



June 8, 2018  
MTE File No.: C40602-100

Mr. Ghazwan Yousif  
City of Mississauga  
300 City Centre Drive  
Mississauga, ON L5B 3C1

Dear Mr. Yousif:

**Re: Revised Stormwater Management Brief  
Erinview Proposed Redevelopment Full Build-Out– 2132 Dundas Street West  
City of Mississauga**

In accordance with the City of Mississauga's SPA requirements, four (4) copies of the Existing Conditions and Removals Plan (MTE Drawing C1.1), Site Grading Plan – Phase 2 (MTE Drawing C3.1), Site Servicing Plan – Phase 2 (MTE Drawing C3.2), and Details and Notes Plan – Phase 2 (MTE Drawing C3.3) for the above development are enclosed for your review and approval.

**BACKGROUND AND EXISTING CONDITIONS**

MTE Consultants Inc. was retained by Sifton Properties Limited to prepare a Site Grading Plan and Stormwater Management (SWM) Brief for the proposed redevelopment of the Erin Mills Retirement Community Centre located at 2132 Dundas Street West in the City of Mississauga (herein referred to as 'the Site'). The proposed redevelopment includes the demolition of the existing retirement community centre and the construction of a new facility, to be completed in two stages.

The Site has a total area of approximately 1.02 ha and is bounded to the north by Dundas Street West, to the west by Christ Our King Lutheran Church, to the south by existing residential development, and to the east by Fifth Line West. For the exact location of the Site refer to the key plan located on the enclosed engineering drawings.

In the existing condition, runoff from the Site is collected in a series of on-site catchbasins and conveyed to the north corner of the property where it is discharged to the municipal storm sewer. There are no existing stormwater management quantity or quality controls on the Site.



The existing retirement facility will be demolished in two phases and a new retirement facility will be constructed in two phases. Phase 1, which is now underway, includes the demolition of a portion of the existing building parallel to the south east property line and the construction of a new building in its place, complete with a new driveway and small parking area. A new storm system will tie into the existing on-site storm system which currently outlets at the Dundas Street West and Fifth Line West intersection. Phase 2 will include the demolition of the remaining existing facility and the construction of a new building in its place, complete with parking areas. A new storm system will be constructed for Phase 2, including a new connection at the Dundas Street West and Fifth Line West intersection. The portion of storm system installed during Phase 1 will connect into the Phase 2 storm system.

## **STORMWATER MANAGEMENT**

The Site is located east of Winston Churchill Blvd, in the Loyalist Creek Subwatershed which is governed by the Credit Valley Conservation Authority. The stormwater management design criteria for the subject Site, as established by the City of Mississauga, are as follows:

- i) Provide attenuation of the post-development peak flows for the 10-year storm event to the pre-development (existing) peak flows; and
- ii) Provide on-site retention of the first 5mm of runoff.

## **ATTENUATION**

Per the City of Mississauga Transportation and Works Development Requirements Manual (September 2016), the maximum pre-development (existing condition) runoff co-efficient for a Site that has already been developed is 0.50. This equates to an imperviousness of approximately 43%. The following table summarizes the catchments used in the modeling of the Site. For the pre-development condition, the Site is modeled as one catchment (101). For the post-development condition of the full site build-out, the Site is divided into four catchments: Site (excluding building), Phase 1 building (302), Phase 2 building (303) and the link roof (304). Refer to the attached figures illustrating the pre development and post development catchment areas.

**TABLE 1.1 - CATCHMENT PARAMETERS**

#	Catchment	Area (ha)	% Impervious	Pervious CN	Impervious CN	Slope (%)	Flow Length (m)
<b>Pre-Development Catchment Area</b>							
101	Site	1.021	43	75	98	2.0	15
<b>Post Development Catchment Areas (Full Build-out)</b>							
301	Site (excluding bldgs)	0.599	55	75	98	4.0	10
302	Phase 1 Bldg	0.164	100	75	98	1.5	30
303	Phase 2 Bldg	0.177	100	75	98	1.5	30
304	Link Roof	0.082	50	75	98	2	15

In order to achieve the stormwater management requirements for the Site, runoff generated from catchment areas 302, and 303 will be controlled through the installation of FCRDs, with a maximum depth of ponding on the rooftop of 0.15 metres. With the addition of the FCRDs, the post development runoff for the full site build-out is controlled to 0.164 m<sup>3</sup>/s. Table 1.3 summarizes the flows generated during the 10 year storm event in the post-development condition. No additional on-site controls are proposed.

