



September 9, 2022
File: 161414276

Attention: Carlos Ramirez, Project Manager

York Developments
303 Richmond St, Suite 201
London, Ontario, N6B 2H8

Dear Carlos,

Reference: 50 King Street – Preliminary Water Servicing Brief

This letter is written to support the development of two high-rise apartment buildings with commercial space located at 50 King Street in the City of London in providing the potential servicing opportunity of the proposed development with the anticipated domestic, commercial and fire flow demands.

Per the Zedd Architecture design dated July 28, 2022, the proposed development consists of two connected 50 and 40 storey towers with a total of 806 residential units and 11,007m² commercial space (retail, office and amenity areas). This corresponds with a conservative design population of 1544 for the residential apartments and 240 for the commercial space using the City of London Standards and the Ontario Building Code (OBC) Table 8.2.1.3.A & 8.2.1.3.B. 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		
Tower 1 Residential	-	448	C.o.L. design standards	1.6 cap/unit	OBC 8.2.1.3.A. - apartment flow	275 L/cap/day	197,175	858
Tower 2 Residential	-	358	C.o.L. design standards	1.6 cap/unit	OBC 8.2.1.3.A. - apartment flow	275 L/cap/day	157,575	686



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Tower 1 Commercial Space	5,552				OBC 8.2.1.3.B. – retail flow	5 L/ day/1m ²	27,760	121
Tower 2 Commercial Space	5,455				OBC 8.2.1.3.B. – retail flow	5 L/ day/1m ²	27,275	119
Total								1,784

Using the average daily domestic demand of 255 L/cap/day, this generates an average water demand of 315.92 L/min corresponding with the residential apartments and commercial space; 173.37L/min (55%) for tower 1 and 142.55 L/min (45%) for tower 2.

Towers 1 and 2 are anticipated to be 164m and 133m in height, respectively. As per the provisions of the Ontario Building Code clause 3.2.9.7, buildings greater than 84m in height measured between grade and the ceiling level of the top storey will require two sources of water supply from the public water system. As a result, both towers are anticipated to be serviced with two separate watermain connections for a total of four water services to the proposed development.

Existing Conditions

The proposed development is located in the City of London within the low-level system boundary condition where the hydraulic-grade line is anticipated to be 301.8m. There currently exists a 300mm diameter PVC distribution watermain along Rideout Street North with a 300x300mm Tee into King Street which is ultimately reduced to a 200mm diameter watermain.

Based on the existing water infrastructure available within the vicinity of the subject site, watermain connections are readily available through both Rideout Street North and King Street. Appropriate sizing of the watermain services to the proposed development will be completed in the future design stages. Any upsizing of municipal watermain to meet the proposed development demands will also be determined using a water model to be created utilizing WaterCad V8i Software.

Based on this desktop investigation, no concerns with servicing the proposed development are anticipated.



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Water Supply for Fire Protection

The proposed Towers at 50 King Street will include provisions for firefighting that include the following considerations:

In accordance with the City of London Design standards for private sites, the proposed Towers at 50 King Street will include provisions for firefighting in accordance with the Ontario Building Code(OBC). Based on the residential occupancy from the ground floor to the top floor for towers 1 & 2, the fire flow requirement is **150 L/s** (9000 L/min) at 20 psi (140 kPa) for each tower.

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

- These towers are anticipated to 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 Towers are anticipated to 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.

A fire flow requirement of 3,785 L/min (63 L/s) is anticipated to be required for each tower. However, we anticipate that mechanical and plumbing drawings will be available at the time of the water service design. If available, the required fire flow will be determined from the chosen automatic sprinkler system for the development. It is anticipated that the water service will be used to supply fire flow demands. If deemed required, a separate fire service may be installed. Additionally, a fire hydrant is available within close proximity to the development at the north-west corner of the King Street and Rideout Street North Intersection.



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Reference: 50 King Street – Preliminary Water Servicing Brief

Anticipated Water Demands

The following summarizes the water demands of the proposed development under each scenario which shall be used to analyze the sufficiency of the proposed water supply network in the design stage for the Site Plan Approval (SPA) application.

