED FLOOR AREA :	4,032.0 m²
FSI - (MAX. 2)	1.2

ZONING:	GM[2353]H(14)	PROVIDED:
LOT AREA (MIN.):	600.0 m²	3,345.48 m²
LOT FRONTAGE :	20.0 m [2353]	45.31 m
FRONT YARD (MIN.) - (MAX.) :	3.0 m - 6.0 m [2353]	5.97 m
CORNER SIDE YARD (MIN.) - (MAX.) :	3.0 m - 6.0 m [2353]	7.18 m
INTERIOR SIDE YARD (MIN.) :	1.5 m [2353]	5.36 m
REAR YARD (MIN.) :	7.5 m	7.05 m
BUILDING HEIGHT (MAX.) :	14.0 m	10.6 m
WIDTH of LANDSCAPED AREA (MIN.) :		
ABUTTING A STREET :	3.0 m	3.0 m
OTHER CASES :	NO MIN.	N/A
NOTES [EXCEPTION 2353] :	if a building or land that is developed in compliance with this by-law is severed or divided into separate ownership, all zone requirements must be maintained on the basis of the whole of the original lot with the exception that each parcel of land created must have a min. lot frontage of 5m or a width of 5m along a driveway that acts as a street	4.57 m
PARKING SPACES :	1 Spaces / UNIT	1 Driveway / 1 Garage
	2.60m-3.1m x 5.20m	Driveway - 2.95m x 5.80 m
PORCH STAIR TO LOT LINE (SECTION 65)	2.0 m	2.84 m
PRIVATE DRIVEWAY WIDTH (MIN.):	2.6 m	Garage 2.95 m
PRIVATE DRIVE/GARAGE LENGTH (MIN.):	5.5 m	Driveway 5.79 m
WALL to PRIVATE DRIVE:	1.8 m	3.92 m

BACK to BACK TOWNHOMES & TOWNHOMES :

BLOCK No. :	BUILDING AREA:	GROSS FLOOR AREA:	No. UNITS:
BLOCK 1 = BACK to BACK TOWNHOMES	429.1 m²	1,152.0 m²	8 UNITS
BLOCK 2 = TOWNHOMES	446.3 m²	2,016.0 m²	8 UNITS
TOTAL =	875.4 m²	4,032.0 m²	16 UNITS

NOTE:
SITE PLAN TO BE READ IN CONJUNCTION WITH :
- SITE SERVICING PLAN PREPARED BY STANTEC.
- LANDSCAPING PLAN PREPARED BY LEVSTEK CONSULTANTS.
- BOUNDARIES DERIVED FROM : PLAN OF SURVEY OF PART OF 4M1383, DATED APRIL 27, 2009. PLAN PREPARED BY ANNIS O'SULLIVAN VOLLEBEKK LTD.

M. David Blakely Architect Inc.
2200 Prince of Wales Dr. - Suite 101
Ottawa, Ontario K2E 6Z9
Phone (613) 226-8811 Fax (613) 226-7942

GENERAL NOTES:
1. THE CONTRACTOR IS RESPONSIBLE FOR CHECKING AND VERIFYING ALL DIMENSIONS. ANY DISCREPANCY MUST BE REPORTED TO M. DAVID BLAKELY ARCHITECT INC.
2. ALL WORK AND MATERIALS TO BE IN COMPLIANCE WITH ALL CODES, REGULATIONS, AND BY-LAWS.
3. ADDITIONAL DRAWINGS MAY BE ISSUED FOR CLARIFICATION TO ASSIST THE PROPER EXECUTION OF WORK. SUCH DRAWINGS WILL HAVE THE SAME MEANING AND INTENT AS IF THEY WERE INCLUDED WITH THE PLANS IN CONTRACT DOCUMENTS.
4. DO NOT SCALE DRAWINGS.
5. THIS DRAWING SHALL NOT BE USED FOR PERMIT OR CONSTRUCTION UNLESS THE DRAWING BEARS THE ARCHITECT'S SEAL AND SIGNATURE.
6. THIS REPRODUCTION SHALL NOT BE ALTERED

CONSTRUCTION NORTH

SEAL

REVISIONS

No.	DATE	DESCRIPTION	INIT.
10.			
9.			
8.			
7.			
6.			
5.			
4.	28/09/21	ZONING INFO ADDED	SM.
3.	29/07/21	FOR REVIEW	SM.
2.	15/06/21	FOR REVIEW	SM.
1.	06/05/21	FOR REVIEW	SM.

REVISIONS

No.	DATE	DESCRIPTION	INIT.
20.			
19.			
18.			
17.			
16.			
15.			
14.			
13.			
12.			SM
11.			SM

PROJECT: 16 UNIT - TOWNHOMES & BACK to BACK TOWNHOMES BLOCK 104 - 80 COPE DRIVE OTTAWA, ONT.

