

# MEO & ASSOCIATES INC.

Architectural & Engineering Consultants, Project Managers



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**RE: Proposed Apartment Building at 2121 Riverside Drive at Rankin Avenue,  
Windsor, Ontario**

## **STORM WATER MANAGEMENT CONSIDERATIONS**

Agbaba Holdings Corporation

2024-08-27

Via email only: [agbabaholdings@gmail.com](mailto:agbabaholdings@gmail.com)

4758 Agbaba 21

**Attention: Marko Agbaba, president**

Marko,

Further to your instructions, we have undertaken a functional review of storm water drainage and runoff management for the new 46-unit apartment building being proposed on the south side of Riverside Drive, west side of Rankin Avenue, with present municipal address of 2121 Riverside Drive, Windsor, Ontario.

### **1. Background**

A 3-storey apartment building is proposed at 2121 Riverside Drive, generally as shown in Figure 1 – Proposed Enlarged Site Plan. As part of the rezoning development process, a functional review of storm water drainage and runoff management has been requested.

Mr. Juan Paramo, P.Eng., Development Engineer for the City of Windsor, has confirmed (via email of July 29, 2024) that the outlet for this new building is the existing 300 mm sewer on Rankin Avenue, in front of the site.

The only data available for the subject sewer is from the City's records, specifically Sheet F5 of the Sewer Atlas, which shows a 300 mm diameter sewer at 0.49% slope, resulting in a capacity of about 68 l/s. The sewer material is vitrified clay pipe; therefore, it is several decades old.

The type of land use in this neighbourhood is residential, with mostly single-family homes. Although there are no specific design records available from the City, it is reasonable to

assume that these sewers were designed according to the historical City of Windsor 1:5-Year IDF curve and a runoff coefficient of  $C=0.40$ .

## **2. Existing Conditions**

Figure 2 shows the various surface areas of the existing site. Using the WERSMS runoff coefficients results in a composite  $C=0.42$ , which is very close to the historical assumed  $C=0.40$ .

Based on the City's historical 1:5-Year IDF curve, a time of concentration of 22 minutes and the  $C=0.40$ , the runoff from this site is calculated to be 10.5 l/s, which will be used as the allowable release rate, even for the 1:100-Year storm.

## **3. Post Development Conditions**

Figure 3 shows the various surface areas after the site is developed. Using the WERSMS runoff coefficients results in a composite  $C=0.78$ .

This  $C$  will be reduced if the paved walkway and/or the parking lot will be surfaced with permeable pavers, however, until this is confirmed, we are considering the worst-case scenario.

Using the WERSMS 1:100-Year equation, a time of concentration of 22 minutes and the  $C=0.78$ , the developed runoff from this site is calculated to be 31.7 l/s.

Since the proposed project will result in an increase in impervious area and runoff, excess storm water emanating from this site will have to be detained, and released at a rate not to exceed 10.5 l/s.

Our preliminary estimate is that for a 1:100-Year storm, a storage volume of 47 cubic metres would be required.

## **4. Detention Storage Options**

Figure 4 illustrates two options that could be employed, individually or jointly, to provide all of the required detention storage volume, and more:

Option 1 can store up to 48 cubic metres on the surface of the parking lot, with the water depth above the catch basin limited to 300 mm maximum.

Option 2 can store up to 48 cubic metres in the landscaped area at the front of the building, with the shallow depressed area limited to 0.61 m. This is envisioned as a terraced and

attractive green space that would be drained of all water after a storm, and thus normally be a “dry” area.

Which option (or combinations) is selected will be determined at the final design stage and prior to applying for a building permit. It is also noted that the project is subject to Site Plan Control.

Once the final Site Plan is confirmed, even if the storage volume ends up being larger than the 47 cubic metres estimated in this review, these two area would still be able to provide (and exceed) the increased detention volume.

### **Conclusion**

The proposed 46-unit apartment building at 2121 Riverside Drive can be provided with sufficient storm water detention storage, on site, and limit its discharge rate to the current 10.5 l/s.

It is my opinion that, if the proposed project is developed as proposed and described herein, it will not have a negative impact on the storm water drainage in this neighbourhood.

If you have any questions, or require any further information, please let us know.

Yours Truly,

MEO & ASSOCIATES INC.

