

October 3, 2023
 File: 161413832

Attention: Michael Pease, Manager, Development Planning

Development and Compliance Services
 City Hall – 6th Floor
 300 Dufferin Avenue
 London Ontario PO BOX 5035 N6A 4L9

Dear Michael,

Reference: Bostwick Site 5 – Water Servicing Brief

This letter is written to re-confirm the adequacy of the existing water network servicing the existing and new proposed apartment buildings at Bostwick – Site 5 in the City of London.

Per the Stantec site plan dated September 30, 2022, the proposed development consists of a 12 storey apartment building with 120 units and 162.5 m² commercial GFA. Additionally, there is an existing 17 storey apartment building with 214 residential units. This corresponds with a total population of 645 using the City of London Standards and the Ontario Building Code (OBC) Table 8.2.1.3. Supporting calculations shown below.

Table 1. Design Population Calculation

Description	Floor Area (m ²)	# of Units	Occupancy Load		Sewage Design Flow		Daily Flow (L/day)	Equivalent Population (based on City of London flow of 230 L/cap/day)
			Reference	Rate	Reference	Rate		
Ex. 17 Storey Apartment Building		214	C.o.L. design standards	1.6 cap/unit	OBC 8.2.1.3.A. - apartment flow	275 L/cap/day	94,325	411
Proposed 12 Storey Apartment Building		120	C.o.L. design standards	1.6 cap/unit	OBC 8.2.1.3.A. - apartment flow	275 L/cap/day	52,800	230
Proposed Commercial Space	162.5				OBC 8.2.1.3.B. – retail flow	5 L/day/m ²	813	4



October 3, 2023
Michael Pease, Manager, Development Planning
Page 2 of 8

Reference: Bostwick Site 5 – Water Servicing Brief

Using the average daily domestic demand of 255 L/cap/day, this generates an average water demand of 72.78 L/min (104,805 L/day) corresponding with the existing 17 storey building and 41.44L/min (59,670 L/day) corresponding with the proposed 12 storey building. The proposed building will be serviced by a single new connection from the existing 250mm watermain along Yorkville Street, which ultimately connects to the existing 400mm high-level feeder main at Southdale Road West.

Water Supply for Fire Protection

The proposed buildings at Bostwick – Site 5 will include provisions for firefighting that include the following considerations:

In accordance with the City of London Design standards for private sites, the proposed residential building at Bostwick site 5 will include provisions for firefighting in accordance with the Ontario Building Code(OBC). Based on the residential occupancy from the ground floor to the twelfth floor and 993 m² building footprint, the fire flow requirement is **150 L/s** (9000 L/min) at 20 psi (140 kPa). Similarly, the existing seventeen storey building with a 1,595 m² building footprint will also have a fire flow requirement of **150 L/s** (9000 L/min) at 20 psi (140 kPa).

However, the two buildings are anticipated to be protected with sprinklers and as a result the fire flow requirements may be reduced due to following considerations.

- These buildings will be protected by an automatic sprinkler system, which as per NFPA 14 5-9.1.3 is a combined system where the standpipe inside and outside hose stream demand will not be required to exceed 1000 gpm (3,785 L/min). Therefore, a separate sprinkler only demand is not required.
- This development has a light hazard occupancy classification for which the acceptable flow at the base of the riser (including hose stream allowance) is 750 gpm (2,840 L/min) per NFPA 13-Table 11.2.2.1. This flow rate is considered conservative and is intended to be higher than the actual sprinkler design requirements when they become available. This will be verified once the information is available.
- The residential buildings will include a standpipe system and from the provisions of OBC 3.2, 65mm hose connections will be required for which the minimum flow rate is 945 L/min at each of the two most remote outlets simultaneously (1890 L/min total) per OBC-3.2.9.7. A pump within the building will boost pressure to the remote connection locations.

The fire flow requirements **63 L/s (3,785 L/min)** will be used to confirm the adequacy of the proposed 200mm water service to each building and to confirm fire protection at the proposed fire hydrant.



October 3, 2023
Michael Pease, Manager, Development Planning
Page 3 of 8

Reference: Bostwick Site 5 – Water Servicing Brief

Water Quality

We note that the Yorkville Street municipal watermain shall be flushed by an automatic flushing device to maintain water turnover prior to unit demands coming online.

A temporary automatic flushing device is in place at the south limit of the subject site and shall remain at the dead-end of the municipal watermain at Yorkville until looping is achieved. The pertaining automatic flushing device flow setting requirements are detailed below along with supporting calculations attached under this cover.

- 25mm temporary automatic flushing device at J-7, at the south limit of Yorkville Street re-programmed to flush 4 minutes, once daily or 11 minutes every 72 hours (2.31 L/s)

No automatic flusher is required on the private site for the private water service to the proposed 12-storey building. Premise isolation is required to ensure no negative impacts arise within the municipal watermain system. Additionally, it is anticipated that the municipal watermain looping will occur prior to occupancy of the proposed building. No quality issues are anticipated as further displayed in the ultimate subdivision model results.

Model Scenarios

The following summarizes the scenarios run with WaterCAD software to analyze the sufficiency of the proposed water supply network in the vicinity of the Bostwick -Site 5 site.