CLIENT

DRAWING TITLE: SITE PLAN

DATE: MAY, 2021. SCALE: 1:250 SHEET No.: SP-1

DRAWN BY: SBM CHECKED: MDB

SITE INFORMATION - BLOCK 46 - 151 COPE DRIVE :

ZONING : GM [2353] H (14) - PERMITTED USES : - PLANNED UNIT DEVELOPMENT

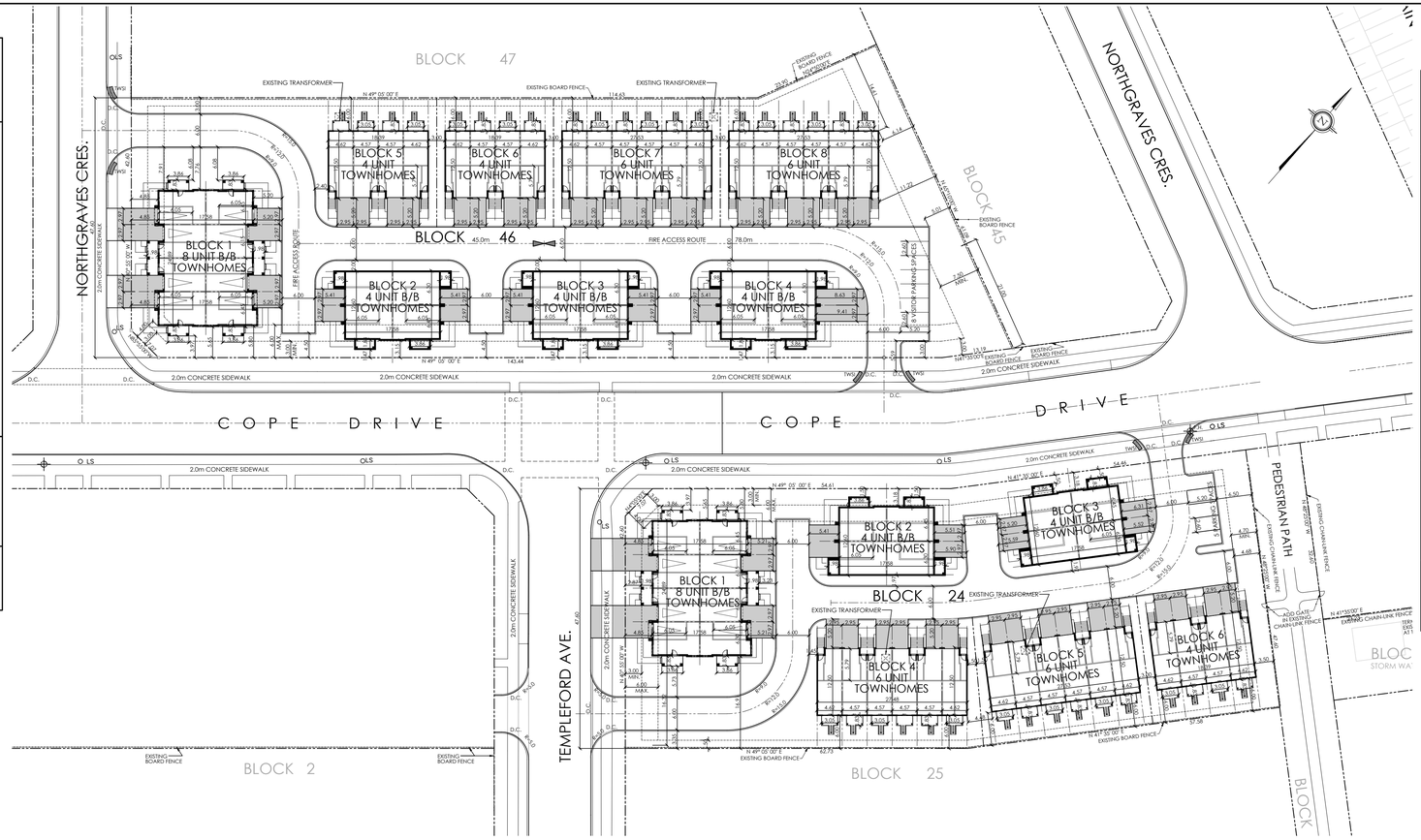
SITE AREA :	7,319.22 m²
TOTAL BUILDING AREA :	2,213.1 m²
TOTAL FINISHED FLOOR AREA :	6,882.0 m²
FSI - (MAX. 2)	0.94

