

Date: June 6, 2024

UPLAND Planning + Design
1489 Hollis Street, Level 2
Halifax, Nova Scotia, B3J 3M4
Attention: Paul Dec, Planner MCIP LPP

RE: 5375 Kaye Street – United Memorial Redevelopment – Service Capacity Analysis

Introduction

DesignPoint has completed a servicing assessment for the United Memorial Church adaptive reuse development located at 5375 Kaye Street in Halifax in support of the conceptual approval application. Existing system capacity considerations for water, wastewater, and stormwater servicing are included in this analysis.

We understand that there are two scenarios for this development – scenario 1 includes maintaining the performance venue inside the existing church building, and scenario 2 involves converting this space into residential units. For the purposes of this analysis, scenario 1 consisted of 60 multi-residential units, and scenario 2 consisted of 78 multi-residential units.

Wastewater Servicing

The proposed development will discharge wastewater effluent to the existing combined sewer on Young Street. Through discussion with the Halifax Water Regional Water Commission (HRWC), it is understood that this combined sewer has adequate capacity to support both proposed development conditions for this project, and a downstream capacity analysis was not required. The proposed wastewater/combined service lateral connection location is shown in the attached conceptual service plan. The exact location and size of the wastewater and combined lateral are subject to detailed civil and mechanical design of the subject building.

Stormwater Servicing

The proposed development will discharge stormwater effluent to the existing combined sewer on Young Street. Typically, new developments are required to meet both Halifax Regional Municipality (HRM) stormwater balancing and stormwater quality requirements. However, according to section 1.4 of the HRM Stormwater Management Standards, MICI developments located in the regional centre with over 80% building coverage of the lot are exempt from stormwater quality requirements. The proposed development meets these conditions.

Additionally, the existing site is already developed, and has a large percentage of impermeable surface coverage as-is. The concept plans for the development demonstrate that the change in overall impermeable surface area from the new development is negligible. Therefore, a significant change in post-development stormwater flows and volumes are not anticipated to occur due to this development. For this reason, stormwater infrastructure for pre- and post-development balancing is not expected to be required for this project. This will need to be confirmed during detailed design and the approvals process.

Water Servicing

The proposed development is planned to be serviced by the existing 300 mm ductile iron water main located on Young Street. The multi-unit building is proposed to have a minimal front yard setback; therefore, the proposed water lateral configuration will follow Halifax Water Standard Detail 1220 (HWSD 1220 (2019)). The conceptual servicing plan for the proposed development is included as an attachment to this letter. The exact location and size of the water lateral is subject to detailed civil and mechanical design of the subject building.

Hydrant Flow Test

As part of this servicing assessment, a hydrant flow test was completed to establish the expected water system operating pressures during domestic and fire flow scenarios for the new multi-unit building. This test was conducted by Aqua Data Clinic on the morning of May 31st, 2024. The flow hydrant used for the test was in front of Civic 5348 Young Street (Halifax Water Hydrant ID: H673), and the residual hydrant used for the test was in front of Civic 5310 Young Street (Halifax Water Hydrant ID: H43110). The detailed results of this test are included as an attachment to this letter.

Domestic Servicing Assessment

The results from the completed hydrant flow test were used to infer the suitability of the existing water network for domestic servicing requirements as summarised in the Halifax Water Design Specifications (2023). The criteria used for this analysis are summarised below in Table 1. The flow test indicated a 2-psi drop, from 72 psi to 70 psi, at a test rate of 853 USGPM (3229 L/min), which is significantly higher than the domestic demands anticipated from this proposed development. Therefore, the existing water system has adequate capacity to support the domestic demand requirements from the proposed development under both proposed development scenarios while meeting the minimum pressure requirements.

