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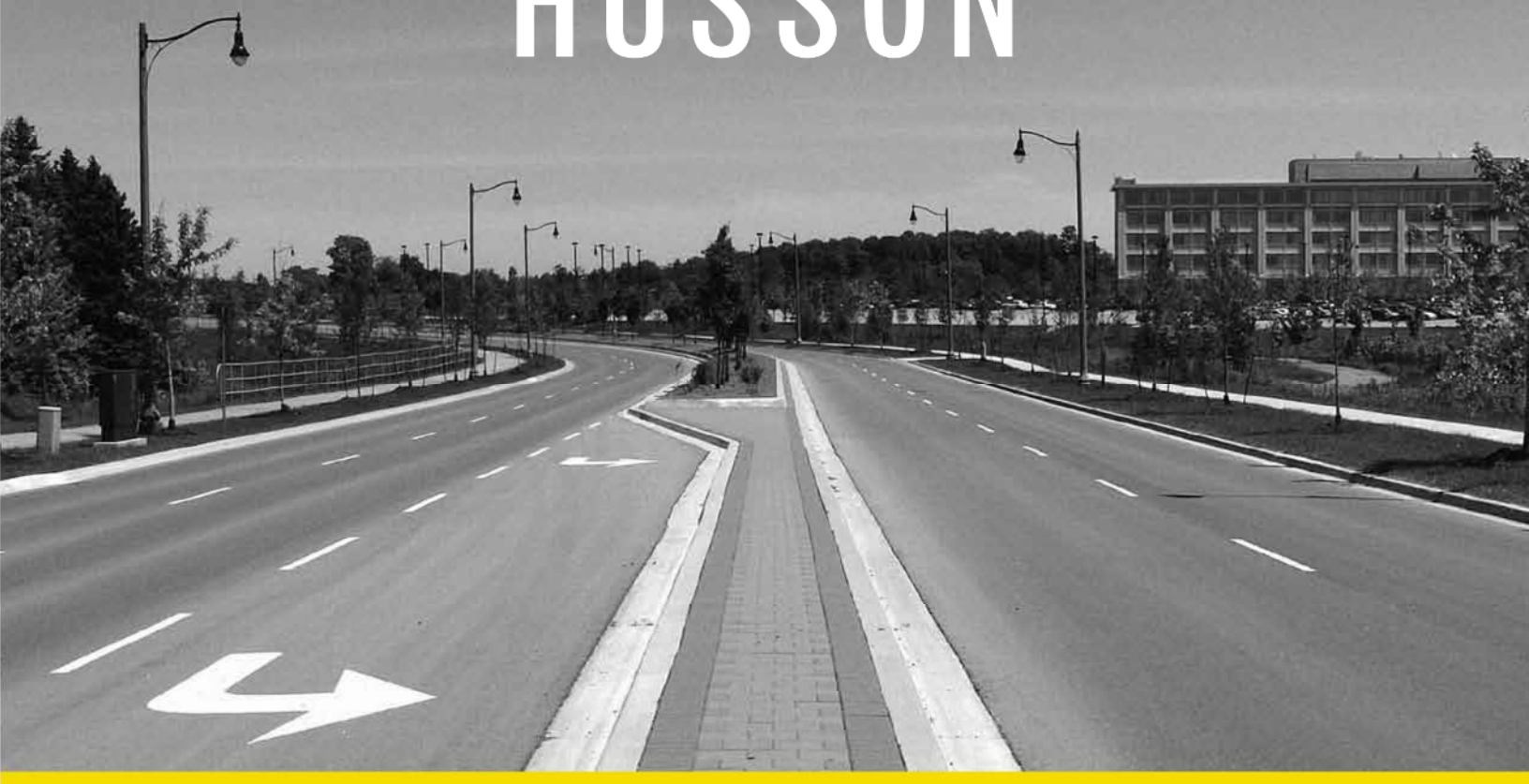

FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

3415-3499 WESTON ROAD
FINCH AND WESTON PLAZA
(PHASE 3/4)
CITY OF TORONTO
M9M 1T7

PREPARED FOR:
MEDALLION DEVELOPMENTS INC.
970 LAWRENCE AVENUE WEST,
SUITE 304
TORONTO, ON M6A 3B6

DATE: DECEMBER 2020

PROJECT: 15753

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1.0 INTRODUCTION

The purpose of this report is to provide functional servicing design information in support of the Rezoning Application for 3415-3499 Weston Road in the City of Toronto, also known as the Finch and Weston Plaza. This report will demonstrate the SWM measures that will be undertaken to deal with water quality and quantity, water balance as well as the proposed sanitary and water servicing designs.

1.1 Site Description

The Finch and Weston Plaza is located at the southeast corner of Finch Avenue and Weston Road in the City of Toronto. The Phase 2 portion of the site is currently under construction.

The proposed Phase 3 and 4 development (the site) consists of 5 buildings – Building A (a 20 storey tower), Building B (a 35 storey tower), Building C (a 40 storey tower), Building D (a 45 storey tower) and Building E (a 55 storey tower). Three levels of underground parking are proposed for the development. This report deals with the entire Phase 3/4 site, and how it is designed to meet the requirements as outlined in the approved design for the proposed municipal infrastructure to service the overall site. **Table 1** outlines the proposed details of the development.

Table 1. Summary of Proposed Phase 2 Development

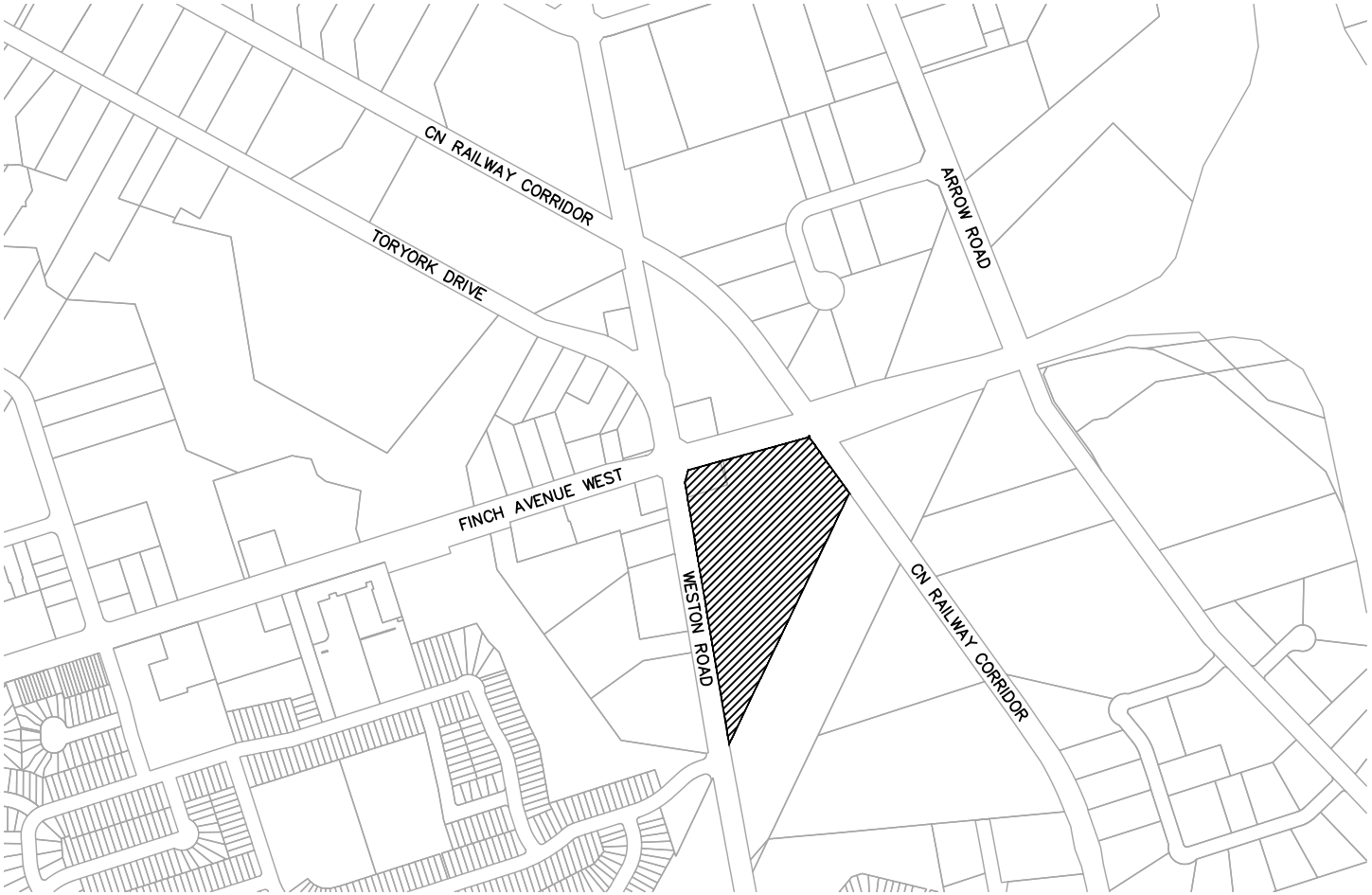
Building	Units	# of Units
Building A	One bedroom	192
	Two bedroom	111
	Three bedroom	16
Building B	One bedroom	221
	Two bedroom	128
	Three bedroom	19
Building C	One bedroom / Studio	290
	Two bedroom	162
	Three bedroom	24
Building D	One bedroom / Studio	295
	Two bedroom	172
	Three bedroom	25
Building E	One bedroom / Studio	348
	Two bedroom	205
	Three bedroom	29
TOTAL:		**2,237**