ZONING:	GM[2353]H(14)	PROVIDED:
LOT AREA (MIN.):	600.0 m²	7,319.22 m²
LOT FRONTAGE :	20.0 m [2353]	47.60 m
FRONT YARD (MIN.) - (MAX.) :	3.0 m - 6.0 m [2353]	4.85 m
CORNER SIDE YARD (MIN.) - (MAX.) :	3.0 m - 6.0 m [2353]	3.15 m
INTERIOR SIDE YARD (MIN.) :	1.5 m [2353]	6.00 m
REAR YARD (MIN.) :	7.5 m	6.14 m
BUILDING HEIGHT (MAX.) :	14.0 m	10.6 m
WIDTH of LANDSCAPED AREA (MIN.) :		
ABUTTING A STREET :	3.0 m	3.18 m
OTHER CASES :	NO MIN.	N/A
NOTES [EXCEPTION 2353] :	if a building or land that is developed in compliance with this by-law is severed or divided into separate ownership, all zone requirements must be maintained on the basis of the whole of the original lot with the exception that each parcel of land created must have a min. lot frontage of 5m or a width of 5m along a driveway that acts as a street	
		4.57 m
PARKING SPACES :	1 Spaces / UNIT	1 Driveway / 1 Garage
	2.60m-3.1m x 5.20m	Driveway - 2.95m x 5.20 m
VISITOR PARKING SPACES :	N/A	8 PARKING SPACES
PERMITTED PROJECTIONS (SECTION 65)		
(BALCONY / PORCH)	2.0 m	1.98 m
PORCH STAIR TO LOT LINE (SECTION 65)	0.6 m	1.47 m
PRIVATE DRIVEWAY WIDTH (MIN.):	2.6 m	2.95 m
PRIVATE DRIVE/GARAGE LENGTH (MIN.):	5.5 m	5.79 m
WALL to PRIVATE DRIVE:	1.8 m	2.00 m

BACK to BACK TOWNHOMES & TOWNHOMES :

BLOCK No. :		BUILDING AREA:	GROSS FLOOR AREA:	No. UNITS:
BLOCK 1 =	BACK to BACK TOWNHOMES	429.1 m²	1,152.0 m²	8 UNITS
BLOCK 2 =	BACK to BACK TOWNHOMES	222.2 m²	576.0 m²	4 UNITS
BLOCK 3 =	BACK to BACK TOWNHOMES	222.2 m²	576.0 m²	4 UNITS
BLOCK 4 =	BACK to BACK TOWNHOMES	222.2 m²	576.0 m²	4 UNITS
BLOCK 5 =	3 STOREY TOWNHOMES	223.7 m²	1,008.0 m²	4 UNITS
BLOCK 6 =	3 STOREY TOWNHOMES	223.7 m²	1,008.0 m²	4 UNITS
BLOCK 7 =	3 STOREY TOWNHOMES	335.0 m²	1,512.0 m²	6 UNITS
BLOCK 8 =	3 STOREY TOWNHOMES	335.0 m²	1,512.0 m²	6 UNITS
TOTAL =		2,213.1 m²	6,882.0 m²	40 UNITS

NOTE:
SITE PLAN TO BE READ IN CONJUNCTION WITH :
- SITE SERVICING PLAN PREPARED BY STANTEC.
- LANDSCAPING PLAN PREPARED BY LEVSTEK CONSULTANTS.
- BOUNDARIES DERIVED FROM : PLAN OF SURVEY OF PART OF 4M1383, DATED APRIL 27, 2009. PLAN PREPARED BY ANNIS O'SULLIVAN VOLLEBEKK LTD.



SITE INFORMATION - BLOCK 24 - 140 COPE DRIVE :

ZONING : GM [2354] H (14) - PERMITTED USES : - PLANNED UNIT DEVELOPMENT

SITE AREA :	5,565.64 m²
TOTAL BUILDING AREA :	1,767.2 m²
TOTAL FINISHED FLOOR AREA :	6,336.0 m²
FSI - (MAX. 2)	1.13

ZONING:	GM[2354]H(14)	PROVIDED:
LOT AREA (MIN.):	600.0 m²	5,565.64 m²
LOT FRONTAGE :	20.0 m [2354]	47.60 m
FRONT YARD (MIN.) - (MAX.) :	3.0 m - 6.0 m [2354]	4.85 m
CORNER SIDE YARD (MIN.) - (MAX.) :	3.0 m - 6.0 m [2354]	3.18 m
INTERIOR SIDE YARD (MIN.) :	1.5 m [2354]	6.00 m
REAR YARD (MIN.) :	4.7 m	3.5 m
BUILDING HEIGHT (MAX.) :	14.0 m	10.6 m
WIDTH of LANDSCAPED AREA (MIN.) :		
ABUTTING A STREET :	3.0 m	3.18 m
OTHER CASES :	NO MIN.	N/A
NOTES [EXCEPTION 2354] :	if a building or land that is developed in compliance with this by-law is severed or divided into separate ownership, all zone requirements must be maintained on the basis of the whole of the original lot with the exception that each parcel of land created must have a min. lot frontage of 5m or a width of 5m along a driveway that acts as a street	
		4.57 m
PARKING SPACES :	1 Spaces / UNIT	1 Driveway / 1 Garage
	2.60m-3.1m x 5.20m	Driveway - 2.95m x 5.20 m
VISITOR PARKING SPACES :	N/A	5 PARKING SPACES
PERMITTED PROJECTIONS (SECTION 65)	2.0 m	1.98 m
PORCH STAIR TO LOT LINE (SECTION 65)	0.6 m	1.50 m
PRIVATE DRIVEWAY WIDTH (MIN.):	2.6 m	Garage 2.95 m
PRIVATE DRIVE/GARAGE LENGTH (MIN.):	5.5 m	Driveway 5.79 m
WALL to PRIVATE DRIVE:	1.8 m	1.45 m