**TABLE 1.2 - SUMMARY OF FLOWS**

Modeling Condition	10 year Storm Event (m <sup>3</sup> /s)
Pre-Development	0.179
Phase 2 Development	0.164

There is existing external drainage directed onto the Site from neighbouring properties to the south and west. As their condition remains the same throughout the construction phases, this area was not taken into account in the pre and post runoff calculations. The external drainage area was considered when sizing the on-site storm sewer pipes.

**RETENTION**

The geotechnical report by Chung and Vander Doelen dated February 10, 2016 indicates that the soils are not suitable for a traditional infiltration gallery. Therefore, in order to retain the first 5 mm runoff three on-site low impact development strategies are proposed. Based on the site area of 1.21 ha, the retention target for the overall site is 51.1 m<sup>3</sup>. Within the surface parking, hydroPAVERS™ are proposed for the parking stalls.



HydroPAVERS™ are paving stones made up of ceramic granules and bentonite clay that absorb up to 6 L/m<sup>2</sup> of water. Stormwater above the pavers' 6 L/m<sup>2</sup> retention capacity will infiltrate into the gravel bed below or will be directed to the storm system. A green roof on the link between the two towers is proposed to reduce the amount of impervious area on site and provide some retention. The proposed green roof is to be designed by LiveRoof® and will have a total retention capacity of 59 L/m<sup>2</sup>. Finally, it is proposed that the landscaped areas along the west property line and the Dundas Street and Fifth Line West frontages have a thicker layer of topsoil to allow for retention. Having amended topsoil with a 450 mm thickness in these area will allow for greater retention of rainwater falling on the landscaped area by allowing water to be stored in the topsoil while slowly infiltrating into the subbase. By using this combination of LID techniques, the retention requirement of the site is met. See the enclosed calculation sheet for a breakdown of the retention volume achieved by each LID technique.

## **EROSION AND SEDIMENTATION CONTROL**

In order to minimize the effects of erosion during the grading of the Site, sediment control fencing will be installed, as shown on the enclosed engineering drawings, around any stockpiles and around the catchbasins during construction. Any sediment that is tracked onto the roadway during the course of construction will be cleaned by the contractor. To help minimize the amount of mud being tracked onto the roadway, a mud mat will be installed at the primary construction entrance, off Fifth Line West.

## **CONCLUSIONS AND RECOMMENDATIONS**

Based on the foregoing analysis, it is concluded that:

- i) Utilizing FCRDs, the proposed stormwater management design provides adequate attenuation of the 10-year storm in the full build-out of the site;
- ii) HydroPAVERS™, a green roof and topsoil amendment are proposed to achieve the 5mm of required retention; and
- iii) Upon completion of construction, the Site will conform to the design criteria specified by the City of Mississauga.

It is recommended that:

- i) The site grading be undertaken according to the proposed elevations, details and erosion control measures shown on the enclosed engineering drawings; and
- ii) The proposed civil works be inspected by MTE Consultants Inc., during construction, and certified to the City of Mississauga upon completion.



Mr. Ghazwan Yousif, City of Mississauga

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We trust that this information is satisfactory. Please contact the undersigned if you have any questions.

Yours truly,

**MTE CONSULTANTS INC.**

A handwritten signature in blue ink, appearing to read "Maisy Jefferson".