- Average day– 41.44 L/min at the proposed residential building connection (J-5) and 72.78 L/min at the existing building connection (J-4);
- Maximum hour – 323.23 L/min at the proposed residential building connection (J-5) and 567.68 L/min at the existing building connection (J-4), using the City peaking factor of 7.8;
- An age analysis upon full occupancy was complete, however there is no concern in lack of water turnover due to the high average day demand during full occupancy and looping;
- Maximum day plus fire demand – 145.04 L/min of domestic demand at the proposed residential building connection (J-5), 56.38 L/min of domestic demand at the existing building connection (J-4) plus 3,785 L/min for a conservative supply for fire protection, using the city peaking factor of 3.5;
- Maximum day plus fire confirming the available fire flows at fire hydrants at 20 psi residual pressure for Hydrant Colour Marking.



October 3, 2023
Michael Pease, Manager, Development Planning
Page 4 of 8

Reference: Bostwick Site 5 – Water Servicing Brief

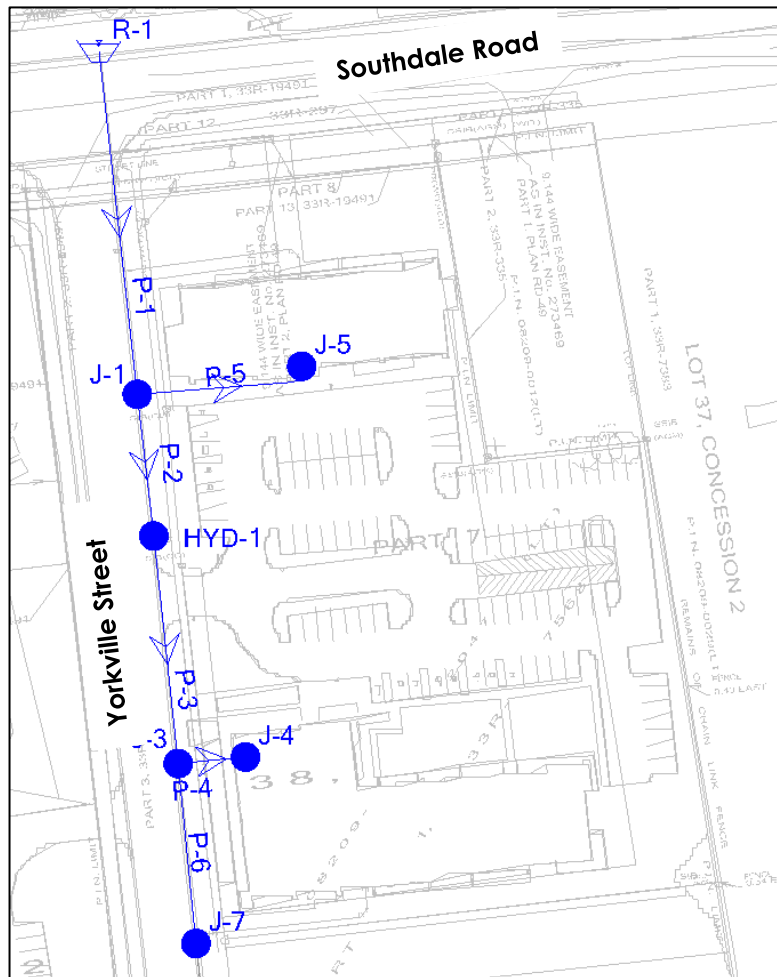


Figure 1. Water network model schematic

Note: This model uses the boundary condition HGL of 335.0 m with reservoir located at single location to reflect supply network that exists in this area. We note that pressure reducing valves should be installed on the services as pressures are expected to exceed 80 psi (550 kPa).

The attached modeling and below summary of critical results confirms that the existing municipal water network and the proposed watermain servicing the proposed development at Bostwick Site 5 meets the requirements of the City of London, the Ontario Building Code and NFPA.



Reference: Bostwick Site 5 – Water Servicing Brief

Table 2. Summary of Results

Scenario	Velocity (m/s)		Pressure (psi)		Fire Flow (L/min)	
		Required Maximum		Required Minimum	Available	Required Per OBC/NFPA
Average Day	0.04	1.5	85	40	n/a	n/a
Max Hour	0.30	1.5	84.9	40	n/a	n/a
Max Day plus Fire (HYD-1)	1.42	2.4	83.6	20	3,785	3,785
Max Day plus Fire (J-4)	2.14	2.4	82.4	20	3,785	3,785
Max Day plus Fire (J-5)	2.08	2.4	83.5	20	3,785	3,785

Lastly, modelling confirms the available fire flows at 20 psi (140kPa) residual pressure for the proposed fire hydrants at Yorkville Street is in excess of 5,680 L/min. This corresponds with a light blue hydrant colour marker (Class AA) to be installed by City staff in accordance with the requirements of NFPA 61 and City of London.

Looping Requirement

We note that looping of the private watermain is not required in the interim as this is a private property with domestic and fire protection flow adequately supplied on single source of supply, and the complex does not contain more than 300 dwelling units per City of London Standards Section 7.9.5.

The Yorkville Street watermain will be extended with future phasing of the Bostwick subdivision upon which time the watermain will be fully looped with secondary connection at Southdale Road. As this looped watermain will be connected to a single watermain, a valve must be installed in the watermain to permit isolation of supplies.



October 3, 2023
Michael Pease, Manager, Development Planning
Page 6 of 8

Reference: Bostwick Site 5 – Water Servicing Brief

Phasing and Oversizing of Watermain

The proposed watermain along Yorkville Street is upsized to continue the larger diameter loop through the overall subdivision Draft Plan area. As a result, the watermain is initially oversized until future phasing.

A water servicing design study confirming the sizing the watermain to service the subject site, subdivision Draft Plan limits, and external lands is shown in the subdivision modeling results attached, all areas of the development will have pressures and velocities that meet the City of London standards under the various demand scenarios. It should also be noted that the age analysis confirms water turnover is less than the 72 hour maximum requirement.