BACK to BACK TOWNHOMES :

BLOCK No. :		BUILDING AREA:	GROSS FLOOR AREA:	No. UNITS:
BLOCK 1 =	BACK to BACK TOWNHOMES	429.1 m²	1,152.0 m²	8 UNITS
BLOCK 2 =	BACK to BACK TOWNHOMES	222.2 m²	576.0 m²	4 UNITS
BLOCK 3 =	BACK to BACK TOWNHOMES	222.2 m²	576.0 m²	4 UNITS
BLOCK 4 =	3 STOREY TOWNHOMES	335.0 m²	1,512.0 m²	6 UNITS
BLOCK 5 =	3 STOREY TOWNHOMES	335.0 m²	1,512.0 m²	6 UNITS
BLOCK 6 =	3 STOREY TOWNHOMES	223.7 m²	1,008.0 m²	4 UNITS
TOTAL =		1,767.2 m²	6,336.0 m²	32 UNITS

NOTE:
SITE PLAN TO BE READ IN CONJUNCTION WITH :
- SITE SERVICING PLAN PREPARED BY STANTEC.
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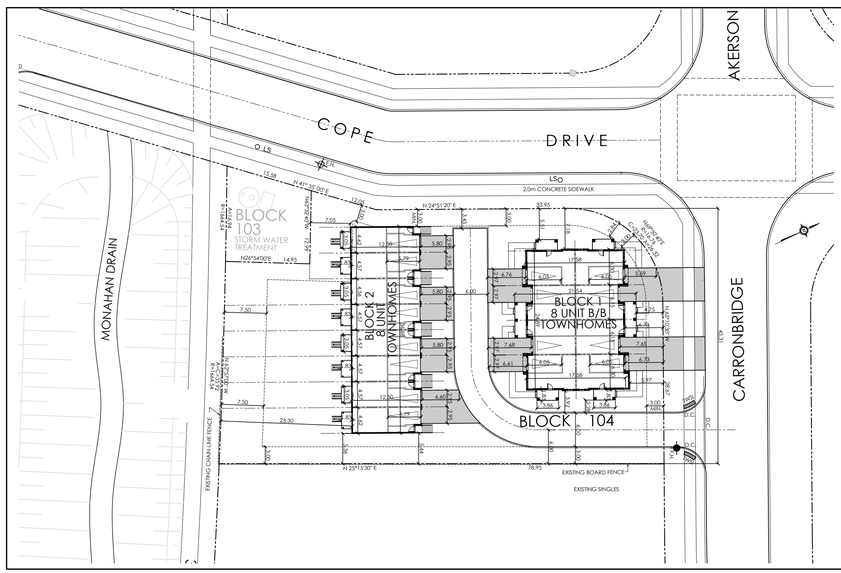
- BOUNDARIES DERIVED FROM : PLAN OF SURVEY OF PART OF 4M1383, DATED APRIL 27, 2009. PLAN PREPARED BY ANNIS O'SULLIVAN VOLLEBEKK LTD.



SITE INFORMATION - BLOCK 104 :

ZONING : GM [2353] H (14) - PERMITTED USES : - PLANNED UNIT DEVELOPMENT

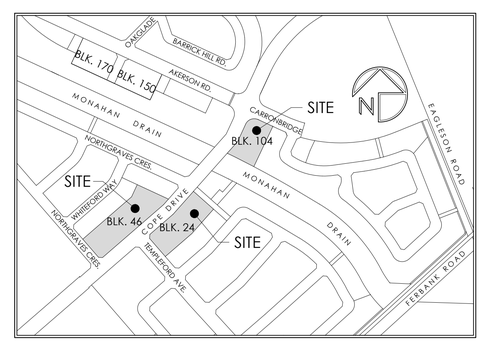
SITE AREA :	3,345.48 m²
TOTAL BUILDING AREA :	1,523.2 m²
TOTAL FINISHED FLOOR AREA :	4,032.0 m²
FSI - (MAX. 2)	1.2