Table 1: Domestic Servicing Requirements Summary

Criteria	Multi-Unit Flow per Unit	Flow with Development Scenario 1	Flow with Development Scenario 2
Average Daily	844 L/unit/day (223 USG/unit/day)	35 L/min (9 USGPM)	46 L/min (12 USGPM)
Maximum Daily	1,097 L/unit/day (290 USG/unit/day)	46 L/min (12 USGPM)	59 L/min (16 USGPM)
Peak Hourly	2,109 L/unit/day (557 USG/unit/day)	88 L/min (23 USGPM)	114 L/min (30 USGPM)
Minimum allowable domestic pressure = 175 kPa (40 psi)			

Fire Flow Servicing Assessment

In addition to a domestic servicing assessment, a fire flow servicing assessment was also inferred from the completed hydrant flow test. The Halifax Water Design Specifications (2023) specify the following requirements for a multi-unit building under maximum day plus fire flow conditions:

- 13,620 L/min (3,600 USGPM) fire flow + Maximum Daily Demand
 - Total = 13,666 L/min (3,612 USGPM)
- Minimum Residual Pressure in System = 150 kPa (22 psi)
- Maximum Pipe Velocity in System = 2.4 m/s (8 ft/s)

The extrapolated results of the completed fire flow test indicate that a flow of 13,666 L/min (3,612 USGPM) results in a residual pressure of approximately 35 psi in the existing water system, which is greater than the minimum required pressure of 22 psi. Therefore, these results show that there is adequate fire flow servicing conditions within the existing water system for the proposed development under both proposed development scenarios.

Closing

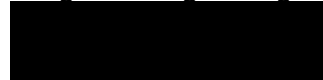
Water, wastewater, and stormwater servicing analyses were completed for the proposed development. In summary:

- HRWC has stated that the existing combined sewer on Young Street has adequate capacity to support the proposed development, and a downstream wastewater capacity analysis was not necessary.
- Due to the exemption in the HRM Stormwater Management Standards, and the negligible change in surface conditions, stormwater quality measures and pre- and post-development stormwater balancing is not expected to be required for the proposed development.
- A hydrant flow test was completed, and the results concluded that the existing 300mm water main on Young Street has adequate capacity to the support domestic and fire flow conditions for both proposed development scenarios.

As demonstrated, the existing municipal services are capable of adequately servicing the proposed development. If there is any information included in this letter that requires clarification, please contact us.