The analysis and demand for the future high-density blocks in the subdivision and external lands is based on Master Plan Concept prepared by MHBC. For the future high-density blocks, and thus on private property, adequate water for firefighting was determined in accordance with the Ontario Building Code as per City of London Standards. The fire flow demand of 150 l/s is utilized for the future high-density blocks this considers the conservative (worst case) scenario and is consistent with City modeling.

We trust this meets your requirements. Should you have any questions or require anything further, please do not hesitate to contact the undersigned.

Sincerely,

STANTEC CONSULTING LTD.

Abdalla Shaat, EIT
Civil Engineering Designer/Project Coordinator
Community Development
Phone: (519) 670-7137
Abdalla.Shaat@stantec.com



Dan Vucetic, MEng., P.Eng.
Project Manager, Engineering Team Lead
Community Development
Phone: (519) 675-6655
Dan.Vucetic@stantec.com

Attachment: Modeling Results, OBC Fire Flow Calculations, Flusher Settings Calculations,
Subdivision Water Servicing Design Study (Demand Summary, Model Results, Water Network)

Design with community in mind

Design Data

Zone:	R9-7, CC4(5), RO2(32), B-57, H40	
Proposed Use:	High Density Residential & Commercial	
Units:	334 Residential & 2 Commercial = 336 Total	
Site Area (m ²)	11,373.0 m ² / 1.137 ha	
Regulation	Required	Proposed
Lot Area (m ²)	1,000 m ²	11,310.9 m ²
Lot Frontage (m)	30.0 m	52.28 m
Front Yard Depth (m)	13.0 m	6.7 m **
Interior Side Yard Depth (m)	15.0 m	2.7 m **
Exterior Side Yard Depth (m)	3.5 m	4.1 m
Rear Yard Depth (m)	5.0 m	5.0 m
Landscaped Open Space (%)	30 %	39.0 %
Lot Coverage (%)	30.0 %	22.4 %
Number of dwelling units	208	336 (incl. 2 commercial) **
Density - Units per hectare	210 uph *	296 uph **
Parking	Residential - 0.5 spaces per unit = 167 Commercial - 1/20m ² = 2	93 surface 269 underground 362 total
Existing Apartment Building Specific - 17 Storey Apartment Building		
Height (m)	68.0 m	59.1 m
Number of dwelling units	214	
Unit Breakdown	Bachelor 1 unit 1 Bedroom 93 units 2 Bedroom 112 units 3 Bedroom 8 units 20% of units will be accessible units Total = 214 units	
Bicycle Parking	Secured parking - 156 Shared parking - 10 Short-term parking - 8 Total = 174	156 10 15 Total = 181
Proposed Apartment Building Specific - 12 Storey Apartment Building		
Height (m)	68.0 m	43.95 m
Number of dwelling units	120	
Unit Breakdown	1 Bedroom 91 units 2 Bedroom 29 units Total = 120 units	
Bicycle Parking	Secured parking - 108 Short-term parking - 12 Residential Total = 120 Commercial Total = 4	108 12 Residential Total = 120 Commercial Total = 4

*PERMISSIONS GRANTED PER A.087/19
 **SPECIAL PROVISIONS REQUIRED
 ***GARBAGE FOR APARTMENT BUILDING WILL BE STORED INTERNALLY WITH PRIVATE PICKUP