Maisy Jefferson, E.I.T.  
*Designer*

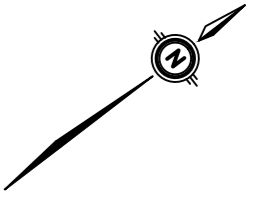
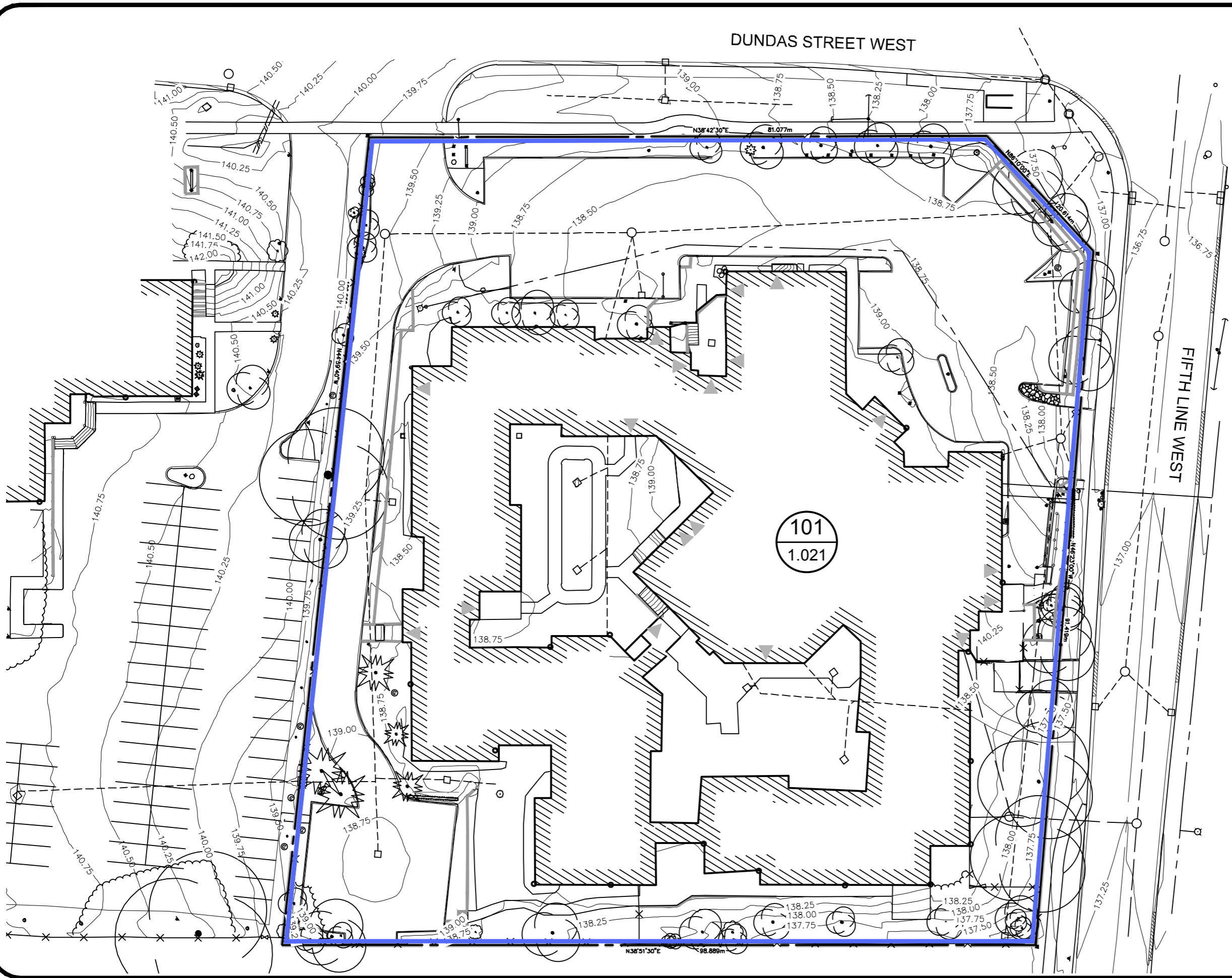


Rebecca Kerr, P.Eng.  
*Design Engineer*

MMJ:dem

cc: Celeste Salvagna, MHBC  
Sabrina Vastag, James Fryett Architect Inc.  
Louise Sanford, MTE Consultants Inc.





**LEGEND**

- CATCHMENT 101
- 101 SUB-CATCHMENT NUMBER
- 1.021 AREA (ha.)