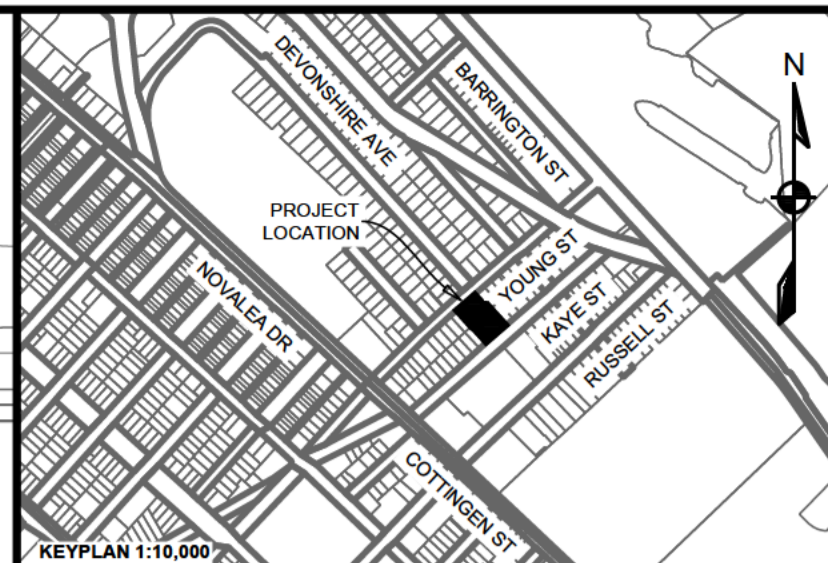
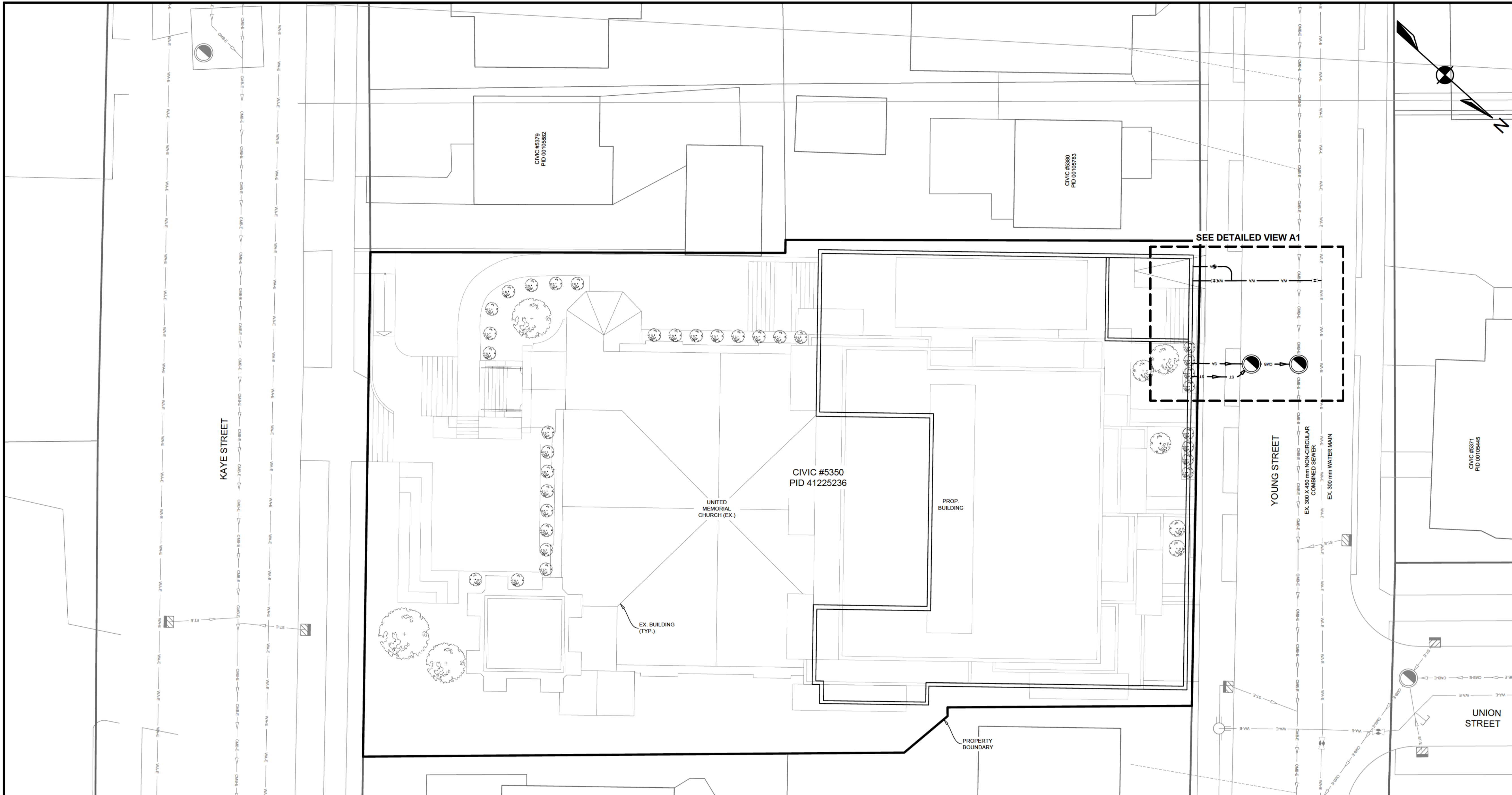
Thank you,

DesignPoint Engineering & Surveying Ltd.