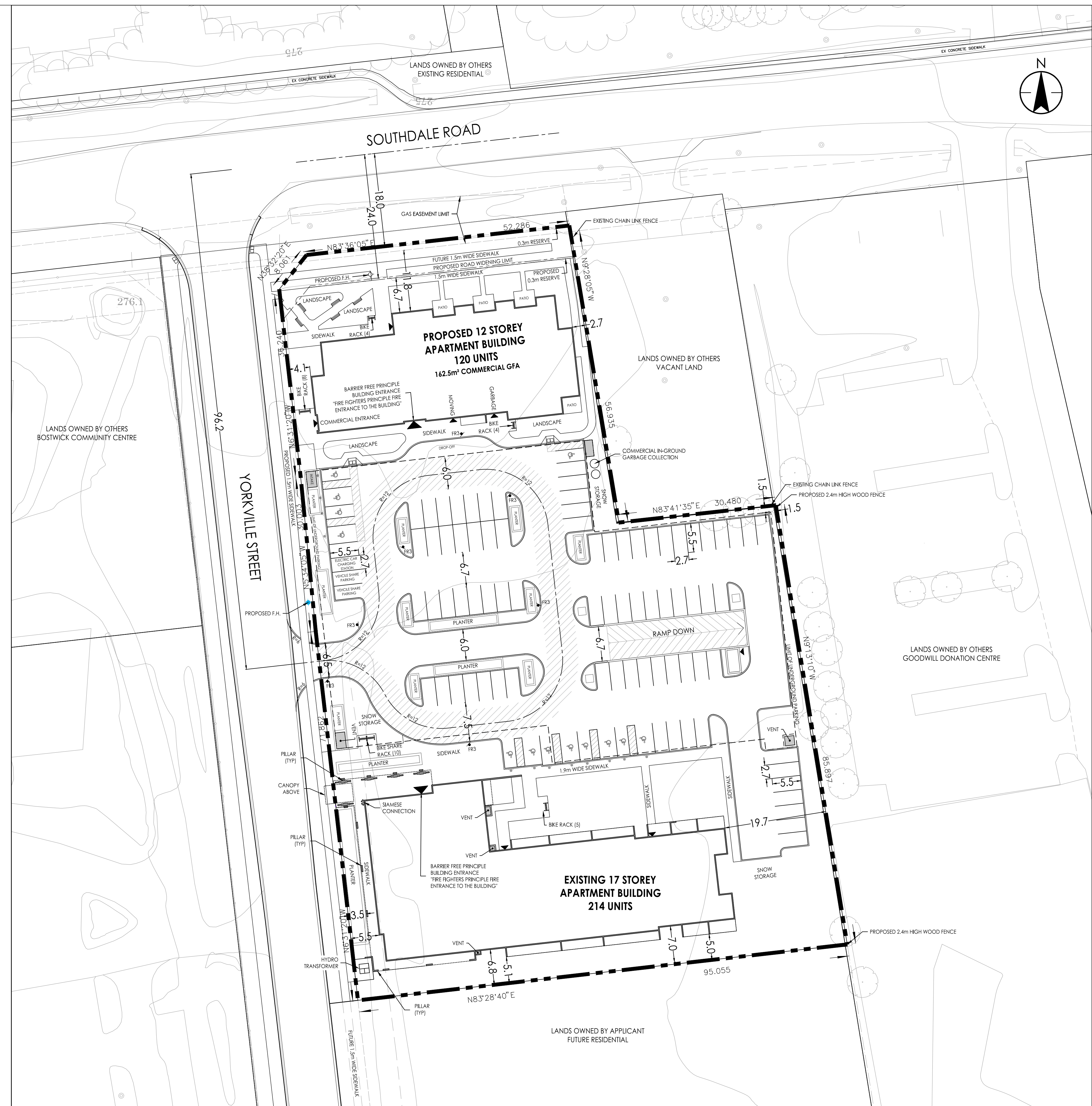
PARKING SPACE FOR PERSONS WITH DISABILITIES TYPE A

PARKING SPACE FOR PERSONS WITH DISABILITIES TYPE B

INTERNATIONAL SYMBOL OF ACCESS (OPTIONAL ON THE SURFACE OF THE PARKING SPACE)

NO STOPPING SIGN

FIRE ROUTE SIGN DETAILS



Stantec
 600-171 Queens Avenue
 London ON N6A 5J7
 Tel. 519-645-2007
 www.stantec.com

Liability Note
 The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Stantec without delay.



Legend

---	SITE BOUNDARY
⬢	ACCESSIBLE PARKING SIGN
⬢	FIRE ROUTE SIGN
▶	PRINCIPLE BUILDING ACCESS
▶	SECONDARY BUILDING ACCESS
⊕	PROPOSED FIRE HYDRANT
⊕	HYDRO TRANSFORMER

6.	PER UPDATED UNIT COUNT	RT	DH	22.09.30
5.	PER REVISED COMMERCIAL/OFFICE BUILDING	RT	DH	20.06.22
4.	PER CITY COMMENTS	DRR	DH	19.10.04
3.	PER REQUIRED ROAD WIDENING	RT	DH	19.09.13
2.	PER CITY COMMENTS	RT	DH	19.08.20
1.	PER CITY COMMENTS	RT	DH	19.06.26
Revision				
7.	FOR SITE PLAN APPROVAL	RT	DH	22.09.30
6.	FOR SITE PLAN APPROVAL	RT	DH	20.06.22
5.	FOR SITE PLAN APPROVAL	DRR	DH	19.10.04
4.	FOR SITE PLAN APPROVAL	RT	DH	19.09.13
3.	FOR SITE PLAN APPROVAL	RT	DH	19.08.20
2.	FOR SITE PLAN APPROVAL	RT	DH	19.06.26
1.	FOR SITE PLAN APPROVAL	RT	DH	19.04.26
Issued				

File Name: 161413832_1.spl RT DH RT 23.07.19
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Permit-Seal

Client/Project
 YORK DEVELOPMENTS
 3080 BOSTWICK ROAD - SITE 5
 London, ON Canada
 Title
 SITE PLAN

Project No.	161413832	Scale	HORZ - 1 : 400
Drawing No.	1	Sheet	1 of 1
		Revision	6

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161413832 - 3080 Bostwick Site 5
Active Scenario: Average Day

Label	Length (m)	Start Node	Stop Node	Diameter (mm)	Hazen-Williams C	Flow (L/min)	Velocity (m/s)
P-1	66	R-1	J-1	250.0	110.0	114.22	0.04
P-2	27	J-1	HYD-1	250.0	110.0	72.78	0.02
P-3	44	HYD-1	J-3	250.0	110.0	72.78	0.02
P-4	13	J-3	J-4	200.0	110.0	72.78	0.04
P-5	37	J-1	J-5	200.0	110.0	41.44	0.02
P-6	35	J-3	J-7	250.0	110.0	0.00	0.00

161413832 - 3080 Bostwick Site 5
Active Scenario: Average Day

Label	Elevation (m)	Demand (L/min)	Pressure (psi)
HYD-1	274.56	0.00	85.8
J-1	274.10	0.00	86.4
J-3	274.50	0.00	85.9
J-4	275.10	72.78	85.0
J-5	274.40	41.44	86.0
J-7	274.34	0.00	86.1

161413832 - 3080 Bostwick Site 5
Active Scenario: Max Hour

Label	Length (m)	Start Node	Stop Node	Diameter (mm)	Hazen-Williams C	Flow (L/min)	Velocity (m/s)
P-1	66	R-1	J-1	250.0	110.0	890.92	0.30
P-2	27	J-1	HYD-1	250.0	110.0	567.69	0.19
P-3	44	HYD-1	J-3	250.0	110.0	567.69	0.19
P-4	13	J-3	J-4	200.0	110.0	567.68	0.30
P-5	37	J-1	J-5	200.0	110.0	323.23	0.17
P-6	35	J-3	J-7	250.0	110.0	0.00	0.00