- Average day– 315.92 L/min (173.37L/min for tower 1 & 142.55 L/min for tower 2)
- Maximum hour – 2,464.18 L/min (1,352.29 L/min for tower 1 & 1,111.89L/min for tower 2); using the City peaking factor of 7.8
- Maximum day plus fire demand – 1,105.72 L/min of domestic demand using the City peaking factor of 3.5 (606.79 L/min for tower 1 & 498.93 L/min for tower 2), and 3,785 L/min for a conservative supply for fire protection for each tower;

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

Sincerely,

Handwritten signature of Abdalla Shaat in black ink.

Abdalla Shaat, EIT.
Civil Engineering Intern, Community
Development
Phone: (519) 675-6655
Abdalla.Shaat@stantec.com

Handwritten signature of Darryl Hern in black ink.

Darryl Hern, P.Eng.
Project Manager, Community Development
Phone: (519) 675-6622
Darryl.Hern@stantec.com

Attachment: Fire Flow Calculation (per OBC A-3.2.5.7)
Rideout Street North As-built Drawing



Subject: FIRE FLOW CALCULATIONS AS PER OBC REQUIREMENTS
Project: 50 King Street Tower 1
Project No.: 161414276
Client: York Developmets
Date: 09-Sep-2022

AVAILABLE FLOW

This site will be serviced from the low level watermain which has a hydraulic grade of 301.8m.

ONTARIO BUILDING CODE CLAUSE A-3.2.5.7.

$Q = K \times V \times S_{Tot}$

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:

$$S_{Tot} = 1.0 + (S_{side1} + S_{side2} + \dots etc)$$
 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

$$S_{Tot} = \text{need not exceed } 2.0$$

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

<i>As per Table 1, Section A-3.2.5.7, OBC</i>	K= 10
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Tower 1 Total Building Volume

Floor	Area (m ²)	Height (m)	Volume (m ³)
P4	2337.5	3.05	7129.38
P3	2337.5	3.05	7129.38
P2	2727.5	3.05	8318.88
P1	2727.5	3.66	9982.65
1(Grade)	955	6.4	6112
2	1840	3.66	6734.4
3	1840	3.66	6734.4
4	1258	3.66	4604.28
5	860	3.66	3147.6
6	915	3.05	2790.75
7	915	3.05	2790.75
8	915	3.05	2790.75
9	915	3.05	2790.75
10	915	3.05	2790.75
11	915	3.05	2790.75
12	915	3.05	2790.75
13	915	3.05	2790.75
14	915	3.05	2790.75
15	915	3.05	2790.75
16	915	3.05	2790.75
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18	915	3.05	2790.75
19	915	3.05	2790.75
20	915	3.05	2790.75
21	915	3.05	2790.75
22	915	3.05	2790.75
23	915	3.05	2790.75
24	915	3.05	2790.75
25	915	3.05	2790.75
26	915	3.05	2790.75
27	915	3.05	2790.75
28	915	3.05	2790.75
29	915	3.05	2790.75
30	915	3.05	2790.75
31	915	3.05	2790.75
32	915	3.05	2790.75
33	895	3.05	2729.75
34	915	3.05	2790.75
35	915	3.05	2790.75
36	915	3.05	2790.75
37	915	3.05	2790.75
38	915	3.05	2790.75
39	915	3.05	2790.75
40	915	3.05	2790.75
41	996	3.05	3037.8
42	1107	3.05	3376.35
43	1005	3.05	3065.25
44	915	3.05	2790.75
45	915	3.05	2790.75
46	915	3.05	2790.75
47	914	3.05	2787.7
48	915	3.05	2790.75
49	915	3.05	2790.75
50	915	3.05	2790.75
51	1023	3.05	3120.15

52	581	3.05	1772.05
53(MEch)	92	6.1	561.2
Total			191973

*Floor heights and areas are based on Zedd Architecture Schematic Design, Dated July 28 2022.

