Site Servicing Report
The Hindu Temple of Ottawa-Carleton
4835 Bank Street,
Ottawa, Ontario K1X 1G6

Prepared for:

The Hindu Temple of Ottawa-Carleton Inc.
c/o Lloyd Philips & Associates Ltd.
1827 Woodward Drive, Suite 109
Ottawa, Ontario K2C 0P9

Attention: Barrett L. Wagar

LRL File No.: 170132   June 20th, 2017

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APPENDICES

SUMMARY

LRL Associates Ltd. has been mandated by Lloyd Philips & Associates Ltd. to prepare a site servicing report for the Hindu Temple of Ottawa-Carleton located at 4835 Bank Street, Ottawa, Ontario.

In terms of water service, the required maximum hour demand for proposed development will be 1.77 L/s. The proposed water service pipe size will be 38mm.

In terms of fire protection, the analysis concluded that the existing on-site hydrant location will be acceptable for the proposed development. The required fire flow will be 140 L/s.

In terms of sanitary service, a new septic system, designed for a total daily flow of 21,600 L/day, is proposed.

The above mentioned conclusions are discussed in greater details in this report.

1   INTRODUCTION

LRL Associates Ltd. has been mandated by Lloyd Philips & Associates Ltd. to prepare a site servicing report for the Hindu Temple of Ottawa-Carleton located at 4835 Bank Street, Ottawa, Ontario. The property is legally described as Part of Lot 22, Concession 5 (Rideau Front), Geographic Township of Gloucester, City of Ottawa. Refer to Appendix A – Key Plan.

The property has somewhat of a rectangular shape. It has a frontage of 101.92m and depth of 401.53m. The total surface area is 4.06ha. The western section of the site is currently composed of an existing single storey Hindu Temple with lower-level basement (combined total gross floor area of $1062m^2$) and a parking lot. An existing creek splits the site from south to north about mid-way through the property. East of the creek is a wooded area.

The proposed addition will be an Assembly Hall with a total gross floor area of $2100m^2$. It will be located east of the existing Hindu Temple and parking lot and west of the existing creek.

The existing water service on Temple Road will need to be extended 90m easterly. A proposed 38mm water service shall be connected to the extension and run perpendicularly to the proposed Assembly Hall building.

The proposed sanitary septic system will be located on the South side of the proposed Assembly Hall.

This report has been prepared in consideration of the terms and conditions noted above. Should there be any changes in the design features, which may relate to the water or sanitary considerations, LRL Associates Ltd. should be advised in order to review the report's recommendations.

2   WATER SERVICE

The existing 5" service on Temple Road will need to be extended 90m easterly. As 5" water services aren't typically used anymore, a reducer shall be installed and the proposed extension shall be 4" in diameter. The 4" pipe will be plugged at the end of the 90m extension. A proposed 38mm water service shall be connected to the 4" extension by tapping valve and sleeve method. The proposed 38mm water service shall run perpendicularly to the proposed Assembly Hall building.

The respective water demand for the proposed development was calculated by fixture count using the 2012 Ontario Building Code and by the method prescribed in the 2010 Ottawa Design Guidelines for Water Distribution.

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2.1 Institutional Flow Demand

For the proposed portion of the development (the Assembly Hall):

- the average institutional water demand = **0.65 L/s**;
- the maximum daily demand = **0.98 L/s**; and
- the maximum hour demand = **1.77 L/s**

For detailed calculations, please refer to Appendix C - Water Service & Fire Flow Calculation Sheets.

2.2 Water Service Pipe Sizing

The minimum required pipe size for the proposed water service was calculated to be 35mm. Therefore, a **38mmØ** HDPE "Gold Stripe" water service is proposed, and will be sufficient to service the new development. Refer to detailed calculations in Appendix C - Water Service & Fire Flow Calculation Sheets.

2.3 Fire Flow Calculations

The fire flow rate was calculated using the Fire Underwriters Survey (FUS) method. Taking into consideration both existing and proposed buildings, the fire flow was calculated to be **140 L/s**. The required duration of the fire flow is 2 hours. Refer to detailed calculations in Appendix C - Water Service & Fire Flow Calculation Sheets. There is an on-site hydrant just west of the site's parking entrance. This hydrant is 85m away, less than 90m, from the proposed development's main entrance. Therefore, the existing hydrant remains in an acceptable location.

2.4 Boundary Conditions

We have received boundary conditions from the City of Ottawa. Refer to Appendix B – Boundary Conditions. The pressures listed under Future 3C Pressure Zone are acceptable as they are between 50 and 80 psi.