There is a proposed dedicated park block, representing 5% of the Block 3 & 4 lands, at the southern portion of the site, adjacent to Zappacosta Drive.

The site location is shown on **Figure 1**.

1.2 Background

The functional servicing design for the site has been designed to meet the requirements of the City of Toronto. The following materials were referenced in the preparation of this report.



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LEGEND

SITE LOCATION

FIGURE 1
FINCH AND WESTON ROAD
SITE LOCATION PLAN

DATE: MAY 2020 SCALE: 1:10000 PROJECT: 15753

- The City of Toronto's Wet Weather Flow Management Guidelines (WWFMG).
- The Stormwater Management Planning and Design Manual (MECP Guidelines), prepared by the Ministry of the Environment, March 2003, were referenced in the preparation of the stormwater management plan.
- The Preliminary Hydrogeological Investigation (HI), prepared by WSP, dated December 2020.
- As-constructed plan and profile drawings for Finch Avenue and Weston Road as provided by the City of Toronto.
- As-constructed plan and profile drawings for Zappacosta Drive (Street A), as completed by Vujeva Surveys Ltd., dated July 18, 2016.
- The approved Functional Servicing Report – Finch/Weston Plaza (FSR), by Sernas Associates dated May 2005. This report provided the details for the proposed development, including the Phase 3/4 portion.
- The approved Stormwater Management Report – Finch & Weston Plaza (SWMR), by GHD dated July 2015. This report provided the details for the proposed stormwater management requirements for the proposed development, including the Phase 3/4 portion.
- The approved Functional Servicing and Stormwater Management Report – Finch & Weston Plaza (Phase 2) (FSSWMR), by HUSSON dated September 2018.

The FSR provided analysis for a total of 1,470 units as was proposed at the time, which was updated to 1,728 units that were proposed at the time of the Phase 2 development. An updated sanitary sewer analysis has been completed to reflect the current proposed development in order to confirm the impact on the downstream system, as outlined in **Section 4.3**.

2.0 STORM DRAINAGE

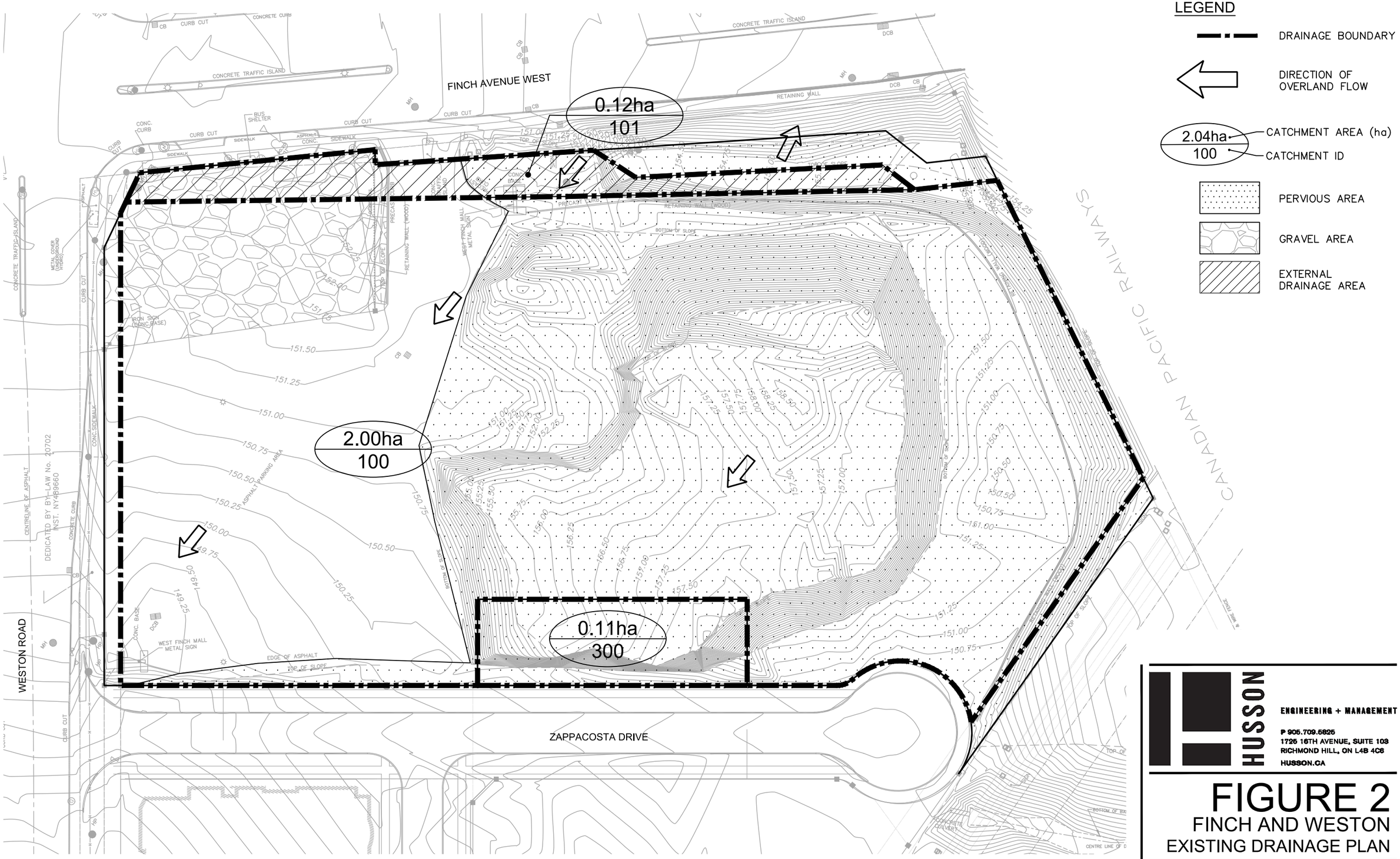
The site is located within the Finch and Weston Plaza, as noted previously. Service connections have been provided on Zappacosta Drive as part of the subdivision design, as per City of Toronto standards. The Phase 3/4 site has been designed as per the requirements of the approved SWMR by GHD, which outlined the SWM requirements for the entire site. The Storm Drainage Plan from the SWMR is included in **Appendix A** for reference.

2.1 Existing Drainage

The area of the subject property that will be impacted by the proposed development currently drains overland towards the south towards Zappacosta Drive.

The existing site also receives external drainage from the lands north of the site, along Finch Avenue, that are shown to be expropriated and conveyed to Metrolinx. Refer to **Figure 2** for the existing site drainage.

There is a 1500mm diameter storm sewer within the Zappacosta Drive Right of Way (ROW) along the south of the proposed Phase 3/4 development. It is proposed to convey the controlled flows from the proposed development to the existing storm sewer.