Exposures

	Separation (m)	Spatial Coeff
North	10	0.00
South	10	0.00
East	10	0.00
West	10	0.00
S _{tot}		1.00

*No structures in immediate vicinity (10m) of proposed building. Stot value of 1 is utilized.

Minimum Water Supply

$$Q = K \times V \times S_{Tot}$$

$$Q = 10 \times 191973.2 \times 1.00 = \underline{1,919,732 \text{ L}}$$

9000 (if Q >270,000 L)

Required Fire Flow (from Table 2 above)	=	9000	L/min
	=	150	L/s



Subject: FIRE FLOW CALCULATIONS AS PER OBC REQUIREMENTS
Project: 50 King Street Tower 2
Project No.: 161414276
Client: York Developmets
Date: 09-Sep-2022

AVAILABLE FLOW

This site will be serviced from the low level watermain which has a hydraulic grade of 301.8m.

ONTARIO BUILDING CODE CLAUSE A-3.2.5.7.

$Q = K \times V \times S_{Tot}$

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:
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 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

$$S_{Tot} = \text{need not exceed } 2.0$$

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
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	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

<i>As per Table 1, Section A-3.2.5.7, OBC</i>	K= 10
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Tower 1 Total Building Volume

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P4	2337.5	3.05	7129.38
P3	2337.5	3.05	7129.38
P2	2727.5	3.05	8318.88
P1	2727.5	3.66	9982.65
1(Grade)	695	6.4	4448
2	2250	3.66	8235
3	2250	3.66	8235
4	866	3.66	3169.56
5	980	3.66	3586.8
6	980	3.05	2989
7	980	3.05	2989
8	980	3.05	2989
9	980	3.05	2989
10	980	3.05	2989
11	980	3.05	2989
12	980	3.05	2989
13	980	3.05	2989
14	980	3.05	2989
15	980	3.05	2989
16	980	3.05	2989
17	980	3.05	2989
18	980	3.05	2989
19	980	3.05	2989
20	980	3.05	2989
21	980	3.05	2989
22	980	3.05	2989
23	980	3.05	2989
24	980	3.05	2989
25	980	3.05	2989
26	980	3.05	2989
27	980	3.05	2989
28	980	3.05	2989
29	980	3.05	2989
30	980	3.05	2989
31	980	3.05	2989
32	980	3.05	2989
33	980	3.05	2989
34	980	3.05	2989
35	980	3.05	2989
36	980	3.05	2989
37	980	3.05	2989
38	980	3.05	2989
39	980	3.05	2989
40	980	3.05	2989
41	776	3.05	2366.8
42	426	3.05	1299.3
43(mech)	91	6.1	555.1
Total			169071

*Floor heights and areas are based on Zedd Architecture Schematic Design, Dated July 28 2022.

Exposures

	Separation (m)	Spatial Coeff
North	10	0.00
South	10	0.00
East	10	0.00
West	10	0.00
S_{tot}		1.00

**No structures in immediate vicinity (10m) of proposed building. S_{tot} value of 1 is utilized.*

Minimum Water Supply

$$Q = K \times V \times S_{Tot}$$

$$Q = 10 \times 169070.8 \times 1.00 = \underline{1,690,708 \text{ L}}$$

9000 (if $Q > 270,000 \text{ L}$)