**FIGURE 1.0** Date: JUN.06/18  
Scale: 1:500

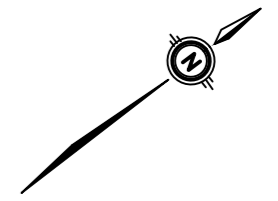
**PRE-DEVELOPMENT  
CATCHMENT AREA**

**MTE**

Engineers | Scientists | Surveyors

Project No.: 40602-100

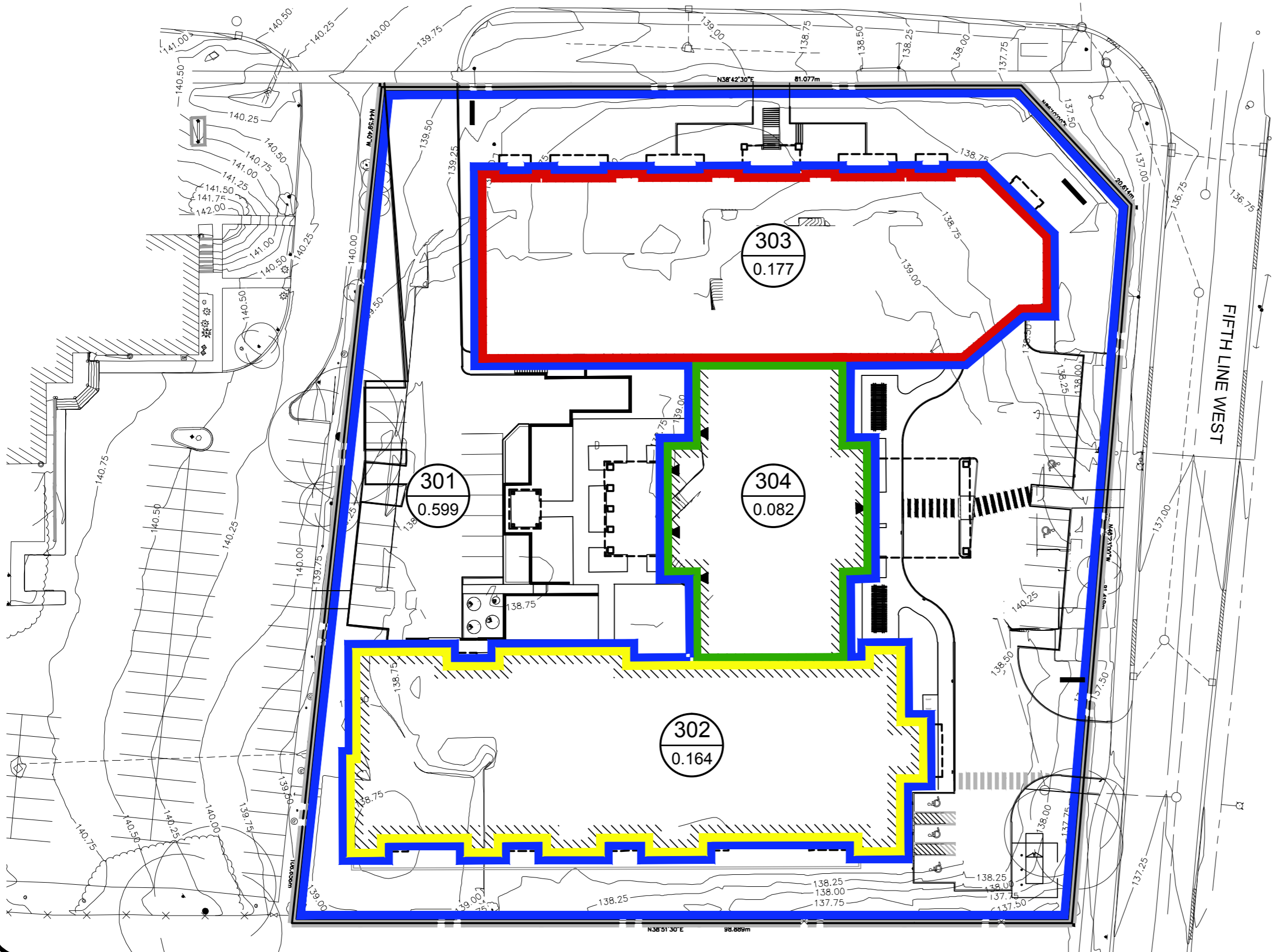
DUNDAS STREET WEST



**LEGEND**

- █ CATCHMENT 301
- █ CATCHMENT 302
- █ CATCHMENT 303
- █ CATCHMENT 304

- 301 SUB-CATCHMENT NUMBER
- 0.599 AREA (ha.)



**FIGURE 2.0** Date: JUN.06/18  
 Scale: 1:500  
**FULL BUILD-OUT POST DEVELOPMENT CATCHMENT AREAS**

**MTE**  
 Engineers | Scientists | Surveyors  
 Project No.: 40602-100

## RETENTION CALCULATIONS

June 6, 2018

### RETENTION REQUIRED

Site Area = 1.021 ha = 10,210 m<sup>2</sup>

Retention Required = 10,210 m<sup>2</sup> \* 0.005 m = **51.1 m<sup>3</sup>**

### HYDROPAVERS:

Capacity = 6 L/m<sup>2</sup>

Area of Pavers = 490 m<sup>2</sup>

Retention Capacity Provided = 6 L/m<sup>2</sup> \* 490m<sup>2</sup> = 2940 L = **2.9 m<sup>3</sup>**

### GREEN ROOF

Capacity = 59 L/m<sup>2</sup>

Area of Green Roof = 372 m<sup>2</sup>

Retention Capacity Provided = 59 L/m<sup>2</sup> \* 372 m<sup>2</sup> = 21,948 L = **21.9 m<sup>3</sup>** (Based on Capacity)

Area Directed to Green Roof = 815 m<sup>2</sup> (includes green roof area and peaked entrance roof)

Volume Directed to Green Roof = 815 m<sup>2</sup> \* 0.03m = **24.5 m<sup>3</sup>**

Note: Assuming 30mm storm event

Since the retention capacity of the green roof is lower than the volume directed it in the 30mm storm, the maximum retention volume is **21.9 m<sup>3</sup>**.

### AMENDED TOPSOIL

Capacity = 90 L/m<sup>2</sup>

Note: Capacity based on 450mm thickness with void ratio of 0.2