LEGEND

- DRAINAGE BOUNDARY
- DIRECTION OF OVERLAND FLOW
- 2.04ha / 100 — CATCHMENT AREA (ha) / CATCHMENT ID
- PERVIOUS AREA
- GRAVEL AREA
- EXTERNAL DRAINAGE AREA

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FIGURE 2
FINCH AND WESTON
EXISTING DRAINAGE PLAN

DATE: DECEMEBR 2020 SCALE: 1:750 PROJECT: 15753

Refer to **Figure 2** for the existing site drainage.

2.2 Site Grading

All grading will be completed in a manner to satisfy the following goals:

- Enable gravity servicing connections (where possible) to the proposed area drains on the site.
- Meet the stormwater management objectives for the site.

The site will be graded such that the surface flows will be captured by catchbasins and area drains and directed to the proposed underground storage system within the underground parking for stormwater management, where possible. There is a small portion of uncontrolled flow at the southern portion of the site, adjacent to Zappacosta Drive.

The site will be graded to suit the City's design criteria and accommodate any constraints that may be imposed by the storm drainage and servicing objectives. Details can be referenced on **Drawing SW1.**

2.3 Minor System Drainage

The internal storm sewer system will be designed to collect drainage from the site for a 100-year design storm. All of the storm drainage structures will drain to the underground storage system within the storm network in the underground parking garage. This will be coordinated with the mechanical engineer as part of the detailed design stage.

The flows from the underground storage system will be controlled so that the release rate from the site meets the required flow in the 100-year storm event.

The controlled stormwater flows will discharge to the existing storm sewer on Zappacosta Drive, south of the site.

Inlet control devices in conjunction with the underground cisterns will be used to limit the release rate from the site, as per the WWFMG. Refer to **Section 3.0** for details on the on-site controls.

2.4 Major System Drainage

For storm events exceeding the capacity of the minor system, drainage will pond above the catchbasins and be conveyed to the minor system. The maximum depth of ponding above the area drains will be 0.3m. For extreme events, emergency overland drainage will be conveyed to the Zappacosta Drive ROW.

3.0 STORMWATER MANAGEMENT PLAN

3.1 Stormwater Management Criteria

The WWFMG require a hierarchy approach to wet weather flow management using source controls, conveyance controls and end-of-pipe controls. The stormwater management design and target release rate for this site was based on the requirements outlined in Table 7 of the WWFMG, for small new developments with a total site area less than 5ha.

These requirements are to be accomplished as follows:

- The WWFMG require retention of water on site, to the extent possible, to match pre-development runoff volumes. This requirement is typically achieved by retaining the runoff from a 5mm 24 hour storm on-site, which is equivalent to approximately 50% of the total average rainfall volume.
- Water quantity controls are to be designed such that the 100-year return period storm in the post-development scenario is to be released at the 2-year pre-development flow rate, with an assumed pre-development imperviousness of 50 percent due to the existing site being greater than 75% impervious. Based on the site being less than 2 hectares, a simplified approach using the Rational Method is proposed to compute the peak flows and storage requirements.
- Due to the site ultimately draining to the Humber River, the TRCA unit flow rate for Sub Basin 46 of the Humber River was used to determine the allowable release rate. Based on the calculations in the SWMR, the target release rate for Phase 3 was 24L/s and the target release rate for Phase 4 was 30L/s at that time. However, future expropriation areas along Finch Avenue and Western Road have been excluded from the proposed development. Based on the current proposed drainage area of 2.10ha, the total target release rate for Phase 3 and 4 is 45L/s.
- Water quality controls are required to achieve an 80% total suspended solids (TSS) removal level.
- For small infill/redevelopment sites less than 2 hectares, erosion control in the form of stormwater detention is not required, provided the on-site minimum runoff retention from a 5mm rainfall event is achieved under the Water Balance criteria.

A stormwater management plan has been prepared for the site, following the City and TRCA requirements as well as the MECP Guidelines, to meet the stormwater management criteria for the site.

The following measures are proposed to meet the requirements for this site:

- Landscaping.
- Cisterns in the underground parking in conjunction with orifice tubes or Inlet Control Devices (ICD) to provide storage, peak flow control and a reservoir for stormwater re-use.
- StormFilter unit

The proposed stormwater catchments can be referenced on **Figure 3**. Refer to **Drawing SW2** for the proposed stormwater management plan and **Appendix B** for the functional SWM calculations.

3.2 Water Balance

The WWFM Guidelines require retention of water on site, to the extent possible, to match pre-development runoff volumes. As per the WWFM Guidelines, this requirement is typically achieved by retaining the runoff from a 5mm, 24 hour storm on-site, which is equivalent to approximately 50% of the total average annual rainfall volume (WWFM Guidelines, 2006).

To determine the initial abstraction from site runoff, the following assumptions were made:

LEGEND

- DRAINAGE BOUNDARY
- DIRECTION OF OVERLAND FLOW
- 1.19ha / 202 — CATCHMENT AREA (ha) / CATCHMENT ID
- PERVIOUS AREA
- EXTERNAL DRAINAGE AREA

FINCH AVENUE WEST

WESTON ROAD

ZAPPACOSTA DRIVE

CANADIAN PACIFIC RAILWAYS

0.10ha
203

0.81ha
201

1.19ha
202

1.10ha
300

BUILDING A
FFE=150.95

BUILDING B
FFE=150.95

BUILDING C
FFE=150.95

BUILDING D
FFE=150.95

BUILDING E
FFE=150.95

DEDICATED BY BY-LAW No. 20702
INST. NY489660

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FIGURE 3

FINCH AND WESTON PHASE 3/4
PROPOSED CATCHMENT PLAN

DATE: DECEMBER 2020 SCALE: 1:750 PROJECT: 15753

- For flat rooftop areas, the initial abstraction is generally 1mm. The depression storage is based on the roughness of the surface area and will increase as the rooftop and terrace surfaces degrade with time. This volume of water will generally evaporate.
- Green roof area is credited with an initial abstraction 5mm to 7mm for extensive and intensive green roofs, respectively. An initial abstraction of 5mm was used.
- The landscape areas on the site will be well vegetated, with an initial abstraction of 5mm assumed. The rainfall will initially infiltrate into the growing medium/substrate and eventually evapo-transpire (ET).

Based on the affected site area in the post-development condition of 20,013m^2, the retention volume required by the WWFM Guidelines is approximately 100.1m^3.

Table 2 provides a summary of the initial abstraction estimates and resulting retention volumes for the post development site. Refer to **Figure 3** for the proposed green roof areas on site, and **Appendix A** for calculations.

Table 2. On-Site Retention – Water Balance

Catchment	Area (m^2)	% of Total Area	IA (mm)	IA Over Site (mm)	Retention (m^3)
Rooftop – Building A	1,950	10%	1.0	0.10	1.95
Rooftop – Building B	1,137	6%	1.0	0.06	1.14
Impervious Area to Cistern Ph3	4,370	22%	1.0	0.22	4.37
Pervious Area to Cistern Ph3	665	3%	5.0	0.15	3.33
Cistern Ph3					41.0
TOTAL (Ph3)	**8,122**	**-**		**-**	**51.8**
Rooftop – Building C, D, E	6,469	32%	1.0	0.32	6.47
Green Roof – Parking Garage	405	2%	5.0	0.10	2.03
Impervious Area to Cistern Ph4	4,009	20%	1.0	0.20	4.01
Pervious Area to Cistern Ph4	1,008	5%	5.0	0.25	5.04
Cistern Ph4				3.90	46.0
TOTAL (Ph4)	**11,891**	**-**		**-**	**63.6**
TOTAL:	**20,013**	**100%**		**5.76**	**115.3**

Based on the proposed design, the equivalent of approximately the first 5.76mm of each storm event will be retained on site, which is greater than 50% of total average annual rainfall volume (as per WWFM Guidelines - Table 1a, 2006).

The stored water will be pumped and used for irrigation to meet the City's requirements, as feasible. The pump will be sized by the mechanical engineer as part of the detailed design of the buildings.

3.3 Quality Control

Based on the City's requirements, the water quality criterion for this site is 80 percent average annual TSS removal from runoff originating onsite.

The majority of the Phase 3/4 site is rooftop or landscaped area which produces generally clean runoff. The quality control requirements for the site can be addressed through a combination of on-site landscape measures.