161413832 - 3080 Bostwick Site 5
Active Scenario: Max Hour

Label	Elevation (m)	Demand (L/min)	Pressure (psi)
HYD-1	274.56	0.00	85.7
J-1	274.10	0.00	86.4
J-3	274.50	0.00	85.8
J-4	275.10	567.68	84.9
J-5	274.40	323.23	85.9
J-7	274.34	0.00	86.0

161413832 - 3080 Bostwick Site 5

Active Scenario: Max Day + Fire @HYD-1

Label	Length (m)	Start Node	Stop Node	Diameter (mm)	Hazen-Williams C	Flow (L/min)	Velocity (m/s)
P-1	66	R-1	J-1	250.0	110.0	4,184.78	1.42
P-2	27	J-1	HYD-1	250.0	110.0	4,039.74	1.37
P-3	44	HYD-1	J-3	250.0	110.0	254.73	0.09
P-4	13	J-3	J-4	200.0	110.0	254.73	0.14
P-5	37	J-1	J-5	200.0	110.0	145.04	0.08
P-6	35	J-3	J-7	250.0	110.0	0.00	0.00

161413832 - 3080 Bostwick Site 5
Active Scenario: Max Day + Fire @HYD-1

Label	Elevation (m)	Demand (L/min)	Pressure (psi)
HYD-1	274.56	3,785.00	84.4
J-1	274.10	0.00	85.4
J-3	274.50	0.00	84.5
J-4	275.10	254.73	83.6
J-5	274.40	145.04	85.0
J-7	274.34	0.00	84.7

161413832 - 3080 Bostwick Site 5

Active Scenario: Max Day + Fire @J-4 (Sprinkler)

Label	Length (m)	Start Node	Stop Node	Diameter (mm)	Hazen-Williams C	Flow (L/min)	Velocity (m/s)
P-1	66	R-1	J-1	250.0	110.0	4,184.78	1.42
P-2	27	J-1	HYD-1	250.0	110.0	4,039.74	1.37
P-3	44	HYD-1	J-3	250.0	110.0	4,039.74	1.37
P-4	13	J-3	J-4	200.0	110.0	4,039.73	2.14
P-5	37	J-1	J-5	200.0	110.0	145.04	0.08
P-6	35	J-3	J-7	250.0	110.0	0.00	0.00

161413832 - 3080 Bostwick Site 5

Active Scenario: Max Day + Fire @J-4 (Sprinkler)

Label	Elevation (m)	Demand (L/min)	Pressure (psi)
HYD-1	274.56	0.00	84.4
J-1	274.10	0.00	85.4
J-3	274.50	0.00	83.8
J-4	275.10	4,039.73	82.4
J-5	274.40	145.04	85.0
J-7	274.34	0.00	84.0

161413832 - 3080 Bostwick Site 5

Active Scenario: Max Day + Fire @J-5 (Sprinkler)

Label	Length (m)	Start Node	Stop Node	Diameter (mm)	Hazen-Williams C	Flow (L/min)	Velocity (m/s)
P-1	66	R-1	J-1	250.0	110.0	4,184.78	1.42
P-2	27	J-1	HYD-1	250.0	110.0	254.73	0.09
P-3	44	HYD-1	J-3	250.0	110.0	254.73	0.09
P-4	13	J-3	J-4	200.0	110.0	254.73	0.14
P-5	37	J-1	J-5	200.0	110.0	3,930.04	2.08
P-6	35	J-3	J-7	250.0	110.0	0.00	0.00

161413832 - 3080 Bostwick Site 5

Active Scenario: Max Day + Fire @J-5 (Sprinkler)

Label	Elevation (m)	Demand (L/min)	Pressure (psi)
HYD-1	274.56	0.00	84.8
J-1	274.10	0.00	85.4
J-3	274.50	0.00	84.8
J-4	275.10	254.73	84.0
J-5	274.40	3,930.04	83.5
J-7	274.34	0.00	85.1

161413832 - 3080 Bostwick Site 5
Active Scenario: Rated Hydrant Capacity

Label	Fire Flow (Available) (L/min)	Pressure (Residual Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Pipe w/ Maximum Velocity	Velocity of Maximum Pipe (m/s)
HYD-1	32,306.00	20.0	J-4	P-1	11.10

Subject: FIRE FLOW CALCULATIONS AS PER OBC REQUIREMENTS
Project: Bostwick - Site 5 - 12 Storey building
Project No.: 161413832
Client: York Developments
Date: April 11, 2019

AVAILABLE FLOW

This site will be serviced from the high level watermain which has a hydraulic grade of 335m.

ONTARIO BUILDING CODE CLAUSE A-3.2.5.7.