Jeremy Wyatt, P.Eng.
Civil Engineer

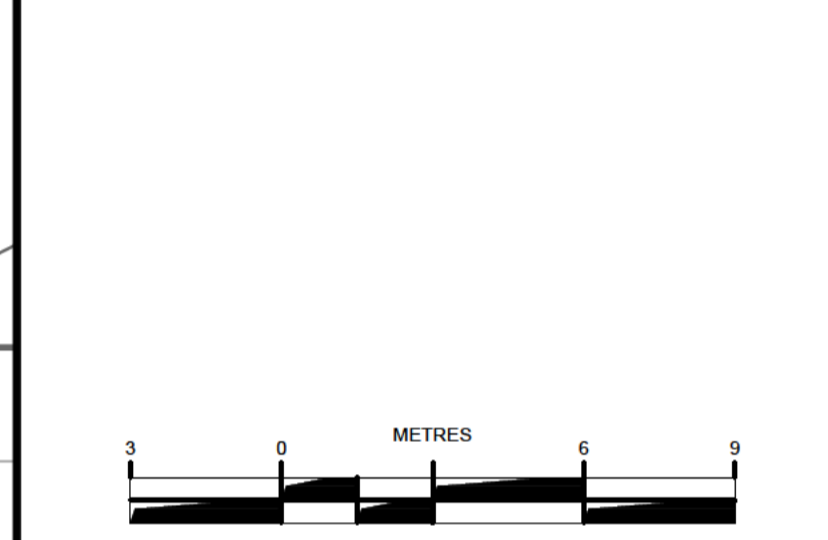
Enclosures: Hydrant Flow Test – Aqua Data Clinic, May 31st, 2024
Conceptual Servicing Schematic – DesignPoint, May 31st, 2024



LEGEND

EXISTING	PROPOSED

- ELEVATIONS ARE REFERENCED TO NOVA SCOTIA PROVINCIAL LIDAR (CGVD2013). CONTOUR INTERVAL IS 0.5 m.
- NOTES:
- ALL WORKS TO BE IN ACCORDANCE WITH HALIFAX WATER DESIGN AND CONSTRUCTION SPECIFICATIONS AND HALIFAX REGIONAL MUNICIPALITY MUNICIPAL DESIGN GUIDELINES (CURRENT EDITIONS).
 - ALL WORKS TO BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR MUNICIPAL SERVICES PREPARED JOINTLY BY THE NOVA SCOTIA ROADBUILDERS ASSOCIATION AND THE CONSULTING ENGINEERS OF NOVA SCOTIA (CURRENT EDITION).
 - LOCATIONS OF EXISTING INFRASTRUCTURE IS BASED ON BEST AVAILABLE INFORMATION, AND USE APPROXIMATE.
 - SERVICING LAYOUT SUBJECT TO DETAILED DESIGN AND APPROVAL BY THE APPLICABLE APPROVAL AGENCIES (e.g. HALIFAX WATER, NOVA SCOTIA DEPARTMENT OF ENVIRONMENT, HALIFAX REGIONAL MUNICIPALITY).
 - STORMWATER MANAGEMENT INCLUDING BALANCING REQUIREMENTS AND MEASURES REQUIRED TO COMPLY WITH THE HALIFAX STORMWATER MANAGEMENT STANDARDS FOR DEVELOPMENT ACTIVITIES TO BE REVIEWED AND DETERMINED AS PART OF DETAILED DESIGN.