Overall TSS removal capabilities are based on the following assumptions:

- Rooftop runoff is generally clean; runoff from the rooftop will be routed to the underground cistern. Based on acceptable values provided by Toronto Water, rooftop runoff is credited with 80 percent TSS removal.
- Landscaped areas provide significant infiltration and generally have a lower TSS loading compared to roadways. Based on acceptable values provided by Toronto Water, landscape runoff is credited with 80 percent TSS removal.
- Runoff from the proposed walkway area in the Phase 3 area are considered generally clean. Based on acceptable values provided by Toronto Water, runoff from landscaped areas is credited with 80 percent TSS removal.
- Flows from the impervious areas of the site will be treated by a Stormfilter treatment system before entering the proposed cistern, to provide 80 percent TSS removal.

Based on the City's requirements, the water quality criterion for this site is 80 percent average annual TSS removal from runoff originating onsite. A Stormfilter unit in conjunction with landscaping and green roof will be used to achieve the water quality targets onsite for each phase. A StormFilter stormwater treatment system is a Filtration based MTD certified by the New Jersey Department of Environmental Protection (NJDEP) to provide 80% TSS Removal as a standalone treatment device, and is recognized by the City of Toronto as an acceptable stormwater treatment device.

Phase 3

The overall TSS removal for the Phase 3 portion of the site is summarized below in **Table 3**. To be conservative, the Stormfilter unit has been sized to provide treatment for the rooftop areas as well as the ground areas.

Table 3. Quality Control Summary – Phase 3

Catchment	Area (ha)	TSS Removal Credit*	StormFilter TSS Removal	Overall TSS Removal
Surface Driveway	0.44	0%	80%	80%
Rooftop Areas	0.31	80%	80%	80%
Surface Walkway/Landscape Area	0.07	80%	80%	80%

* - Rooftop and Landscaped areas are considered clean flows and credited with 80% TSS removal.

Phase 4

The overall TSS removal for the Phase 4 portion of the site is summarized below in **Table 4**. To be conservative, the Stormfilter unit has been sized to provide treatment for the rooftop areas as well as the ground areas.

Table 4. Quality Control Summary – Phase 4

Catchment	Area (ha)	TSS Removal Credit*	StormFilter TSS Removal	Overall TSS Removal
Surface Driveway	0.40	0%	80%	80%
Rooftop Areas	0.65	80%	80%	80%
Green Roof	0.04	80%	80%	80%
Surface Walkway/Landscape Area	0.10	80%	80%	80%

* - Rooftop and Landscaped areas are considered clean flows and credited with 80% TSS removal.

Therefore, with the StormFilter, green roof and landscape areas treating the runoff, all quality control requirements are satisfied for both phases. Refer to **Appendix C** for the details for the Stormfilter units.

Additional quality controls for this site will be limited to providing goss traps on catchbasins and directing impervious runoff to landscaped areas, where possible. Therefore, all runoff originating on site will be treated to the minimum requirement of 80 percent TSS removal.

3.4 Quantity Control

3.4.1 Target Release Rate

The site has been designed to limit the peak release rate to the required rates based on the target release rates outlined in the SWMR to meet the unit flow rates for Sub Basin 46 of the Humber River. The following options were considered for quantity control on site:

Storage chambers/cistern – A restrictor pipe could be provided at the site outlet, with surplus storage provided in storage tanks.

Rooftop Storage – Controlled flow roof drains could be installed on the rooftop and water could be stored on the rooftops to attenuate peak flows. With typical flat rooftop design, flows can generally be limited to approximately 42L/s/ha.

In order to meet the allowable release rate of 45L/s for the site, it is proposed that cisterns in the underground parking areas will be used as part of the proposed design.

3.4.2 Quantity Control Measures

Drainage and grading will be generally consistent with the existing drainage patterns on the site. The proposed site modifications will not significantly change the hydrological characteristics of the site.

As mentioned, flows from the proposed Phase 3/4 development will be routed through the mechanical system to the cisterns to provide storage for the controlled flows outletting to the existing storm sewer on Zappacosta Drive. The total release rate for the site will be as shown in **Table 5** following.

Table 5. Site Summary – Quantity Control

Description	Total Area (m^2)	Target Flow (L/s)	Release Rate (L/s)	Required Storage (m^3)
Phase 3 Draining To Cistern	8,122			
External Drainage Area	981			
TOTAL – Phase 3	9,103	-	11.0	416
Phase 4 Draining To Cistern	11,891		34.0	468
TOTAL:	**20,994**	**45.0**	**45.0**	**884**

The release rate from the cistern for the Phase 3 development will be controlled by an inlet control device, sized for 11L/s at head of 2.9m, in order to achieve the target release rates for the development. The release rate for the Phase 4 portion of the site will be controlled by an inlet control device, sized for 34L/s at head of 3.0m.

As shown, the total release rate for the site in the post development scenario during the 100-year event will meet the required release rates as per the WWFM Guidelines and TRCA requirements for Sub Basin 46 of the Humber River. There are sufficient controls to meet all the required targets for water balance, as well as for water quality and quantity for the site. Calculations for storage volume requirements and peak flows are provided in **Appendix A**. Refer to **Appendix C** for preliminary Stormtech storage chamber sizing and specifications.

4.0 FOUNDATION DRAINAGE

The City of Toronto's Design Criteria for Sewers and Watermains (Toronto Municipal Code, Chapter 681 – Sewers) states that subsurface groundwater shall not be discharged or deposited into a storm sewer, or watercourse. A Preliminary Hydrogeological Investigation (HI) has been completed by WSP to identify groundwater levels in relation to the elevation of the lowest level of the proposed building, including seasonal fluctuations, and the rate, quality and quantity of any groundwater proposed to be pumped and discharged.

The results of the HI confirmed that the groundwater levels within the affected area of the site was in the range of 141.02 – 143.53, or approximately 7.25-10.00m below the ground surface. Based on the estimated elevation of the P3 floor slab at 139.90, a conventional sub-floor Private Water Drainage System (PWDS) with perimeter/underfloor weeping tile is proposed. This will be confirmed at the detailed design stage of the development.

The short-term construction dewatering rate of 95,300L/day (1.10L/s) was used in the calculations, as outlined in the HI. The maximum short-term pump peak flow rate will be designed to convey this flow at a minimum, to be confirmed in the detailed design in coordination with the mechanical engineer. The flow rate of approximately 1.1L/s is significantly less than the proposed sanitary flow of 38L/s as outlined in **Section 5.2**, so will not have an adverse impact on the downstream sanitary sewer system, as there is sufficient capacity as outlined in **Section 5.3**.

The estimated steady state discharge of the PDS in the wet seasons of the year was calculated to be approximately 2,900L/day, or 0.03L/s. The groundwater will be pumped and discharged into the City sanitary sewer system. The groundwater sump pumps will be sized at the detailed design stage, to provide sufficient flows to meet the City's requirements. As shown on **Drawing SW2**, the groundwater will outlet to sampling ports at the southern property line for each sanitary connection as required, and connect to the sanitary control MH before connecting to the existing 250mm diameter sanitary sewer in the Zappacosta Drive ROW.

The City's groundwater forms are provided in **Appendix D**. The appropriate letters will be provided at the detailed design stage, as required.

As required by the City, a groundwater sampling port has been included in the design, as noted above. The detailed design of the internal system will be finalized at the building permit stage of the project, in conjunction with the mechanical engineer.

5.0 SANITARY DRAINAGE

5.1 Receiving System

As outlined in the FSR, the proposed development is tributary to the Emery Creek Trunk Sanitary Sewer, which is part of the Humber River Waster Water System. The report confirmed that there was existing capacity in the system to accommodate the proposed development based on a unit count of 1,470. The approved FSSWMR completed as part of the Phase 2 development confirmed that there was capacity for the 1,728 units that were proposed at that time. An updated analysis has been completed based on the current proposed unit count.

The existing sanitary sewer on Zappacosta Drive is a 250mm diameter sewer that drains to Weston Road as outlined in the FSR.

One sanitary connection for each building is proposed for the development, refer to **Drawings SW2** and **SW3**.

5.2 Proposed Sanitary System

The following is a summary of the sanitary demand for the proposed Phase 3/4 portion of the development. The summary is based on the design guidelines from the City of Toronto's Design Criteria for Sewers and Watermains and the Ontario Building Code.

The summary of the sanitary flows for the proposed development is shown below in **Tables 6** and **7**. The summary is based on the design guidelines from the City of Toronto's Design Criteria for Sewers and Watermains and the Ontario Building Code.