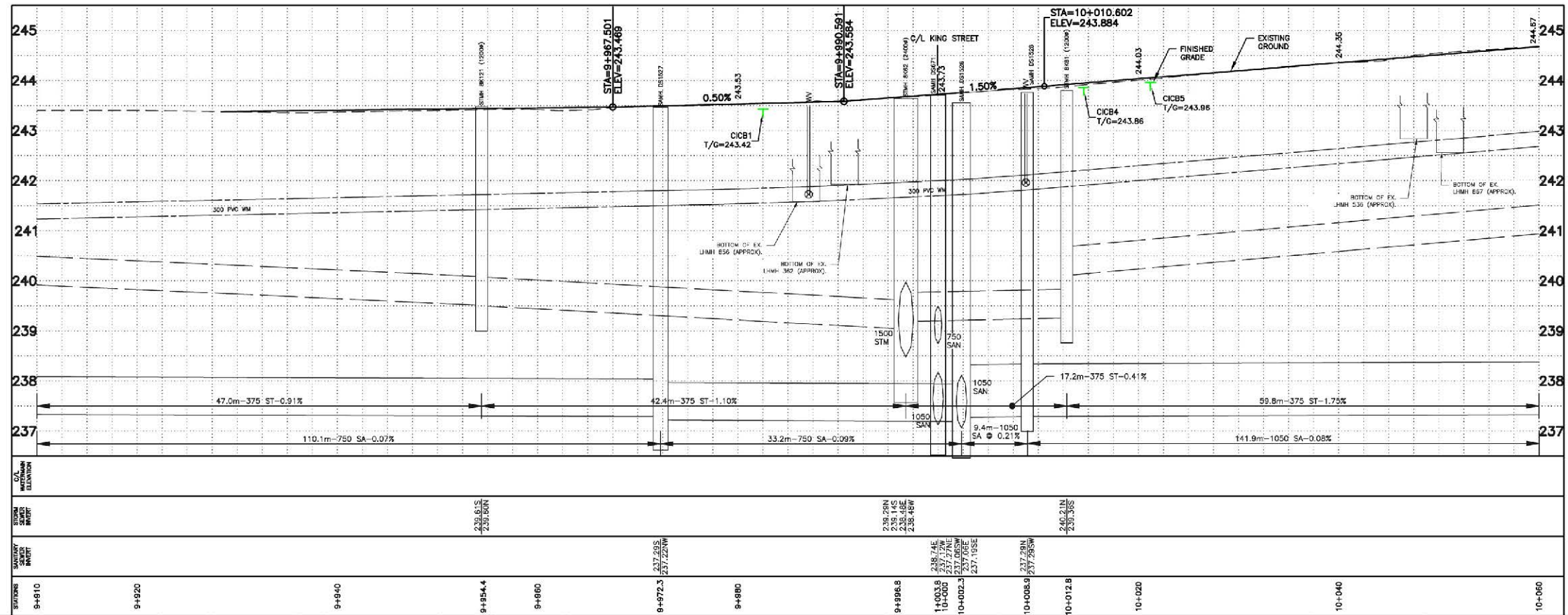
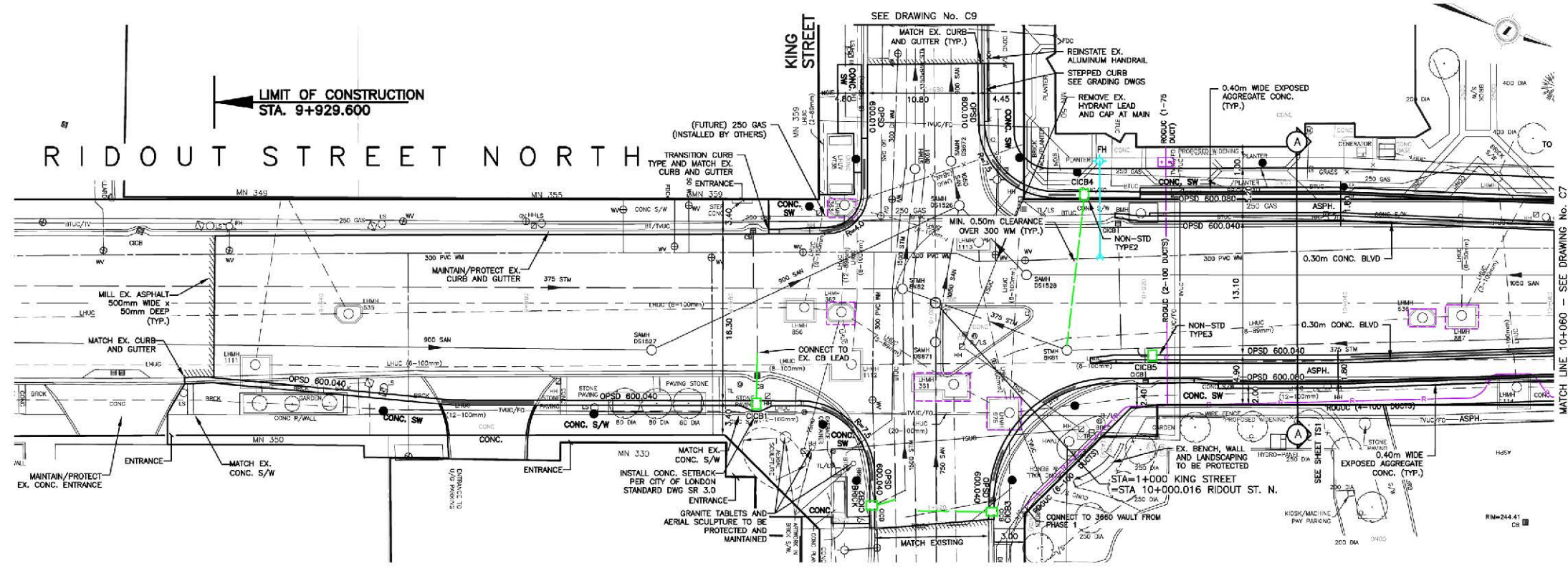
Required Fire Flow (from Table 2 above)