ZONING:	GM[2353]H(14)	PROVIDED:
LOT AREA (MIN.):	600.0 m²	3,345.48 m²
LOT FRONTAGE :	20.0 m [2353]	45.31 m
FRONT YARD (MIN.) - (MAX.) :	3.0 m - 6.0 m [2353]	5.97 m
CORNER SIDE YARD (MIN.) - (MAX.) :	3.0 m - 6.0 m [2353]	7.18 m
INTERIOR SIDE YARD (MIN.) :	1.5 m [2353]	5.36 m
REAR YARD (MIN.) :	7.5 m	7.05 m
BUILDING HEIGHT (MAX.) :	14.0 m	10.6 m
WIDTH of LANDSCAPED AREA (MIN.) :		
ABUTTING A STREET :	3.0 m	3.0 m
OTHER CASES :	NO MIN.	N/A
NOTES [EXCEPTION 2353] :	if a building or land that is developed in compliance with this by-law is severed or divided into separate ownership, all zone requirements must be maintained on the basis of the whole of the original lot with the exception that each parcel of land created must have a min. lot frontage of 5m or a width of 5m along a driveway that acts as a street	
		4.57 m
PARKING SPACES :	1 Spaces / UNIT	1 Driveway / 1 Garage
	2.60m-3.1m x 5.20m	Driveway - 2.95m x 5.80 m
PORCH STAIR TO LOT LINE (SECTION 65)	2.0 m	2.84 m
PRIVATE DRIVEWAY WIDTH (MIN.):	2.6 m	Garage 2.95 m
PRIVATE DRIVE/GARAGE LENGTH (MIN.):	5.5 m	Driveway 5.79 m
WALL to PRIVATE DRIVE:	1.8 m	3.92 m

BACK to BACK TOWNHOMES & TOWNHOMES :

BLOCK No. :		BUILDING AREA:	GROSS FLOOR AREA:	No. UNITS:
BLOCK 1 =	BACK to BACK TOWNHOMES	446.3 m²	2,016.0 m²	8 UNITS
BLOCK 2 =	TOWNHOMES	875.4 m²	4,032.0 m²	16 UNITS
TOTAL =				

NOTE:
SITE PLAN TO BE READ IN CONJUNCTION WITH :
- SITE SERVICING PLAN PREPARED BY STANTEC.
- LANDSCAPING PLAN PREPARED BY LEVSTEK CONSULTANTS.
- BOUNDARIES DERIVED FROM : PLAN OF SURVEY OF PART OF 4M1383, DATED APRIL 27, 2009. PLAN PREPARED BY ANNIS O'SULLIVAN VOLLEBEKK LTD.



KEY PLAN
NOT TO SCALE

M. David Blakely
Architect Inc.
2200 Prince of Wales Dr. - Suite 101
Ottawa, Ontario K2E 6Z9
Phone (613) 226-8811 Fax (613) 226-7942

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6. THIS REPRODUCTION SHALL NOT BE ALTERED

CONSTRUCTION NORTH

SEAL

REVISIONS

No.	DATE	DESCRIPTION	INIT.
9.			
8.			
7.			
6.	16/06/22	REV. BLK. 24 - BLOCK 1 TO 8 UNITS	
		REV. BLK. 46 - BLOCK 1 TO 8 UNITS	SM
5.	30/03/22	COMBINING COPE SITE PLANS	SM
4.	28/09/21	ZONING INFO ADDED	SM
3.	29/07/21	FOR REVIEW	SM
2.	15/06/21	FOR REVIEW	SM
1.	06/05/21	FOR REVIEW	SM