3 SANITARY SERVICE

Since there are currently no municipal sanitary services available in this area, a new septic system, designed for 600 persons at 36 L/person which results in a total daily flow of 21,600 L/day, is proposed. This system will be located on the South side of the proposed Assembly Hall.

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4   CONCLUSION

It is our professional opinion that this water and sanitary analysis demonstrates that the proposed systems are sufficient for the servicing needs of the proposed development.

5   LIMITATIONS AND USE OF REPORT

The conclusions above are applicable only to the project described in this report. Any changes will require a subsequent review by LRL Associates Ltd. to insure compatibility with the recommendations contained in this document.

We trust the information presented in this report meets your current requirements. Please do not hesitate to contact us should you have any questions or concerns.

Yours truly,

LRL Associates Ltd.

Prepared by: Reviewed by:

_____   _____

Guillaume Courtois, C.E.T., rcji   **Michel Gagnon, P.Eng., MBA**

APPENDIX A
Key Plan

PROJECT

TERRAIN ANALYSIS - PROPOSED ASSEMBLY HALL
4835 BANK STREET
OTTAWA, ONTARIO

DRAWING TITLE

PROPOSED DEVELOPMENT PLAN
SOURCE: LLOYD PHILLIPS & ASSOCIATES LTD.
(NOT TO SCALE)

L R L
ENGINEERING | INGÉNIERIE

5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434

CLIENT

THE HINDU TEMPLE OF OTTAWA CARLTON

DATE

JUNE 2017

PROJECT

170132

FIGURE3

HINDU TEMPLE OF OTTAWA-CARLETON
PHASE 2 EXPANSION
4835 Bank Street, Ottawa

PRELIMINARY CONCEPT PLAN

APPENDIX B
Boundary Conditions

Boundary Conditions for 4835 Bank Street

Information Provided:

Date provided: April 2017

Scenario	Demand	
	L/min	**L/s**
Average Daily Demand	79.2	1.32
Maximum Daily Demand	157.8	2.63
Peak Hour	not provided	not provided
Fire Flow Demand	8400	140