Area of Amended Topsoil = 990 m<sup>2</sup>

Retention Capacity Provided = 90 L/m<sup>2</sup> \* 990 m<sup>2</sup> = 89,100 L = **89.1 m<sup>3</sup>**

Volume Directed to Amended Topsoil = 990 m<sup>2</sup> \* 0.03m = **29.7 m<sup>3</sup>**

Note : Assume 30mm storm event

Since the volume directed to the topsoil amended area is lower than its retention capacity, the maximum retention volume is **29.7 m<sup>3</sup>**.

**TOTAL RETENTION VOLUME PROVIDED = 2.9 m<sup>3</sup> + 21.9 m<sup>3</sup> + 29.7 m<sup>3</sup> = 54.5 m<sup>3</sup>**

**RETENTION REQUIRED = 51.1 m<sup>3</sup>**

**RETENTION PROVIDED > RETENTION REQUIRED**



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" Company Microsoft"
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" 4 Add Runoff "

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40602-100 10 yr ultimate MMJa

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"          1 Chicago storm"
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"          Total depth                          51.735 mm"
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" 0.100 Pervious Ia/S coefficient"
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"          40602-100 10 yr ultimate MMJa
" 98.000 Impervious SCS Curve No."
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" 0.100 Impervious Ia/S coefficient"
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" Rainfall losses 37.121 5.860 5.861 mm"
" Runoff depth 14.614 45.874 45.874 mm"
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" 1 Equal length"

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40602-100 10 yr ultimate MMJa