REVISIONS

No.	DATE	DESCRIPTION	INIT.
19.			
18.			
17.			
16.			
15.			
14.			
13.			
12.			
11.			SM
10.			SM

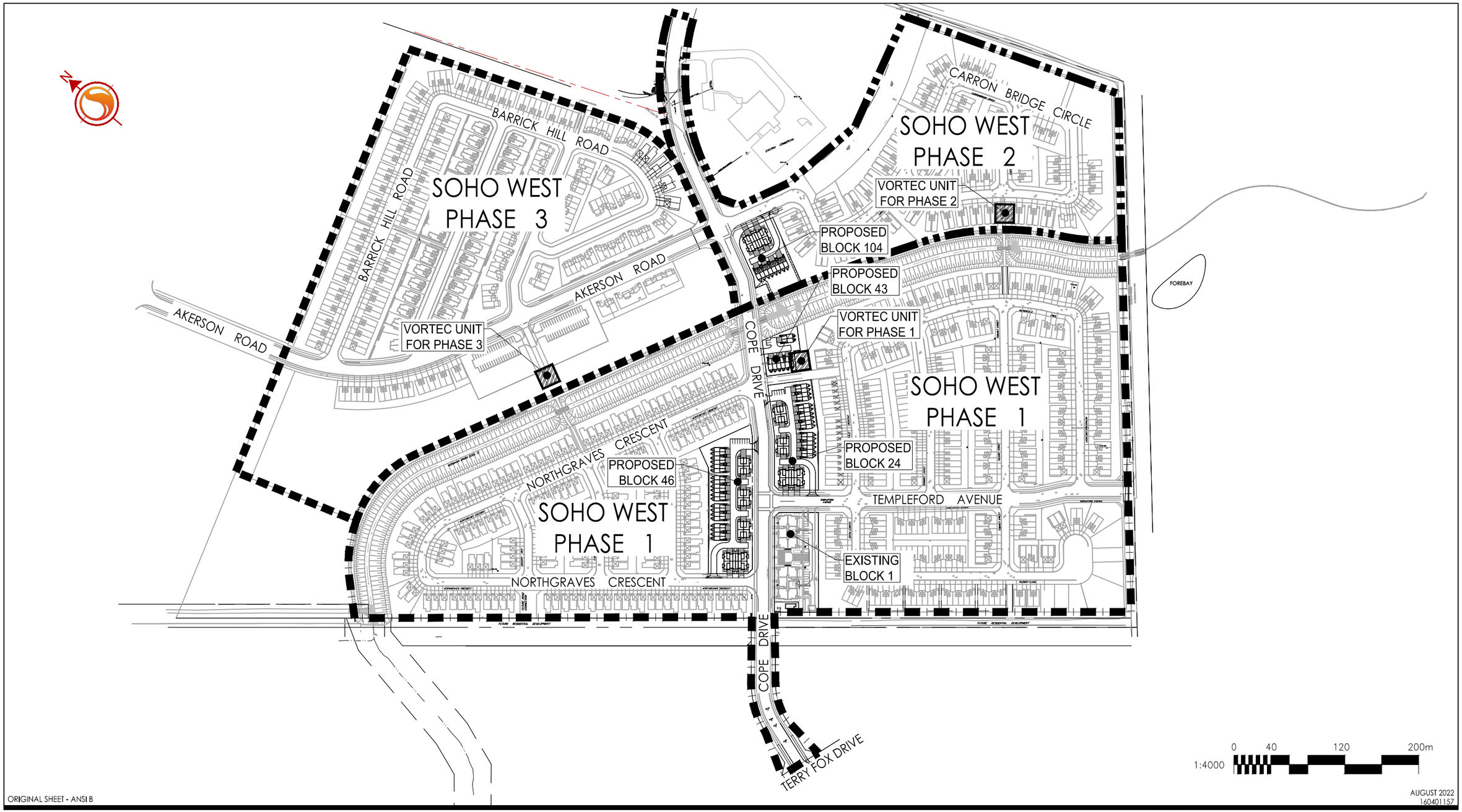
PROJECT: 88 UNIT - TOWNHOMES & BACK to BACK TOWNHOMES BLOCKS 24, 46 & 104 COPE DRIVE OTTAWA, ONT.