$Q = K \times V \times S_{Tot}$
<p>Q = MINIMUM SUPPLY OF WATER (L) K = WATER SUPPLY COEFFICIENT V = BUILDING VOLUME (m³) S_{Tot} = TOTAL OF SPATIAL COEFFICIENT VALUES FROM PROPERTY LINE EXPOSURES ON ALL SIDES AS OBTAINED FROM THE FORMULA: where:</p>
$S_{Tot} = 1.0 + (S_{side1} + S_{side2} + \dots etc)$
<p>values are obtained from Figure 1 A-3.2.5.7, OBC, as modified by Sections 6.3 (e) and 6.3 (f) of this guideline, and</p> $S_{Tot} = \text{need not exceed } 2.0$

As per Table 2, Section A-3.2.5.7, OBC

OBC Part 3 Buildings under Building Code	Required Minimum Water Supply Flow Rate (L/min)
One-storey building with area ≤ 600 m ²	1800
All other buildings	2700 (if Q ≤ 108,000 L)
	3600 (if Q >108,000 L and ≤ 135,000 L)
	4500 (if Q >135,000 L and ≤ 162,000 L)
	5400 (if Q >162,000 L and ≤ 190,000 L)
	6300 (if Q >190,000 L and ≤ 270,000 L)
	9000 (if Q >270,000 L)

Major Occupancy Classification

Group C	Residential Occupancies
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Water Supply Coefficient - K

As per Table 1, Section A-3.2.5.7, OBC	K= 10
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Total Building Volume

Floor	Area (m ²)	Fir Height (m)	Volume (m ³)
Ground to 12th Floor	993	68	67524
Total			67524

*Floor areas & heights conservative based on latest Site Plan dated September 2022

Exposures

	Separation (m)	Spatial Coeff
North	15	0.00
South	15	0.00
East	15	0.00
West	15	0.00
S _{Tot}		1.00

**above separation distances conservative estimates as no structures in immediate vicinity.

Minimum Water Supply

$Q = K \times V \times S_{Tot}$	$Q = 10 \times \text{####} \times 1.00 = \underline{675,240} \text{ L}$
	$\underline{9000} \text{ (if } Q > 270,000 \text{ L)}$
Required Fire Flow (from Table 2 above)	= 9000 L/min
	= 150 L/s

Subject: FIRE FLOW CALCULATIONS AS PER OBC REQUIREMENTS
Project: Bostwick - Site 5 - 17 Storey residential building
Project No.: 161413832
Client: York Developments
Date: October 3, 2023

AVAILABLE FLOW

This site will be serviced from the high level watermain which has a hydraulic grade of 335m.

ONTARIO BUILDING CODE CLAUSE A-3.2.5.7.

$Q = K \times V \times S_{Tot}$
<p>Q = MINIMUM SUPPLY OF WATER (L) K = WATER SUPPLY COEFFICIENT V = BUILDING VOLUME (m³) S_{Tot} = TOTAL OF SPATIAL COEFFICIENT VALUES FROM PROPERTY LINE EXPOSURES ON ALL SIDES AS OBTAINED FROM THE FORMULA: where:</p>
$S_{Tot} = 1.0 + (S_{side1} + S_{side2} + \dots etc)$
<p>values are obtained from Figure 1 A-3.2.5.7, OBC, as modified by Sections 6.3 (e) and 6.3 (f) of this guideline, and <i>S_{Tot} = need not exceed 2.0</i></p>

As per Table 2, Section A-3.2.5.7, OBC

OBC Part 3 Buildings under Building Code	Required Minimum Water Supply Flow Rate (L/min)
One-storey building with area ≤ 600 m ²	1800
All other buildings	2700 (if Q ≤ 108,000 L)
	3600 (if Q >108,000 L and ≤ 135,000 L)
	4500 (if Q >135,000 L and ≤ 162,000 L)
	5400 (if Q >162,000 L and ≤ 190,000 L)
	6300 (if Q >190,000 L and ≤ 270,000 L)
	9000 (if Q >270,000 L)

Major Occupancy Classification

Group C	Residential Occupancies
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Water Supply Coefficient - K

As per Table 1, Section A-3.2.5.7, OBC	K= 10
--	-------

Total Building Volume

Floor	Area (m ²)	Fir Height (m)	Volume (m ³)
Ground to 17th Floor	1595	59.1	94264.5
Total			94264.5

*Floor areas & heights conservative estimates based on concept Site Plan & Part 9 of OBC

Exposures

	Separation (m)	Spatial Coeff
North	15	0.00
South	15	0.00
East	15	0.00
West	15	0.00
S _{tot}		1.00

**above separation distances conservative estimates as no structures in immediate vicinity.

Minimum Water Supply	
$Q = K \times V \times S_{Tot}$	$Q = 10 \times 94265 \times 1.00 = \underline{942,645} \text{ L}$
	9000 (if Q >270,000 L)
Required Fire Flow (from Table 2 above)	= 9000 L/min
	= 150 L/s



Subject: Water Quality - Automatic Flusher Settings
Project: 3080 Bostwick Road Subdivision - Bostwick Site 5
Project No.: 161413832
Client: York Development Group
Date: October 3, 2023

Flushing of Municipal Watermain Along Yorkville Street

Flushing at J-7 (Yorkville Street Phase Limit):

Min. System Pressure (PSI)	85.00	*per WaterCAD hydraulic modelling.
Discharge Rate 25mm AF (Lps):	2.31	
Pipe Length (m):	30	*dead end watermain length
Pipe Dia. (mm):	250	
Pipe Area (sq. m):	0.0491	
Watermain/Blowoff Volume (L):	1472.622	*Flushed every 72 hours for Water Quality
Blowoff Duration (s):	637	
Blowoff Duration (min):	10.6	

Therefore, using a 25mm automatic flushing device assembly (City of London Standard Drawing W-CS-5) the flusher must be programmed to flush 4 minutes, once daily or 11 minutes every 72 hours (2.31 L/s).