Location:
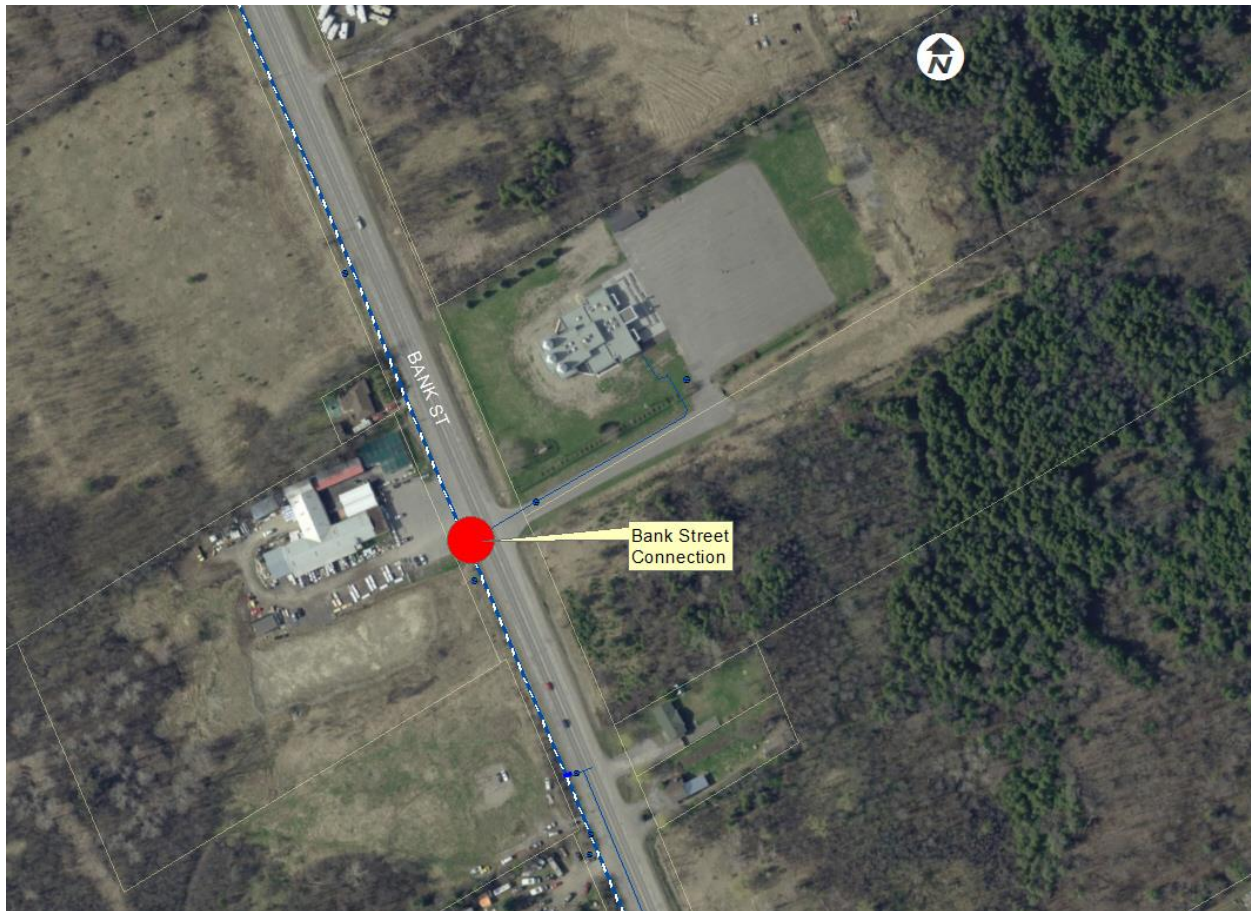
Results

Existing 3C Pressure Zone

Connection 1 - Bank Street

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	158.2	85.8
Peak Hour	155.3	81.8
Max Day plus Fire (8,400l/min)	145.3	67.5

[1] Ground Elevation = 98 m

Future 3C Pressure Zone

Connection 1 - Bank Street

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	148.0	71.2
Peak Hour	146.6	69.3
Max Day plus Fire (8,400l/min)	139.3	58.9

[1] Ground Elevation = 98 m

Notes:

1) As per the Ontario Building Code in areas that may be occupied, the static pressure at any fixture shall not exceed 552 kPa (80 psi.) Pressure control measures to be considered are as follows, in order of preference:
   a) If possible, systems to be designed to residual pressures of 345 to 552 kPa (50 to 80 psi) in all occupied areas outside of the public right-of-way without special pressure control equipment.
   b) Pressure reducing valves to be installed immediately downstream of the isolation valve in the home/ building, located downstream of the meter so it is owner maintained.

2) Peak hour and maximum day demands should be calculated as per Section 4.2.8 of the City's Water Design Guidelines.

Disclaimer

The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.

APPENDIX C

Water Service & Fire Flow Calculation Sheets

Water Service Calculations

LRL File No. : 170132
Project : The Hindu Temple of Ottawa-Carleton
Date : May 4, 2017
Designed by : Guillaume Courtois

1. Institutional Flow Demand

Total fixture units: 47 (as per OBC Table 7.6.3.2.A)
Conversion of fixture units to equivalent gpm: 28 gpm (as per PS&D)

Average institutional water demand = 56529 L / day
= 0.65 L/s

Maximum daily peak factor: 1.5
Maximum daily demand = 84793 L / day
= 0.98 L / s

Maximum hour peak factor: 1.8
Maximum hour demand = 152628 L / day
= 1.77 L / s

2. Water Service Pipe Sizing

Q = VA Where: V = velocity (max velocity = 1.8m/s)
A = area of watermain pipe
Q = water supply flow rate

By deriving the above formula, we can obtain the diameter of the pipe:

Minimum pipe diameter: $d = (4Q/\pi V)^{1/2}$
$d =$ 0.035 m
$d =$ 35 mm

Proposed pipe diameter: 38 mm

3. Fire Flow Calculations

Enter correct multiplier for building's type of frame: | 0.8 |

Options	Multiplier
Wood Frame	1.5
Ordinary Construction	1.0
Non-combustible construction	0.8
Fire resistive construction <2 hrs	0.7
Fire resistive construction >2 hrs	0.6

Enter floor space area of building: | 3162 | m^2 (Ex. Bldg.=1062m^2; Pr. Bldg.=2100m^2)

$$Fire\ Flow = 220\ x\ C\ x\ Area^{0.5}$$

Fire Flow = 9897 L / min

Fire Flow = 164.9 L / s

Reduction / surcharge:

Enter combustibility of contents: | -0.15 |

Options	Multiplier
Non-combustible	-0.25
Limited combustible	-0.15
Combustible	0
Free burning	0.15
Rapid burning	0.25