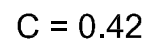


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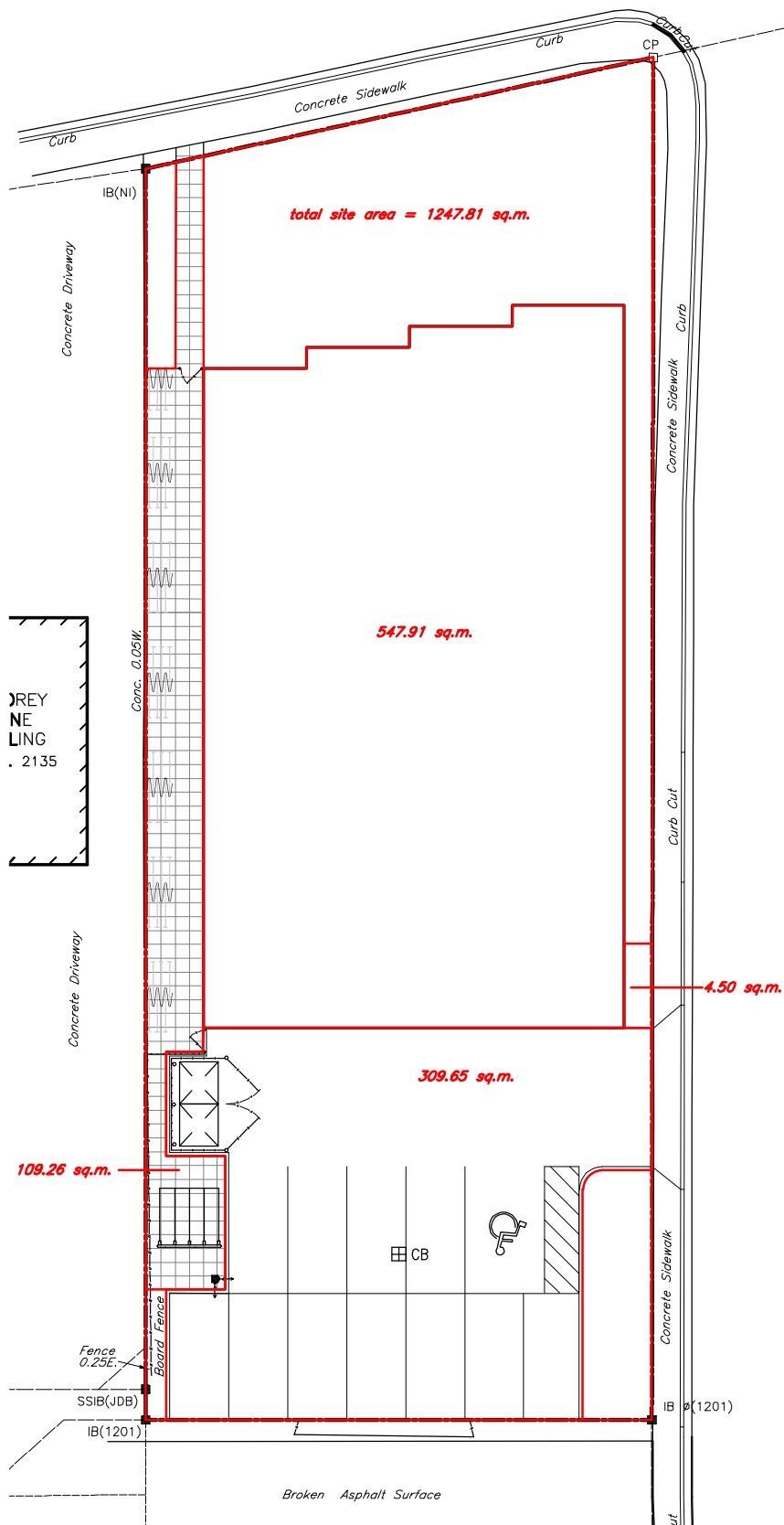
PER: Raffaele Meo, P.Eng., P.E.

Enclosures:    Figure 1 – Proposed Enlarged Site Plan  
                      Figure 2 – Existing Conditions  
                      Figure 3 – Proposed Conditions  
                      Figure 4 – Proposed Conditions Storm Water Detention Storage





Total % Impervious = 29.7% (370.45sq.m.)  
(Roof Area = 315.38 sq.m.)  
(Concrete Area = 55.07 sq.m.)



$C = 0.78$

TOTAL SITE AREA = 1247.81 sq.m.

Total % Pervious = 22.2% (276.49sq.m.)  
(Grass Area = 276.49 sq.m.)

Total % Impervious = 77.8% (971.32sq.m.)  
(Roof Area = 547.91 sq.m.)  
(Asphalt/Concrete Area = 314.15 sq.m.)  
(Pavers Area = 109.26 sq.m.)

FIGURE 3: PROPOSED CONDITIONS RUNOFF COEFFICIENT

PROJECT No:

**4758**

AUTOCAD REF.:

4758 - Proposed Conditions

DATE:

August 27, 2024

SCALE:

N.T.S.

**MEO & ASSOCIATES INC.**  
Architectural & Engineering Consultants