Reference: Bostwick Site 5 – Water Servicing Brief

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SUBDIVISION WATER SERVICING DESIGN STUDY

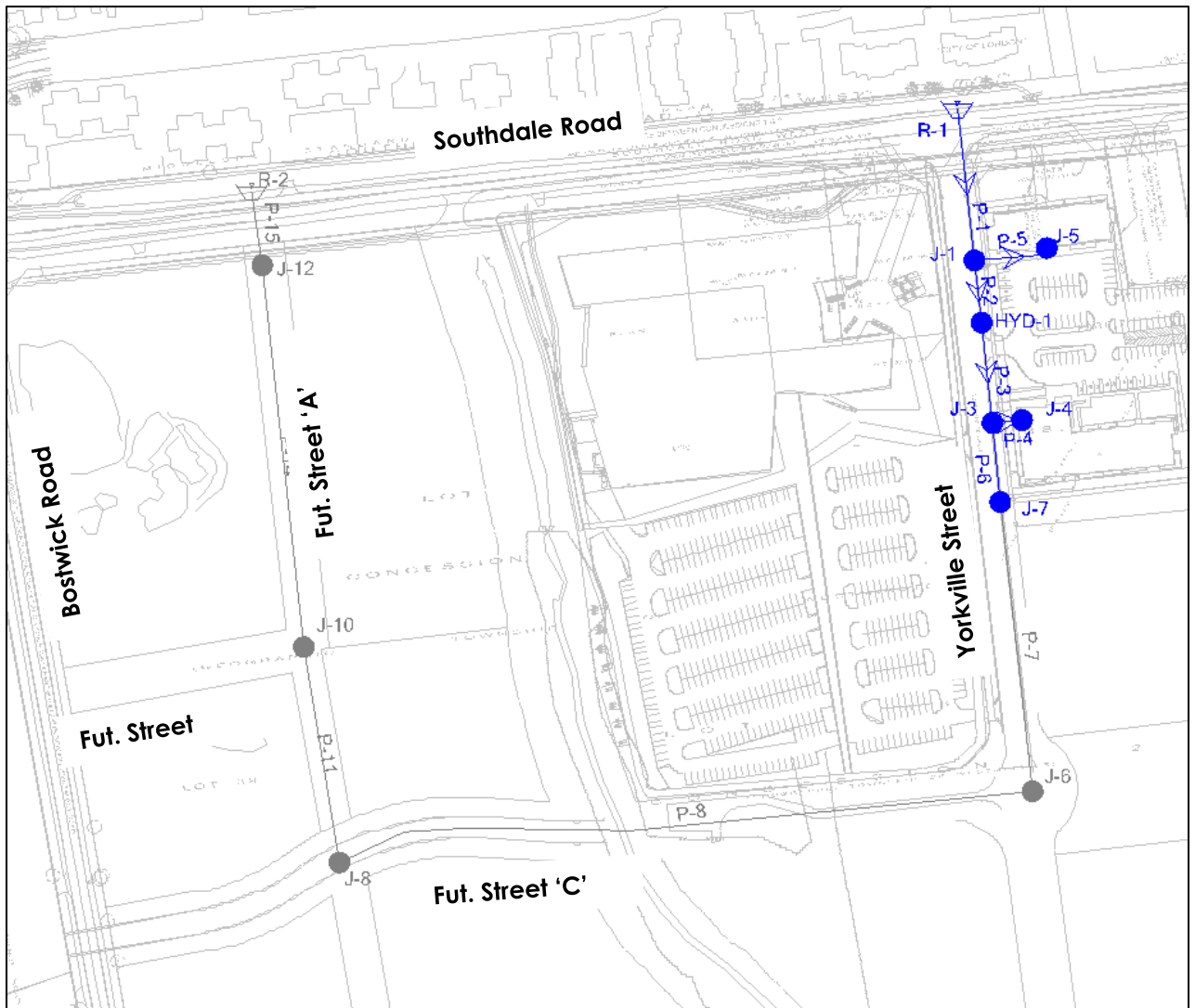


Figure 2. Water Network Bostwick Subdivision

Note: This model uses the boundary condition HGL of 335.0 m with reservoir located at two locations to reflect supply network that exists in this area. We note that pressure reducing valves should be installed on the services as pressures are expected to exceed 80 psi (550 kPa).

Design with community in mind

Subject: Demand Summary
Project: 3080 Bostwick Road Subdivision - Bostwick Site 5
Project No.: 161413832
Client: York Development Group
Date: October 3, 2023

Table 1

Junction	Elevation (m)	Land Use		Population	Average Day Demand (L/min)
		HD Area (ha)	HD units		
J-4	275.10			399	70.66
J-5	274.40			91	16.11
J-6	273.76	4.00	600	960	170.00
J-8	274.25	3.67	552	884	156.54
J-10	274.00	2.66	400	640	113.33

NOTES:

¹ High Density (HD) = 150 units/hectare @ 1.6 people/unit

² Elevations are based on proposed ground for J-4 & J-5 remaining based on existing ground

³ J-4 & J-5 is demand from Bostwick Site 5

⁴ Development Future Blocks conservatively assumed as high density with area based on Master Plan Concept prepared by MHBC, dated April, 2018