CLIENT: PATTEN HOMES 2000

DRAWING TITLE: SITE PLAN

DATE: MAY, 2021. | SCALE: 1:500 | SHEET No.: SP-1

DRAWN BY: SBM | CHECKED: MDB



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ORIGINAL SHEET - ANSI B

AUGUST 2022
160401157

Legend

Notes

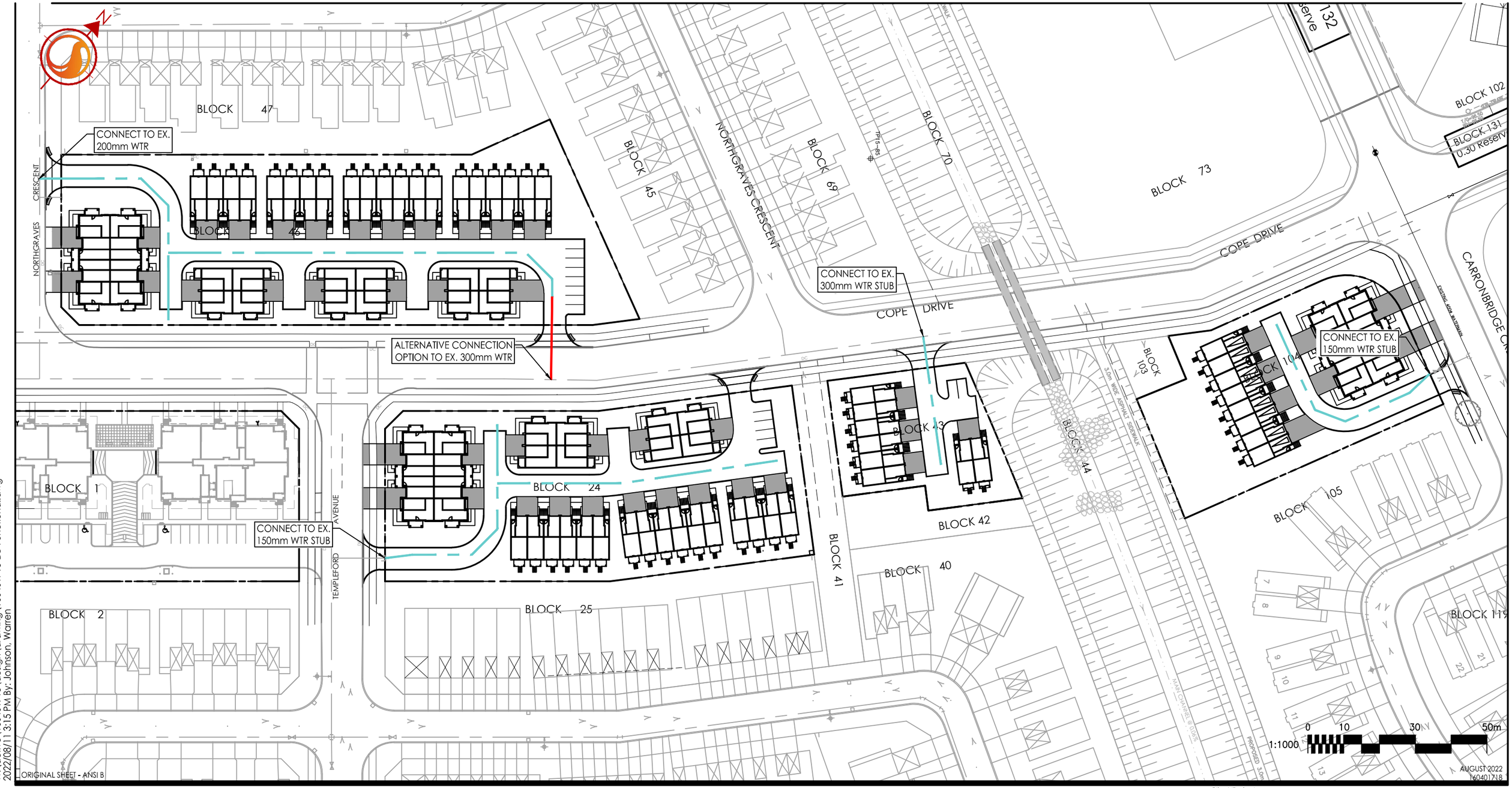
Stantec

400 - 1331 Clyde Avenue
Ottawa ON
Tel. 613 722-4420
www.stantec.com

Client/Project
CAVANAGH CONSTRUCTION LTD.
TRAILS WEST
COPE DRIVE UNITS

Figure No.
1.0

Title
PROPOSED DEVELOPMENT LOCATION