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"      304 Link Roof"
"      50.000 % Impervious"
"      0.082 Total Area"
"     156.000 Flow length"
"      2.000 Overland Slope"
"      0.041 Pervious Area"
"     156.000 Pervious length"
"      2.000 Pervious slope"
"      0.041 Impervious Area"
"     156.000 Impervious length"
"      2.000 Impervious slope"
"      0.250 Pervious Manning 'n'"
"     75.000 Pervious SCS Curve No."
"      0.283 Pervious Runoff coefficient"
"      0.100 Pervious Ia/S coefficient"
"      8.467 Pervious Initial abstraction"
"      0.015 Impervious Manning 'n'"
"     98.000 Impervious SCS Curve No."
"      0.894 Impervious Runoff coefficient"
"      0.100 Impervious Ia/S coefficient"
"      0.518 Impervious Initial abstraction"
"          0.014      0.000      0.012      0.024 c.m/sec"
"      Catchment 304      Pervious      Impervious      Total Area      "
"      Surface Area      0.041      0.041      0.082      hectare"
"      Time of concentration      44.780      4.870      14.458      minutes"
"      Time to Centroid      160.049      94.521      110.263      minutes"
"      Rainfall depth      51.735      51.735      51.735      mm"
"      Rainfall volume      21.21      21.21      42.42      c.m"
"      Rainfall losses      37.105      5.468      21.286      mm"
"      Runoff depth      14.630      46.267      30.448      mm"
"      Runoff volume      6.00      18.97      24.97      c.m"
"      Runoff coefficient      0.283      0.894      0.589      "
"      Maximum flow      0.001      0.014      0.014      c.m/sec"
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"      4      Add Runoff "
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"      6      Combine "
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"          Maximum flow      0.036      c.m/sec"
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"          0.014      0.014      0.014      0.036"
" 40      HYDROGRAPH Confluence 1"
"      7      Confluence "
"      1      Node #"
"          Roof & Site"
"          Maximum flow      0.036      c.m/sec"
"          Hydrograph volume      181.390      c.m"
"          0.014      0.036      0.014      0.000"
" 33      CATCHMENT 301"
"      1      Triangular SCS"
"      1      Equal length"
"      1      SCS method"
"      301      Remainder of Site"
"     55.000 % Impervious"
"      0.599 Total Area"
"     10.000 Flow length"
"      4.000 Overland Slope"

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                                40602-100 10 yr ultimate MMJa
"      0.270 Pervious Area"
"     10.000 Pervious length"
"      4.000 Pervious slope"
"      0.329 Impervious Area"
"     10.000 Impervious length"
"      4.000 Impervious slope"
"      0.250 Pervious Manning 'n'"
"     75.000 Pervious SCS Curve No."
"      0.281 Pervious Runoff coefficient"
"      0.100 Pervious Ia/S coefficient"
"      8.467 Pervious Initial abstraction"
"      0.015 Impervious Manning 'n'"
"     98.000 Impervious SCS Curve No."
"      0.853 Impervious Runoff coefficient"
"      0.100 Impervious Ia/S coefficient"
"      0.518 Impervious Initial abstraction"
"          0.137      0.036      0.014      0.000 c.m/sec"
"      Catchment 301 Pervious Impervious Total Area "
"      Surface Area 0.270 0.329 0.599 hectare"
"      Time of concentration 6.997 0.761 2.083 minutes"
"      Time to Centroid 109.560 88.258 92.775 minutes"
"      Rainfall depth 51.735 51.735 51.735 mm"
"      Rainfall volume 139.45 170.44 309.89 c.m"
"      Rainfall losses 37.217 7.602 20.929 mm"
"      Runoff depth 14.517 44.133 30.806 mm"
"      Runoff volume 39.13 145.40 184.53 c.m"
"      Runoff coefficient 0.281 0.853 0.595 "
"      Maximum flow 0.021 0.131 0.137 c.m/sec"
" 40 HYDROGRAPH Add Runoff "
"      4 Add Runoff "
"          0.137      0.164      0.014      0.000"
" 38 START/RE-START TOTALS 301"
"      3 Runoff Totals on EXIT"
"      Total Catchment area 1.022 hectare"
"      Total Impervious area 0.711 hectare"
"      Total % impervious 69.613"
" 19 EXIT"

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