Table 6. Sanitary Flows to Zappacosta Drive (Phase 3)

Development Type	Total Area/Unit Count	Population Density (pp/ha or pp/unit)[1]	Population	Peaking Factor[2]	Peak Sanitary Flow (L/s)[3]
1 Bedroom	413 units	1.4	579	-	-
2 Bedroom	239 units	2.1	502		
3 Bedroom	35 units	3.1	109		
Commercial/Retail	1,203m^2	110	14	-	-
TOTAL:	**-**	**-**	**1,204**	**3.74**	**12.6**

[1]Population densities based on Toronto Design Criteria for Sewer and Watermains, Table: Equivalent Populations.

[2]Peaking Factor calculated as per Harmon Equation.

[3]Wastewater flow calculated based on 240L/cap/day.

Table 7. Sanitary Flows to Zappacosta Drive (Phase 4)

Development Type	Total Area/Unit Count	Population Density (pp/ha or pp/unit)[1]	Population	Peaking Factor[2]	Peak Sanitary Flow (L/s)[3]
1 Bedroom / Studio	933 units	1.4	1,307	-	-
2 Bedroom	539 units	2.1	1,132		
3 Bedroom	78 units	3.1	242		
Commercial/Retail	0 m^2	110	0	-	-
TOTAL:	**-**	**-**	**2,681**	**3.48**	**25.9**

[1]Population densities based on Toronto Design Criteria for Sewer and Watermains, Table: Equivalent Populations.

[2]Peaking Factor calculated as per Harmon Equation.

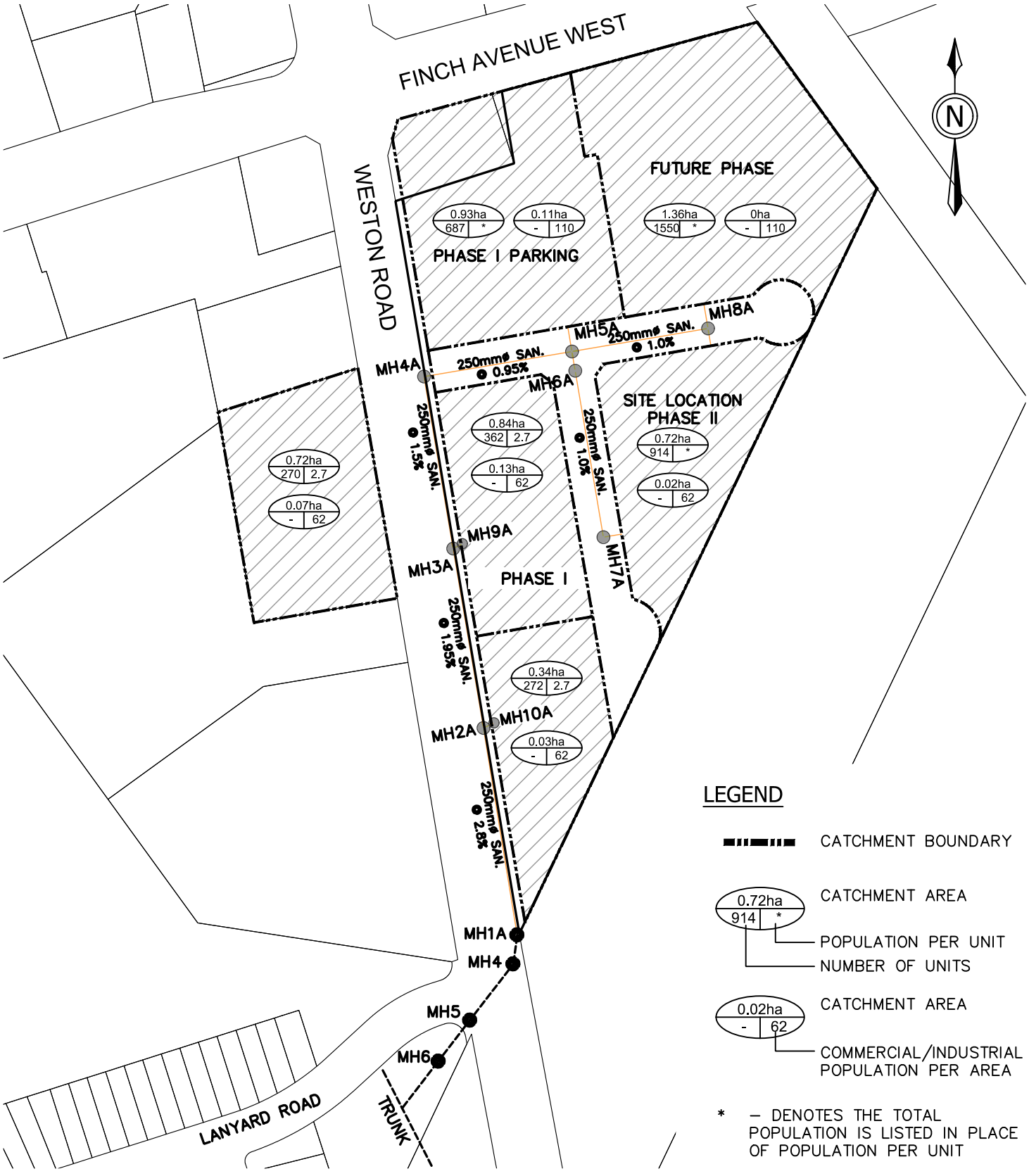
[3]Wastewater flow calculated based on 240L/cap/day.

Based on the proposed floor areas and unit counts for Phase 3 and 4, the estimated sanitary flow from the proposed development will be 12.6L/s and 25.9L/s respectively to the sanitary sewer on Zappacosta Drive.

As requested by the City, a separate connection has been shown for each tower and pavilion level of the proposed development.

5.3 Downstream Analysis

A downstream sanitary analysis was completed for the 250mm diameter sanitary sewer system on Weston Road as part of the approved FSSWMR for the Phase portion of the development. All of the phases for the development to the south east of the intersection of Finch Avenue West and Weston road were included in this analysis. Additionally, as confirmed by the City, the property at 3406-3434 Weston Road was included in the catchment area for the sanitary sewer system. The Plan and Profile drawing obtained from the City does not show sanitary connections to Weston Road from 3490 Weston Road. The total catchment area is shown on **Figure 4**.



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ENGINEERING + MANAGEMENT
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1725 16TH AVENUE, SUITE 103
RICHMOND HILL, ON L4B 4C6
HUSSON.CA

FIGURE 4

FINCH AND WESTON PHASE 2 SANITARY DRAINAGE PLAN

DATE: MAY 2017 SCALE: 1:2500 PROJECT: 15753

The total contribution to the system is a population of 3,871 from residential units, and approximately 1,082m^2 of commercial and indoor amenity space. This results in a total flow contribution to the trunk sewer of approximately 38L/s, which results in pipe between MH6 and the trunk, the most critical pipe with a capacity of approximately 59L/s, flowing at 110% capacity. However, based on this last length of sewer being located downstream of the drop structure under the watercourse, with no service connections and the depth of the sewer being more than 3.6m deep, and the pipe immediately upstream being 31% full due its 12% slope, the pipe being over capacity does not cause the HGL to be less than 1.8m from the ground level. Refer to **Appendix A** for the Plan and Profile drawing for the sanitary sewer.

The City accepts surcharging during Wet Weather Flow scenarios provided that 1.8m freeboard is provided to the ground surface in areas where service connections exist, and 0.0m freeboard to the ground surface in areas where there are no service connections; therefore, the proposed development meets the requirements and can be safely conveyed by the existing sanitary sewer system to the trunk sewer.

Refer to **Appendix E** for the Sanitary Sewer Design Sheet.

6.0 WATER DISTRIBUTION

6.1 Proposed Water System

There is a 200mm diameter watermain on the north side of Zappacosta Drive.

One water connection for each building is proposed for the development, and one is proposed for each podium as required. Redundant fire connections are proposed for buildings greater than 84m in height, as required. Refer to **Drawings SW2** and **SW3** for details.

Hydrant flow tests were completed by Jackson Waterworks on May 18, 2017 for hydrants on Street A and on Street B, see attached in **Appendix F**.

The following is a summary of the domestic water demand and fire flow requirements for the proposed development. The summary is based on the design guidelines from the City of Toronto's Design Criteria for Sewers and Watermains and the Ontario Building Code.