161413832 - 3080 Bostwick Subdivision

Active Scenario: Average Day

Label	Length (m)	Start Node	Stop Node	Diameter (mm)	Hazen-Williams C	Flow (L/min)	Velocity (m/s)
P-1	66	R-1	J-1	250.0	110.0	293.92	0.10
P-2	27	J-1	HYD-1	250.0	110.0	252.48	0.09
P-3	44	HYD-1	J-3	250.0	110.0	252.48	0.09
P-4	13	J-3	J-4	200.0	110.0	72.78	0.04
P-5	37	J-1	J-5	200.0	110.0	41.44	0.02
P-6	35	J-3	J-7	250.0	110.0	179.70	0.06
P-7	126	J-7	J-6	250.0	110.0	179.70	0.06
P-8	305	J-6	J-8	250.0	110.0	9.70	0.00
P-11	95	J-8	J-10	250.0	110.0	-146.84	0.05
P-14	167	J-10	J-12	250.0	110.0	-260.17	0.09
P-15	32	J-12	R-2	250.0	110.0	-260.17	0.09

161413832 - 3080 Bostwick Subdivision

Active Scenario: Average Day

Label	Elevation (m)	Demand (L/min)	Pressure (psi)
HYD-1	274.56	0.00	85.8
J-1	274.10	0.00	86.4
J-3	274.50	0.00	85.9
J-4	275.10	72.78	85.0
J-5	274.40	41.44	86.0
J-6	273.76	170.00	86.9
J-7	274.34	0.00	86.1
J-8	274.25	156.54	86.2
J-10	274.00	113.33	86.6
J-12	273.00	0.00	88.0

161413832 - 3080 Bostwick Subdivision

Active Scenario: Max Hour

Label	Length (m)	Start Node	Stop Node	Diameter (mm)	Hazen-Williams C	Flow (L/min)	Velocity (m/s)
P-1	66	R-1	J-1	250.0	110.0	2,292.60	0.78
P-2	27	J-1	HYD-1	250.0	110.0	1,969.36	0.67
P-3	44	HYD-1	J-3	250.0	110.0	1,969.36	0.67
P-4	13	J-3	J-4	200.0	110.0	567.68	0.30
P-5	37	J-1	J-5	200.0	110.0	323.23	0.17
P-6	35	J-3	J-7	250.0	110.0	1,401.68	0.48
P-7	126	J-7	J-6	250.0	110.0	1,401.68	0.48
P-8	305	J-6	J-8	250.0	110.0	75.68	0.03
P-11	95	J-8	J-10	250.0	110.0	-1,145.33	0.39
P-14	167	J-10	J-12	250.0	110.0	-2,029.31	0.69
P-15	32	J-12	R-2	250.0	110.0	-2,029.31	0.69

161413832 - 3080 Bostwick Subdivision

Active Scenario: Max Hour

Label	Elevation (m)	Demand (L/min)	Pressure (psi)
HYD-1	274.56	0.00	85.4
J-1	274.10	0.00	86.1
J-3	274.50	0.00	85.3
J-4	275.10	567.68	84.4
J-5	274.40	323.23	85.7
J-6	273.76	1,326.00	86.0
J-7	274.34	0.00	85.4
J-8	274.25	1,221.01	85.3
J-10	274.00	883.97	85.8
J-12	273.00	0.00	87.9

161413832 - 3080 Bostwick Subdivision

Active Scenario: Age

Current Time: 336.00 hours

Label	Length (m)	Start Node	Stop Node	Diameter (mm)	Hazen-Williams C	Flow (L/min)	Velocity (m/s)	Age (Calculated) (hours)
P-1	66	R-1	J-1	250.0	110.0	293.92	0.10	0.046
P-2	27	J-1	HYD-1	250.0	110.0	252.48	0.09	0.184
P-3	44	HYD-1	J-3	250.0	110.0	252.48	0.09	0.313
P-4	13	J-3	J-4	200.0	110.0	72.78	0.04	0.426
P-5	37	J-1	J-5	200.0	110.0	41.44	0.02	0.370
P-6	35	J-3	J-7	250.0	110.0	179.70	0.06	0.462
P-7	126	J-7	J-6	250.0	110.0	179.70	0.06	0.823
P-8	305	J-6	J-8	250.0	110.0	9.70	0.00	13.974
P-11	95	J-8	J-10	250.0	110.0	-146.84	0.05	0.842
P-14	167	J-10	J-12	250.0	110.0	-260.17	0.09	0.315
P-15	32	J-12	R-2	250.0	110.0	-260.17	0.09	0.001

161413832 - 3080 Bostwick Subdivision

Active Scenario: Age

Current Time: 336.00 hours

Label	Elevation (m)	Demand (L/min)	Pressure (psi)
HYD-1	274.56	0.00	85.8
J-1	274.10	0.00	86.4
J-3	274.50	0.00	85.9
J-4	275.10	72.78	85.0
J-5	274.40	41.44	86.0
J-6	273.76	170.00	86.9
J-7	274.34	0.00	86.1
J-8	274.25	156.54	86.2
J-10	274.00	113.33	86.6
J-12	273.00	0.00	88.0

161413832 - 3080 Bostwick Subdivision

Active Scenario: Max Day + Fire

Label	Fire Flow (Available) (L/min)	Pressure (Residual Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Pipe w/ Maximum Velocity	Velocity of Maximum Pipe (m/s)
HYD-1	8,068.82	20.0	J-4	P-1	2.40
J-1	7,684.44	20.0	J-4	P-1	2.40
J-3	8,610.11	20.0	J-4	P-1	2.40
J-4	4,269.12	20.0	J-3	P-4	2.40
J-5	4,378.69	20.0	J-4	P-5	2.40
J-6	10,335.93	20.0	J-7	P-1	2.40
J-7	8,989.74	20.0	J-4	P-1	2.40
J-8	10,450.55	20.0	J-10	P-15	2.40
J-10	9,441.91	20.0	J-8	P-15	2.40
J-12	7,143.11	20.0	J-4	P-15	2.40