



March 1, 2024  
File: 1901

## **Functional Servicing Assessment Bender Street Attraction, Niagara Falls**

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We are pleased to provide a municipal servicing assessment for the proposed development of a 18 storey multi-use building on lands located between Palmer Avenue, Bender Street and Falls Avenue in Niagara Falls. This assessment is preliminary in nature, as the current building and site development is proceeding through the Planning process for Official Plan and Zoning By-Law Amendments.

The proposed building will consist of various uses, including a 402 room hotel, restaurant and retail areas, and speciality event/display areas. This submission will assess the anticipated sewage flows from the building, water flows into the building, stormwater flows from the development site area, and general grading assessment. The proposed building will have 2 levels of underground parking with entrances from Ontario Avenue and Bender Street, with the main lobby to the hotel and retail areas entrance from Ontario Avenue and Bender Street. The surface parking area adjacent to Palmer Avenue, will continue with a revised entrance and an efficient parking layout.

### **General Grading**

The existing grading and drainage on this development generally slopes from Palmer Avenue down to Falls Avenue and from Regional Road 420 to Bender Street. The grade differential from Palmer Avenue to the east site limit is approximately 8.75 metres (186.50 - 177.75m), and from Regional Road 420 to Bender Street averages 0 metres at the east limit, 2.2 metres (183.3-181.1m) along Ontario Avenue and 0.70m (186.50-185.80m) along Palmer Avenue. The proposed building design has considered these grade changes throughout the building and for the proposed entrances from Palmer Avenue, Ontario Avenue and Bender Street.

To construct the proposed building and accesses from Ontario Avenue and into the building, Ontario Avenue road allowance from Bender Street to the north property limit of the site or at the Ontario Avenue overpass of Regional Road 420 within the building limits will be reconstructed approximately following the existing profile. The existing municipal watermain infrastructure in Ontario Avenue will remain. The existing utilities (Enbridge Natural Gas, Bell Canada communications) will also remain. The street lighting of Ontario Avenue will be reinstated with the proposed reconstruction of Ontario Avenue and consideration to the proposed building design.



The vehicle entrance from Palmer Avenue will essentially be the same, however may need grading adjustments for the proposed building design. The Ontario Avenue entrance will form part of the building vehicle layby area on the east side of Ontario Avenue and the Hotel Lobby. On the west side of Ontario Avenue, the building loading area and parking access shall be a level area for building supply drop off and pickup. Finally, the Bender Street vehicle entrance will require adjustment to the existing sidewalk to allow for the entrance on the steep Bender Street profile. The existing profile of Bender Street is approximately 6.6% and the building entrance will be level. The sidewalk reconstruction will level the sidewalk for the entrance and reduce pedestrian/vehicle conflicts.

### **Sanitary Sewage**

The sanitary sewage generated from this proposed building will be from approximately 402 hotel rooms, a restaurant area, retail area, and Hotel Lobby area. We have estimated the peak sewage outflow from this building to 22.3 L/s, and shall outlet to the Bender Street sanitary sewer. The Bender Street sanitary sewer is a 600mm diameter sewer with a critical slope capacity of 588 L/s and drains to the Bender Hill Pumping Station. The Bender Hill Pumping Station has a firm capacity of 330 L/s, and an existing average dry weather and wet weather flows of 36.1 L/s and 118.8 L/s, respectively.

The anticipated sanitary service from the building will be 250mm diameter sewer, and be connected to an existing MH on Bender Street, just east of the Ontario Avenue intersection. The existing 250mm sanitary sewers on Ontario Avenue and Bender Street from the development site may be abandoned. A review of the sanitary sewer system on Bender Street with the building design, the entire building shall have a gravity sanitary sewer outlet to Bender Street.

### **Water Supply**

The existing watermains on Bender Street, Ontario Avenue and Palmer Avenue are 300mm diameter, 200mm diameter and 200mm diameter, respectively. The anticipated building connection would be from the Bender Street watermain near the east limit of building, as this location has building mechanical rooms within the underground parking areas.

The approximate domestic water supply required for this building is 20 L/s, which is based on the anticipated sewage flows from the building. As building height is 21 storey's above the water service connection on Bender Street, a booster pump system will be required for both domestic and fire protection systems. The anticipated water service for this building to supply fire protection is a 250mm diameter and a 150mm diameter for the domestic supply. The water service will be a single 250mm diameter connection to the existing 300mm diameter watermain on Bender Street, with a 150mm diameter tee off for domestic services. Therefore, there will be two water service valves at the property line.