City of Toronto's Design Criteria for Sewers and Watermains:

Persons per unit:	Bachelor:	1.4
	1 bedroom:	1.4
	2 bedroom:	2.1
	3 bedroom:	3.1
Residential per capita demand (multi-unit):		191 L/capita/day
Peaking Factor:	peak hour (apartments)	2.5
	peak hour (commercial/daycare)	1.2
	maximum day (apartments)	1.3
	maximum day (commercial/daycare)	1.1
Minimum Pressure (under non-fire demand scenario):		275 kilopascals(kPa)
Minimum Pressure (under fire demand scenario):		140 kPa

6.2 Domestic Water Analysis

The domestic water analysis for the proposed development is based on the preliminary design by IBI Group Architects dated December 2020. The proposed Phase 3 and 4 development consists of 5 buildings – Building A (a 20 storey tower), Building B (a 35 storey tower) in Phase 3, and Building C (a 40 storey tower), Building D (a 45 storey tower) and Building E (a 55 storey tower) in Phase 4.

Based on the preliminary design, the water demand for the site will be based on the populations determined in Tables 6 and 7 in Section 5.2.

6.2.1 Average Daily Demand:

Phase 3 = 1,202 (Population) x 191 (L/ capita /day)
= 229,582 L/day
Phase 3 Retail = 1,082m^2/10,000 x 180,000 litres/floor ha/day
= 19,476 L/day
Phase 4 = 2,681 (Population) x 191 L/capita/day
= 512,071L/day
Total = 761,129 L/day

6.2.2 Peak Hour Demand:

Phase 3 = 229,582L/day x 2.50 (peaking factor (pf))
= 573,955 L/day
= 6.64 L/sec (105.2 gallons/minute)
Phase 3 Retail = 19,476 L/day x 1.20 (peaking factor (pf))
= 23,371 L/day
= 0.27 L/sec (4.3 gallons/minute)
Phase 4 = 512,071 L/day x 2.50 (peaking factor (pf))
= 1,280,177.5 L/day
= 14.82 L/sec (234.9 gallons/minute)
Total = 21.73 L/sec (344.4 gallons/minute)

6.2.3 Maximum Day Demand:

Phase 3 = 229,582 L/day x 1.30 (peaking factor (pf))
= 298,456.6 L/day
= 3.45 L/sec (54.7 gallons/minute)
Phase 3 Retail = 19,476 L/day x 1.10 (peaking factor (pf))
= 21,423.6 L/day
= 0.25 L/sec (4.0 gallons/minute)
Phase 4 = 512,071 L/day x 1.30 (peaking factor (pf))
= 665,692.3 L/day
= 7.70 L/sec (122.0 gallons/minute)
Total = 11.40 L/sec (180.7gallons/minute)

With maximum day and peak hour domestic flows of 180.7 gallons/minute and 344.4 gallons/minute for the proposed development, sufficient pressure will be confirmed when the hydrant flow test is completed in the spring.

6.3 Fire Analysis

As required in the Building Code, Section 3.2.9.7 (3), if a building is 84m or higher, measured between grade and the ceiling level of the top storey, the water supply for fire as required in Section 3.2.9.7 (1) shall be provided by sufficient pumping capacity. For the towers that are proposed to be higher than 84m, the water supply for fire will be provided as part of the internal building works by sufficient pumping capacity. The pump will be design by a mechanical engineer during the detailed design stage of the project.

In addition, the detailed fire formula on page 17 of the Fire Underwriter's Survey was used to calculate the minimum fire flow. The architect provided the following information for the proposed development:

- Maximum Floor Area:
  Building A = 2,233m^2
  Building B = 1,461m^2
  Building C = 9,652m^2
- Vertical openings and exterior vertical communications are properly protected
- Fire resistive construction
- Complete, fully supervised, automatic sprinkler system, with water flow and control valve alarm service

Table 8 provides the building characteristics and minimum fire flow requirements for the buildings.

Table 8. Fire Flow Estimates

Population Type	Area (m^2)	Construction Coefficient	Occupancy Increase/ Decrease	Sprinkler	Exposure	Required Flow (L/min.)
Building A	2,233	0.6	0%	50%	30%	6,000
Building B	1,461	0.6	0%	50%	35%	5,000
Building C, D, E	9,652	0.6	0%	50%	30%	11,000

When using this information, the minimum fire flow was 6,000 L/min for Building A, 5,000L/min for Building B and 11,000L/min for Building C, if the buildings are constructed using 'fire resistive construction' with fully automated sprinkler system and vertical openings and exterior vertical communications properly protected; see calculation attached in **Appendix E**.

The results of the hydrant flow tests show that the theoretical fire flow at the minimum City pressure of 140kPA (20psi) was 25,975L/min (6,862gal/min) on Zappacosta Drive (Street A) and 19,495L/min (5,150gal/min) on Vena Way (Street B). Based on the required minimum fire flow of 11,000L/min the proposed building will be protected as required.

Minimum fire flows will be confirmed with the hydrant flow test that will be completed in the spring, as required.

Drawing SW2 shows the proposed service connections.

7.0 CONCLUSIONS

The stormwater management design for the site has been designed to meet the criteria outlined by the City and the MOE Guidelines. The plan will consist of the following:

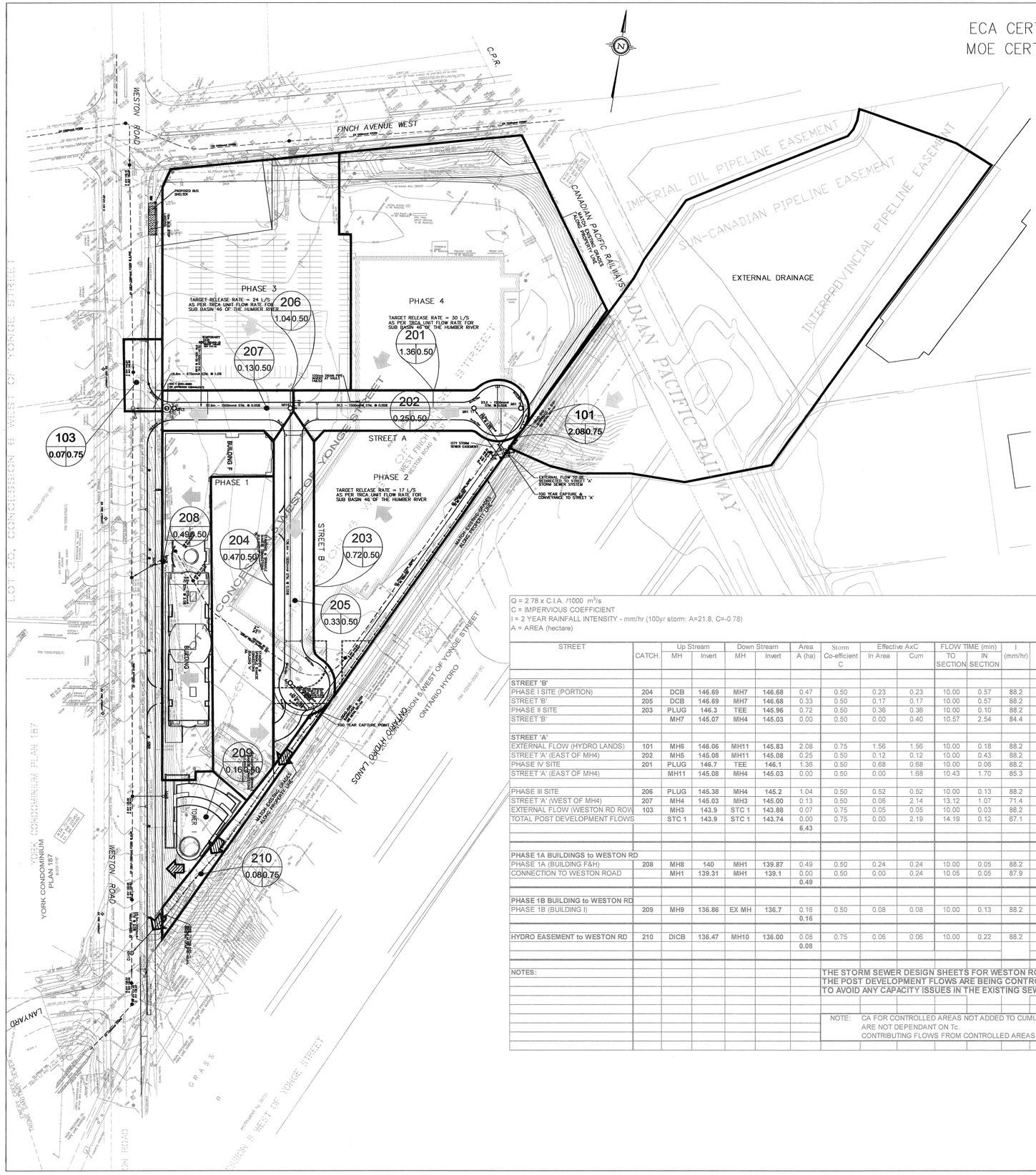
- The existing storm sewer on Zappacosta Drive adjacent to the site can be used to direct the flows from the proposed development to the existing storm sewer system downstream of the site. The proposed development meets the criteria of the WWFM Guidelines.
- There is sufficient capacity in the storm sewer to convey the proposed storm flows as per City Design Criteria.
- The water balance targets for the site will be achieved through the proposed landscape areas and proposed water re-use with the proposed cisterns.
- Quality control is provided through StormFilter units upstream of the proposed cisterns, rooftop and landscaped areas.
- Peak flows will be controlled using the proposed cisterns such that the post development flows from the proposed development area in the 100 year storm event will not be greater than 45L/s, as required.
- Sanitary drainage from the proposed development can be conveyed to the existing sewer on Zappacosta Drive. There is sufficient capacity available in the downstream system to accommodate these flows and the additional flows will not adversely affect the downstream system.
- The existing 400mm watermain on Weston Road and 200mm watermain on Zappacosta Drive can be used to service the proposed development.
- The proposed development will not have an adverse effect on the existing Municipal infrastructure.