ISSUE	DATE	DESCRIPTION	CONSULTANT
A	MAY 31, 2024	ISSUED FOR REVIEW	AK

DESIGNPOINT
engineering • surveying • solutions

902.832.5597 designpoint.ca

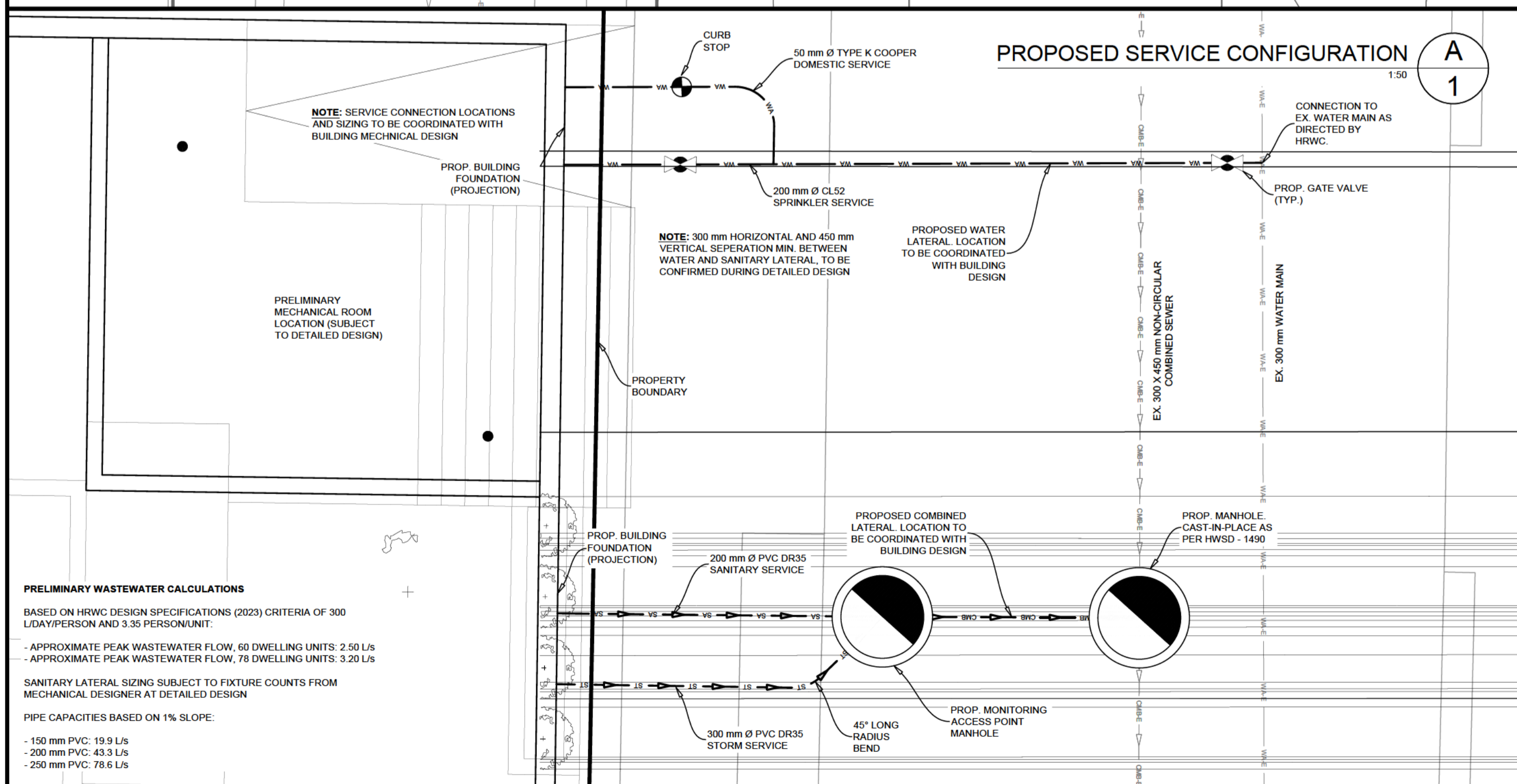
PRELIMINARY
MAY 31, 2024

CLIENT
UPLAND PLANNING + DESIGN

PROJECT DESCRIPTION
UNITED MEMORIAL REDEVELOPMENT
HALIFAX, NOVA SCOTIA
SHEET DESCRIPTION

CONCEPT PLAN

Drawn A. KITSUTA	Engineer J. WYATT	Project No. 24-264	Drawing No. CP-01
Scale 1:150	Filename 24-264_CP.dwg	1 of 1	



WATER FLOW TEST SUMMARY

Type of Area: Residential	Test No: Test # 1 - DesignPoint
Location: Young St / 5375 Kaye St	Test By: Tom Cameron
Municipality: HRM	Date: May 31, 2024

• SYSTEM DATA

Size of Main: Dead End: Two Ways: Loop:

Source Reliable: If not, explain:

Comments: Results are in US GPM and PSI. Hyd coefficient is 0.09

• TEST DATA

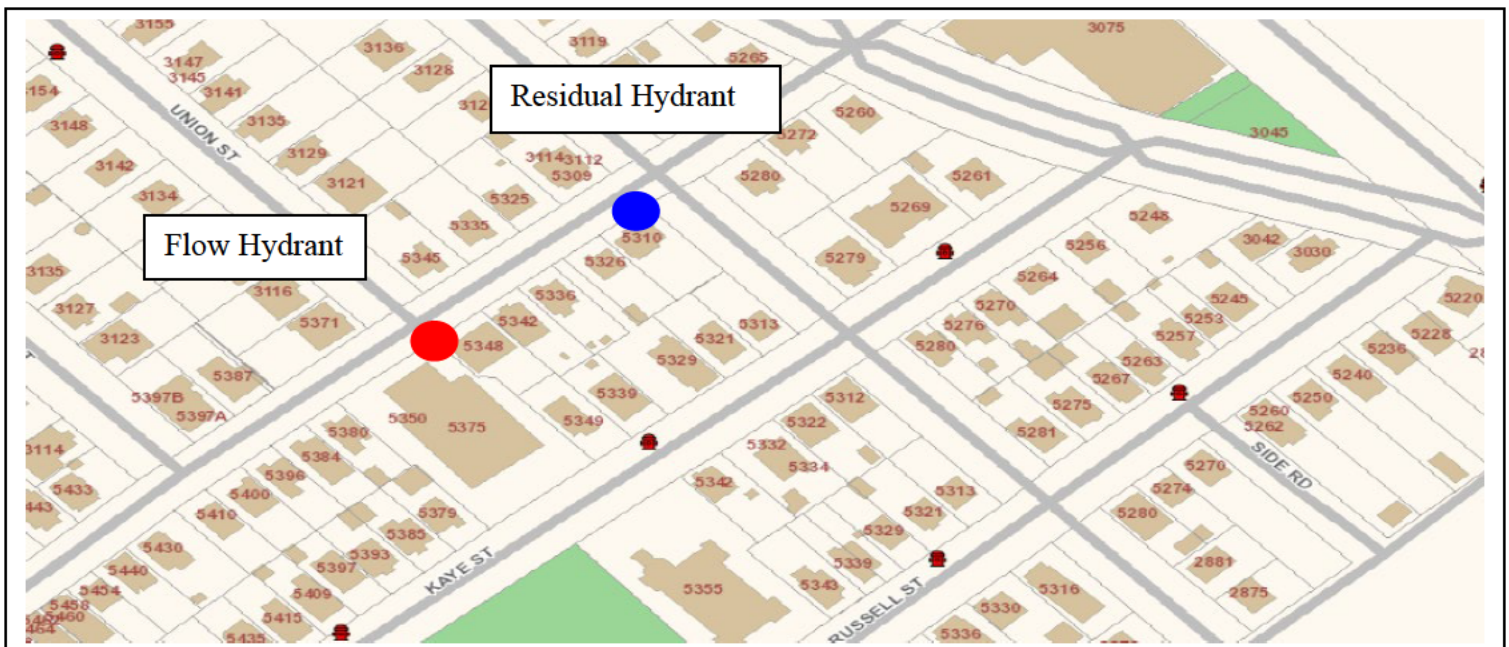
Location of Test Hydrants: Residual:

Flow:

Normal Pressure: Time: A.M. P.M.

Test No.	No. of Outlets	Orifice Size (IN)	Pilotless Nozzle Reading (PSI)	Equivalent Flow (US GPM)	Total Flow (US GPM)	Residual Pressure (PSI)	Comments
1	1	2.5"	26	853	853	70	
2	2	2.5"	16 / 15	669 / 648	1317	66	
3							

Hydrant flow information from the files of the Aqua Data Atlantic, regardless of their original source, are maintained for internal use only. Although such information is often shared with others, people or firms who make use of this data do so at their own risk.





Water Flow Test Summary

Location 5375 Kaye St Municipality Halifax, NS Date May 31, 2024