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CAVANAGH CONSTRUCTION LTD.
TRAILS WEST
OTTAWA, ON

Figure No.
2.0

Title
FUNCTIONAL WATER SERVICING FIGURE

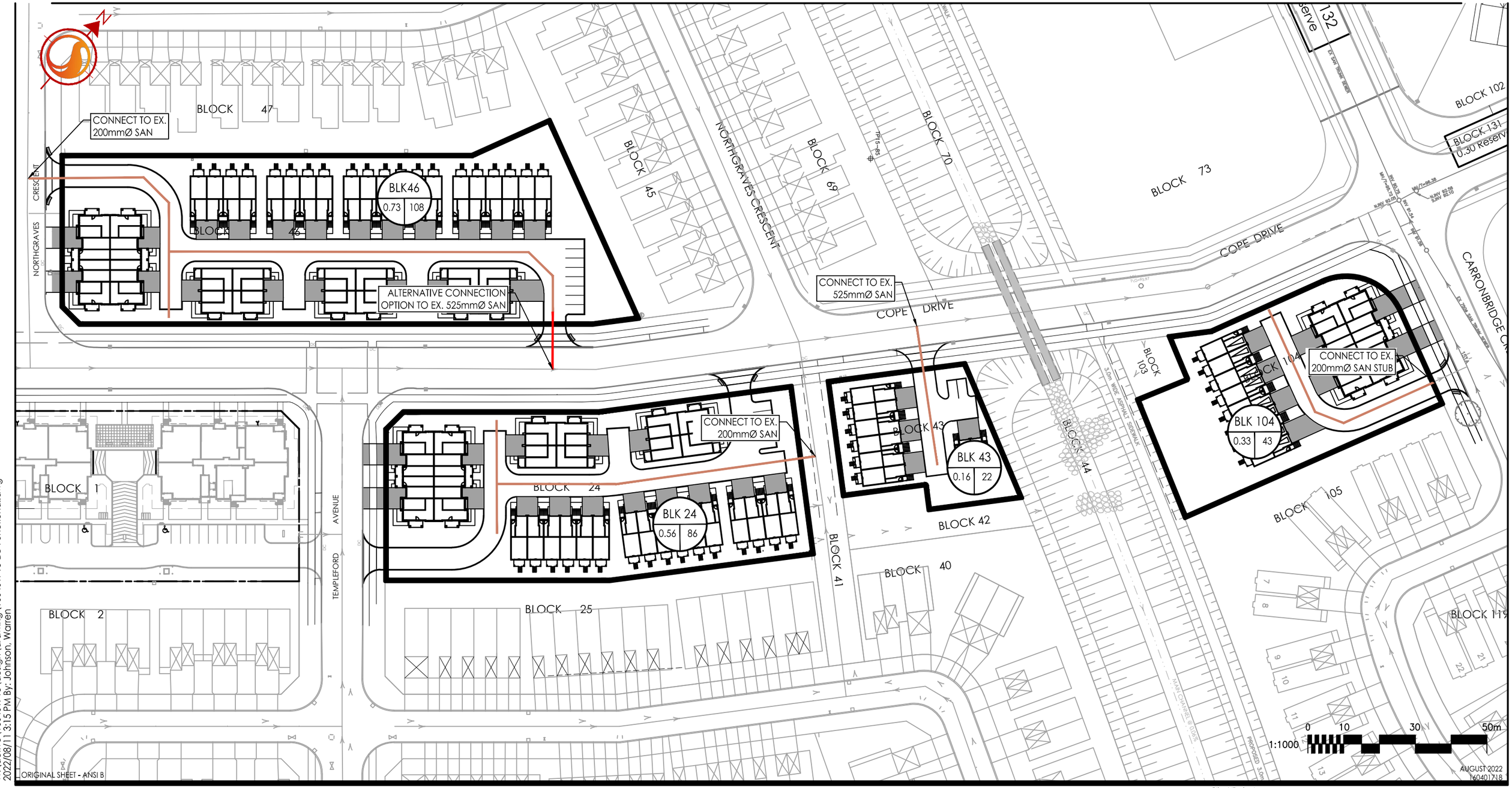

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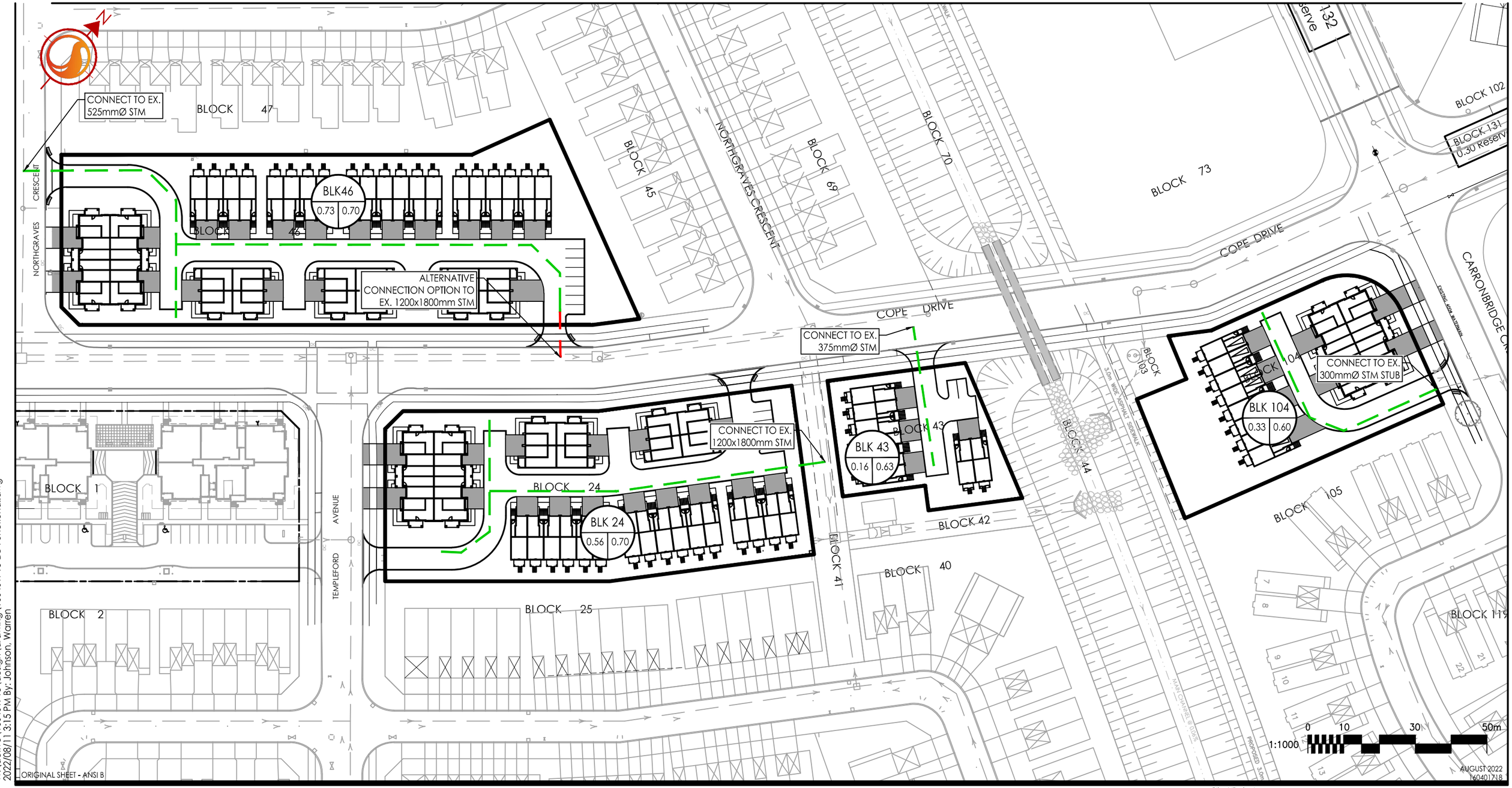
Figure No.
3.0

Title
FUNCTIONAL SANITARY SERVICING FIGURE



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TRAILS WEST
OTTAWA, ON

Figure No.
4.0

Title
FUNCTIONAL STORMWATER SERVICING FIGURE