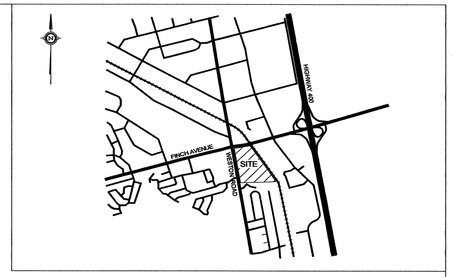
With the proposed controls in place, the site design will meet the requirements of the Wet Weather Flow Management Guidelines and City of Toronto Standards.

APPENDIX A

BACKGROUND INFORMATION

ECA CERTIFICATE OF APPROVAL NO. 9129-A2TJSL
MOE CERTIFICATE OF APPROVAL NO. 6062-7LHU68





KEY PLAN
N.T.S.

NOTE

1) MEASUREMENTS IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE SHOWN.
2) REFER TO CITY OF TORONTO SITE PLAN APPLICATION NO: 03-173068-NNY-07-SA FOR PHASE 1 BUILDING AREA DETAILS
3) IT IS THE RESPONSIBILITY OF THE APPLICANT TO ENSURE COMPLIANCE WITH ALL APPLICABLE PROVISIONAL STANDARDS AND TO OBTAIN ALL PROVISIONAL APPROVALS, INCLUDING BUT NOT LIMITED TO ENVIRONMENTAL COMPLIANCE APPROVALS AND PRIVATE DRINKING WATER SYSTEM APPROVALS
4) THE SIGNED ACCEPTANCE BY ENGINEERING AND CONSTRUCTION SERVICES PERTAINS TO THE SERVICE CONNECTIONS LOCATED
5) HYDRANT SHALL BE RATED FOR 250 PSI. FM WORKING PRESSURE AND 200 PSI. ULC WORKING PRESSURE
6) REFER TO STORMWATER MANAGEMENT REPORT DATED JULY 9TH, 2015 PREPARED BY GHD FOR REQUIRED STORMWATER MANAGEMENT CONTROLS
7) HYDRANT SHALL BE CLASS AA - RATED CAPACITY OF 5680 l/m OR GREATER - LIGHT BLUE
8) IT IS THE RESPONSIBILITY OF THE APPLICANT TO COMPLY WITH THE SEWER USE BY-LAW AND OBTAIN ALL APPROVALS/PERMITS FROM TORONTO WATER - ENVIRONMENTAL MONITORING & PROTECTION UNIT FOR ANY PROPOSED TEMPORARY OR PERMANENT DISCHARGING OF GROUNDWATER INTO MUNICIPAL SEWER SYSTEMS AND WATERCOURSES. THE APPLICANT IS ALSO RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE PROVISIONAL REQUIREMENTS AND OBTAINING THE NECESSARY APPROVALS AND/OR PERMITS FROM THE MINISTRY OF THE ENVIRONMENT & CLIMANTE CHANGE WITH REGARD TO ANY PROPOSED DEWATERING.

BENCH MARK

ELEVATIONS ARE GEODETIC AND ARE REFERRED TO THE CITY OF NORTH YORK BENCHMARK No. 50036 ELEVATION 144.254 m.

Q = 2.78 x C.I.A. /1000 m^3/s
C = IMPERVIOUS COEFFICIENT
I = 2 YEAR RAINFALL INTENSITY - mm/hr (100yr storm: A=21.8, C=-0.78)
A = AREA (hectare)

DESIGN SHEET NO. MP
ASSESS SHEET NO. SP
SUBDIV. FILE NO. 6/22/2015 15:00

STREET	CATCH.	Up Stream MH	Up Stream Invert	Down Stream MH	Down Stream Invert	Area A (ha)	Storm Co-efficient C	Effective AxC In Area	Effective AxC Cum	FLOW TIME (min) TO SECTION	FLOW TIME (min) IN SECTION	I (mm/hr)	TOTAL Q (m3/s)	Length (m)	S%	D (mm)	TYPE OF PIPE	Q FULL (m3/s)	V FULL (m/s)	Notes
STREET 'B'																				
PHASE I SITE (PORTION)	204	DCB	146.69	MH7	146.68	0.47	0.50	0.23	0.23	10.00	0.57	88.2	0.056	15.3	0.05	525	CONC	0.096	0.44	Ph 1 overland flow to Street B
STREET 'B'	205	DCB	146.69	MH7	146.68	0.33	0.50	0.17	0.17	10.00	0.57	88.2	0.042	15.3	0.05	525	CONC	0.096	0.44	100 year capture point
PHASE II SITE	203	PLUG	146.3	TEE	145.96	0.72	0.50	0.36	0.36	10.00	0.10	88.2	0.088	11.8	2.00	300	PVC	0.137	1.93	Controlled Site flows
STREET 'B'		MH7	145.07	MH4	145.03	0.00	0.50	0.00	0.40	10.57	2.54	84.4	0.182	136.4	0.05	1500	CONC	1.581	0.89	Confluence Pt, SWM Facility + Plug Flow
STREET 'A'																				
EXTERNAL FLOW (HYDRO LANDS)	101	MH6	146.06	MH11	145.83	2.08	0.75	1.56	1.56	10.00	0.18	88.2	0.382	25.9	0.90	750	CONC	1.056	2.39	100 year capture point
STREET 'A' (EAST OF MH4)	202	MH5	145.08	MH11	145.08	0.25	0.50	0.12	0.12	10.00	0.43	88.2	0.029	23.2	0.05	1500	CONC	1.581	0.89	
PHASE IV SITE	201	PLUG	146.7	TEE	146.1	1.36	0.50	0.68	0.68	10.00	0.06	88.2	0.167	8.7	2.00	375	PVC	0.248	2.25	Controlled site flows
STREET 'A' (EAST OF MH4)		MH11	145.08	MH4	145.03	0.00	0.50	0.00	1.68	10.43	1.70	85.3	0.565	91.1	0.05	1500	CONC	1.581	0.89	Confluence Pt, SWM Facility + Plug Flow
PHASE III SITE	206	PLUG	145.38	MH4	145.2	1.04	0.50	0.52	0.52	10.00	0.13	88.2	0.127	17.0	2.00	375	PVC	0.248	2.25	Controlled site flows
STREET 'A' (WEST OF MH4)	207	MH4	145.03	MH3	145.00	0.13	0.50	0.06	2.14	13.12	1.07	71.4	0.807	57.6	0.05	1500	CONC	1.581	0.89	Confluence Pt, SWM Facility + Plug Flows
EXTERNAL FLOW (WESTON RD ROW	103	MH3	143.9	STC 1	143.88	0.07	0.75	0.05	0.05	10.00	0.03	88.2	0.012	3.7	1.00	450	CONC	0.285	1.79	Catchment from Weston Road
TOTAL POST DEVELOPMENT FLOWS		STC 1	143.9	STC 1	143.74	0.00	0.75	0.00	2.19	14.19	0.12	67.1	0.819	16.8	1.00	675	CONC	0.841	2.35	Controlled Flows + Catchment 103
						6.43														
PHASE 1A BUILDINGS to WESTON RD																				
PHASE 1A (BUILDING F&H)	208	MH8	140	MH1	139.87	0.49	0.50	0.24	0.24	10.00	0.05	88.2	0.059	6.2	2.00	375	PVC	0.248	2.25	Bldg F&H Roof & AD Flow
CONNECTION TO WESTON ROAD		MH1	139.31	MH1	139.1	0.00	0.50	0.00	0.24	10.05	0.05	87.9	0.059	11.4	2.00	750	CONC	1.574	3.56	Ex Storm Sewer Connection to Weston
						0.49														
PHASE 1B BUILDING to WESTON RD																				
PHASE 1B (BUILDING I)	209	MH9	136.86	EX MH	136.7	0.16	0.50	0.08	0.08	10.00	0.13	88.2	0.020	14.7	2.00	300	PVC	0.137	1.93	Bldg I Roof & AD Flow
						0.16														
HYDRO EASEMENT to WESTON RD	210	DICB	136.47	MH10	136.00	0.08	0.75	0.06	0.06	10.00	0.22	88.2	0.015	25.3	2.00	300	PVC	0.137	1.93	Hydro easement swale
						0.08														