Adjusted Fire Flow = 8412 L / min

Adjusted Fire Flow = 140.2 L / s

Enter reduction for sprinklers: | 0 |

Options	Multiplier
Sprinklers (NFPA13)	-0.30
Water supply is standard for both the system and fire department hose lines	-0.10
Fully supervised system	-0.10
None	0

Adjusted Fire Flow = 8412 L / min

Adjusted Fire Flow = 140.2 L / s

Enter multipliers for corresponding distances from neighbouring properties:

North side:	0
East side:	0
South side:	0
West side:	0

Sum = 0

Options	Multiplier
0 to 3m	0.25
3.1 to 10m	0.2
10.1 to 20m	0.15
20.1 to 30	0.1
30.1 to 45	0.05
over 45	0

Adjusted Fire Flow =	8412	L / min
Adjusted Fire Flow =	140.2	L / s

Net required fire flow:

Minimum required fire flow rate =	8,400	L / min	(rounded to nearest 100)
Minimum required fire flow rate =	**140.0**	**L / s**	

Required duration of fire flow:

Fire Flow Required (L / min)	Duration (hrs)
2000 or less	1.0
3,000	1.25
4,000	1.5
5,000	1.75
6,000	2.0
8,000	2.0
10,000	2.0
12,000	2.5
14,000	3.0
16,000	3.5
18,000	4.0
20,000	4.5
22,000	5.0
24,000	5.5
26,000	6.0
28,000	6.5
30,000	7.0
32,000	7.5
34,000	8.0
36,000	8.5
38,000	9.0
40,000 and over	9.5

APPENDIX D

Sanitary Septic System Sheets

TREATMENT SYSTEM

ANOXIC ZONE

1.6 METER GRADE RAISE EXPECTED

PUMPING STATIONS

PROPOSED BUILDING

TOTAL AMMONIA 40 mg/LITER AT SOURCE (ASSUMED)
TOTAL NITRATES NOT TO EXCEED 10 mg/LITER AFTER TREATMENT
SOIL TYPE (FILL), BEDROCK AT 1.5 M BELOW EXISTING GRADE

TIME DOSED PUMP STATIONS 91000 LITERS CAPACITY

PRIMARY TREATMENT UNIT 45,500 LITERS CAPACITY

TWO DAYS RETENTION
TWO DAYS RETENTION
TWO DAYS RETENTION

Grass

14.6073

OPTIONAL RETAINING WALL

5.0000

6 RUNS AT 21.336   2.0000

SHALLOW BURIED TRENCH

1.4 METER GRADE RAISE EXPECTED

5.0000

4:1 SLOPES

20.0000

15.0000

5.0000

4:1 SLOPES 7.3941

31.4891

MAXIMUM LOADING PER DAY 6000 LITERS PER DAY
TOTAL CONTACT AREA 826.6 SQUARE METERS
HYDRAULIC LOADING 6000 L/DAY / 826.6 SQM
HYDRAULIC LOADING = 7.25 LITERS PER METER² PER DAY

ORGANIC LOADING RATE
TOTAL GRAVEL CONTACT AREA 279.6 SQUARE METERS
6000 L/DAY * 10 mg PER LITER = 60,000 mg PER DAY
60,000 mg/ DAY/ 279.6 SQUARE METERS
ORGANIC LOADING RATE= 214.5 mg PER SQUARE METER OR .2145 GRAMS/SQM PER DAY

Top of Slope
Approximate Water's Edge
C/L
Approximate of Creek

41.3360

CLF

Scrub Bush

9.14

Heavy Bush

(Part   2   plan   5r–3156)   subject   to   easement   inst.   ns271193

9.14

(Part   3   plan   5r–3156)   together   with   easement   inst.   ns271193

PRELIMINARY DRAFT PROPOSAL
600 PERSONS AT 36 LITERS/PERSON
21,600 LITERS PER DAY

Drawn by: PRS	Designed by: PRS	Checked by: PRS		
Rev.	Description SITE/SEPTIC PROPOSAL		Date	Approved
Township:	Plan#	Lot Sublot Con		
	Civic Address BANK STREET		Date: JUNE 16, 2017	Scale: 1:250
	DIMENSIONAL ANALYSIS		BCIN 13527 BCIN 43452	
	ON-SITE SEWAGE TREATMENT PLAN FOR THE HINDU TEMPLE OF OTTAWA			