### **Stormwater Management**

The existing and past land uses on this property were fully developed with parking lots and buildings. The proposed development will balance the imperviousness of the site, with the lands along Regional Road 420 to be dedicated as road widening to Regional Niagara, and increase landscape buffering along Palmer Avenue. In addition, the City has noted that the 1200mm diameter storm sewer on Bender Street has been designed for this site development under the previous land uses, which were 100% impervious with buildings and parking lots. Therefore, stormwater quantity controls are not required for this development.

As the stormwater from this site development will be from a building flat roof system, stormwater quality improvements are not considered necessary, as the roof water will be considered clean. Therefore, stormwater quality improvements are not required for this development.

Areas outside the building envelope and property will drain to the adjacent roadway systems. The reconstruction of Ontario Avenue, will outlet to the existing roadside catch basins at the intersection with Bender Street. The landscape area of the future Regional Niagara road widening will drain northerly toward the lower Regional Road 420, that shall not impact the roadway systems.

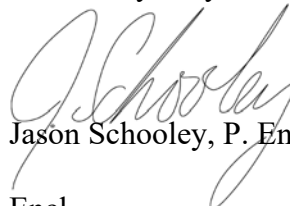
The roofwater and building foundation drainage systems will outlet to the existing 1200mm diameter storm sewer on Bender Street.

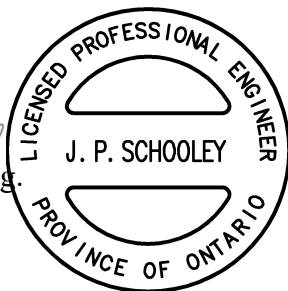
### **Conclusions**

Based on the above assessment, the existing municipal systems (sanitary and storm sewers, and watermain) on Bender Street shall not be impacted by the proposed development and these systems are adequate for the building and site development requirements.

Should you have any questions or concerns regarding the information provided, please do not hesitate to contact our office.

Yours very truly,

  
Jason Schooley, P. Eng.



Encl.

**UPPER CANADA CONSULTANTS**  
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**MUNICIPALITY:** CITY OF NIAGARA FALLS  
**PROJECT :** BENDER STREET - NIAGARA ICE HOTEL  
**PROJECT NO:** 1901

**DOMESTIC WATER & SANITARY OUTFLOW CALCULATIONS**

Per Ontario Building Code

Hydraulic Loads per OBC Table 7.4.9.3 (Minimum Size of Fixture Outlet Pipe)

**HOTEL**

<b>Location</b>	<b>Item</b>	<b>Number of Items</b>	<b>Fixture Units</b>	<b>Subtotal</b>
<b>Retail Area</b>				
<i>(Underground Lvl 2)</i>	Bathroom Group	2	6.0	12.0
<b>Parking Area</b>				
<i>(Underground Lvl 1 - 3)</i>	Maintenance Sink	4	2.0	8.0
	Sinks/Faucets	6	3.0	9.0
<b>Ice Sculpture Gallery / Tropical Garden</b> <i>(Floors 4 - 6)</i>	Urinals	9	1.5	13.5
	Water Closet	30	6.0	180.0
	Washroom Sink	9	1.5	13.5
	Suites - Bathroom Group	442	6.0	2652.0
<b>Hotel Area</b> <i>(Floors 7 - 16)</i>	Linen Closet - Clothes Wash	10	2.0	20.0
	Linen Closet - Sink	10	2.0	20.0
	Icebox	10	1.0	10.0
	Kitchen Sink	3	2.0	6.0
	Sink Bar	4	1.5	6.0
<b>Restaurant/Hotel Lobby &amp; Seating Lounge</b> <i>(Floor 17)</i>	Ice box	1	1.0	1.0
	Dishwasher	1	3.0	3.0
	Urinals	4	1.5	6.0
	Water Closet	12	6.0	72.0
	Washroom Sink	6	1.5	9.0
			<b>Subtotal</b>	<b>3041.0</b>

Total Number of Fixture Units 3041.0

Max Probable Drainage Rate **353.5** gal/min  
**22.3** L/sec

Per OBC Table 7.4.10.5