$$= 9000 \text{ L/min}$$

$$= 150 \text{ L/s}$$

CONSTRUCTION NOTES:

- SANITARY PDC LOCATIONS AT MAINLINE DETERMINED FROM CCTV VIDEO INSPECTION REPORTS
- CONDUCT VIDEO INSPECTIONS AND DYE TEST OF ALL EXISTING SANITARY PDC'S AS DIRECTED BY THE CONTRACT ADMINISTRATOR. REPLACE ACTIVE PDC'S AS INDICATED ON DRAWINGS, UNLESS OTHERWISE DIRECTED
- UNLESS APPROVED OTHERWISE BY THE CONTRACT ADMINISTRATOR, THERE SHALL BE ONLY ONE (1) SANITARY PDC INSTALLED FOR EACH PROPERTY/BUSINESS
- REFER TO G1 FOR ALL UTILITY CONSTRUCTION NOTES AND DETAILS
- SEE CONTRACT SPECIFICATIONS FOR ALL WATER SERVICING DETAILS
- WATER SERVICES TO BE CONNECTED AT PROPERTY LINE, OR AS INDICATED ON DRAWINGS, UNLESS DIRECTED OTHERWISE BY THE CONTRACT ADMINISTRATOR
- ALL EXISTING BEDDING SURROUNDING STEAM LINE TO BE RESTORED TO ENWAVE STANDARDS
- SEE SHEETS GR1-GR4 FOR GRADING RESTORATION DETAILS
- SEE DETAILS DRAWINGS P1 AND P2 FOR BUS BAY DETAILS



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EXISTING SERVICES	DRAWING #, SOURCE	DATE	AS CONSTRUCTED SERVICES	COMPLETION	DETAILS	No.	REVISIONS	DATE	CONSULTANT
					DESIGN	0	ISSUED FOR TENDER	9-21-2021	DILLON/AECOM
					DRAWN BY	1	ISSUED FOR ARCHITECTURE 1	10-20-2021	DILLON/AECOM
					CHECKED	2	ISSUED FOR CONSTRUCTION	1-21-2022	DILLON/AECOM
					APPROVED				
					DATE				

London, Ontario
905.873.2000

London
CANADA

SCALE: HORIZONTALLY: 1:250
VERTICALLY: 1:50

PROJECT No: 19-2912
SHEET No: C6
PLAN FILE No: T21-98-06

DOWNTOWN LOOP AND MUNICIPAL INFRASTRUCTURE IMPROVEMENTS - PHASE 2
RIDOUT STREET NORTH
STA. 9+890 TO STA. 10+060