NOTES:

THE STORM SEWER DESIGN SHEETS FOR WESTON ROAD ARE NOT AVAILABLE.
THE POST DEVELOPMENT FLOWS ARE BEING CONTROLLED TO PREDEVELOPMENT FLOWS CONDITIONS TO AVOID ANY CAPACITY ISSUES IN THE EXISTING SEWERS.

NOTE: CA FOR CONTROLLED AREAS NOT ADDED TO CUMULATIVE CA AS CONTRIBUTING FLOW RATES ARE NOT DEPENDANT ON Tc.
CONTRIBUTING FLOWS FROM CONTROLLED AREAS ADDED TO CUMULATIVE FLOW (TOTAL Q)

CONTRACTOR TO BE RESPONSIBLE FOR LOCATION OF ALL EXIST'G U/G & OVERHEAD UTILITIES. VARIOUS UTILITIES CONCERNED TO BE GIVEN REQUIRED ADVANCE NOTICE PRIOR TO ANY DIGGING, FOR STAKE OUT. THE CONSULTANT ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE LOCATION OF EXISTING UTILITIES AS INDICATED ON THIS DRAWING.

NOTES:

1. TOPOGRAPHIC SURVEY BY KRCMAR (DATED 27/OCT/06)
2. DRAFT R PLAN BY KRCMAR (JOB NO. 85-023, DATED 05/DEC/2014)

DIGITAL INFORMATION

No.	DATE	REVISIONS	INITIAL	SIGNED
5.	01/OCT/15	FINAL SUBMISSION	S.P.	
4.	15/APR/15	FOURTH SUBMISSION	S.P.	
3.	13/MAR/15	THIRD SUBMISSION	S.P.	
2.	23/JAN/15	SECOND SUBMISSION	S.P.	
1.	18/JUL/14	FIRST SUBMISSION	S.P.	

CONSULTANT
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Mississauga Ontario L5N 5M4
T 1 416 213 7121 F 1 416 890 8499
E ytomail@ghd.com W www.ghd.com

LICENCED PROFESSIONAL ENGINEER
M. PASSMORE
90539925
OCT 1/15
PROVINCE OF ONTARIO

TORONTO ENGINEERING & CONSTRUCTION SERVICES

ACCEPTED TO BE IN ACCORDANCE WITH THE CITY OF TORONTO STANDARDS. THIS ACCEPTANCE IS NOT TO BE CONSTRUED AS VERIFICATION OF ENGINEERING CONTENT.

MANAGER, DEVELOPMENT ENGINEERING DATE:

2345 FINCH AVE W. & 3415 WESTON ROAD
STORM DRAINAGE PLAN

DESIGN	MP	DRAWN	MP	CHECKED	SP	CONTRACT No. 98087
SCALE:	1:1,000			SHEET NO:	3 OF 22	DRAWING NUMBER G-102
DATE:	OCT, 2006					

N:\CA\Mississauga\Projects\Legacy\SDSK\PROJECT FILES - SA\1998\98087 Finch and Weston Road\98087 Finch & Weston Rd Palrwe_ toronto98087-G-102.dwg Oct 01, 2015 - 3:50pm

FINCH WEST PLAZA

EAST LIMIT OF PROPERTY

FUTURE BUILDING

322'-8" SAN. @ 3.10%

224'-8" SAN. @ 12.50%

EAST STREET LINE PROPOSED SIDEWALK

EXISTING 12" WATERMAIN

EXISTING STORM

WESTON ROAD

REMOVE & REPLACE SIDEWALK

M.T.R.C.A. LANDS

28'-10" SAN @ 1.80%

EXISTING 30" METRO EASEMENT

LANYARD ROAD

EXISTING 12" WATERMAIN
BT Co UNDERGROUND CABLE
2" GAS MAIN
EXISTING 20" Ø SANITARY TRUNK @ 0.60%
EXISTING 30' EASEMENT

MH 1

CONNECTION FROM BLDG. BY OTHERS

322'-8" SAN. @ 3.10%
C-14-SS. 'B' BEDDING

224'-8" SAN. @ 12.50%
C-14-SS. 'B' BEDDING

EXISTING SEWER

WESTON ROAD

ORIGINAL GROUND

PROPOSED GRADE

EXIST. 12" W.M.

EXIST. 16" W.M.

EXIST. 12" GAS

EXIST. 20" SAN.

EXIST. 24" SAN.

EXIST. 30" SAN.

47'-10" SAN @ 5.20%
C-14-SS. 'B' BEDDING

100'-10" SAN @ 3.00%
C-14-SS. 'A' BEDDING

VERTICAL TRENCH

COMPACTED GRANULAR BACKFILL WITH 3" M.E.S. ON 1ST CR. STONE

PERMANENT REPAIR BY METRO ROADS

68'-10" @ MIN @ 1.00%
C-14-SS. 'A' BEDDING

ROCK STRUCTURE

GAS LINE SUPPORT

ASPHALT PAVING OF ONE HALF OF ROADWAY AS PER STD. DWG.

CONCRETE SURFACE AS PER STD. DWG.

91'-10" SAN @ 1.80%
C-14-SS. CLASS 'A' BEDDING

MH 2-15-56

NOTES: 1. ALL DISTURBED BOULEVARDS BETWEEN EAST STREET LINE AND WEST STREET LINE OF WESTON ROAD AND ARSAR WEST OF WEST STREET LINE OF WESTON ROAD TO BE SODDED AS SPECIFIED AND DIRECTED.

APPROVED
AUG 11 1972
BOROUGH OF NORTH YORK
PUBLIC WORKS DEPT.
Per. R. Chadwick

NO.	REVISION	BY	DATE	APP'D	DATE

ORIGINAL ELEVATION

CHANGE

REGISTERED PROFESSIONAL ENGINEER K. A. HYLL PROVINCE OF ONTARIO

ENGINEER'S STAMP

APPROVAL STAMP

FINCH WEST PLAZA

PART LOT 20 CON. 5 W.Y.S. S-E. CORNER OF INTERSECTION FINCH AVE. & WESTON RD. BOROUGH OF NORTH YORK

R.V. ANDERSON ASSOCIATES LTD.
CONSULTING ENGINEERS AND PLANNERS
TORONTO WELLAND

SANITARY SEWER AND CONNECTION TO 30" Ø METRO TRUNK

PLAN AND PROFILE

HORIZ. SCALE	VERT.	BENCH MARK	R.V.A.A.L. DWG. NO.
1" = 40'	1" = 10'	SEE DWG. No. 370-05	
DESIGNED M.J.H	DATE JUNE 1972		ISSUE A
CHECKED W.L.M			

DRAWING NO. 370-4

A-1514

HP

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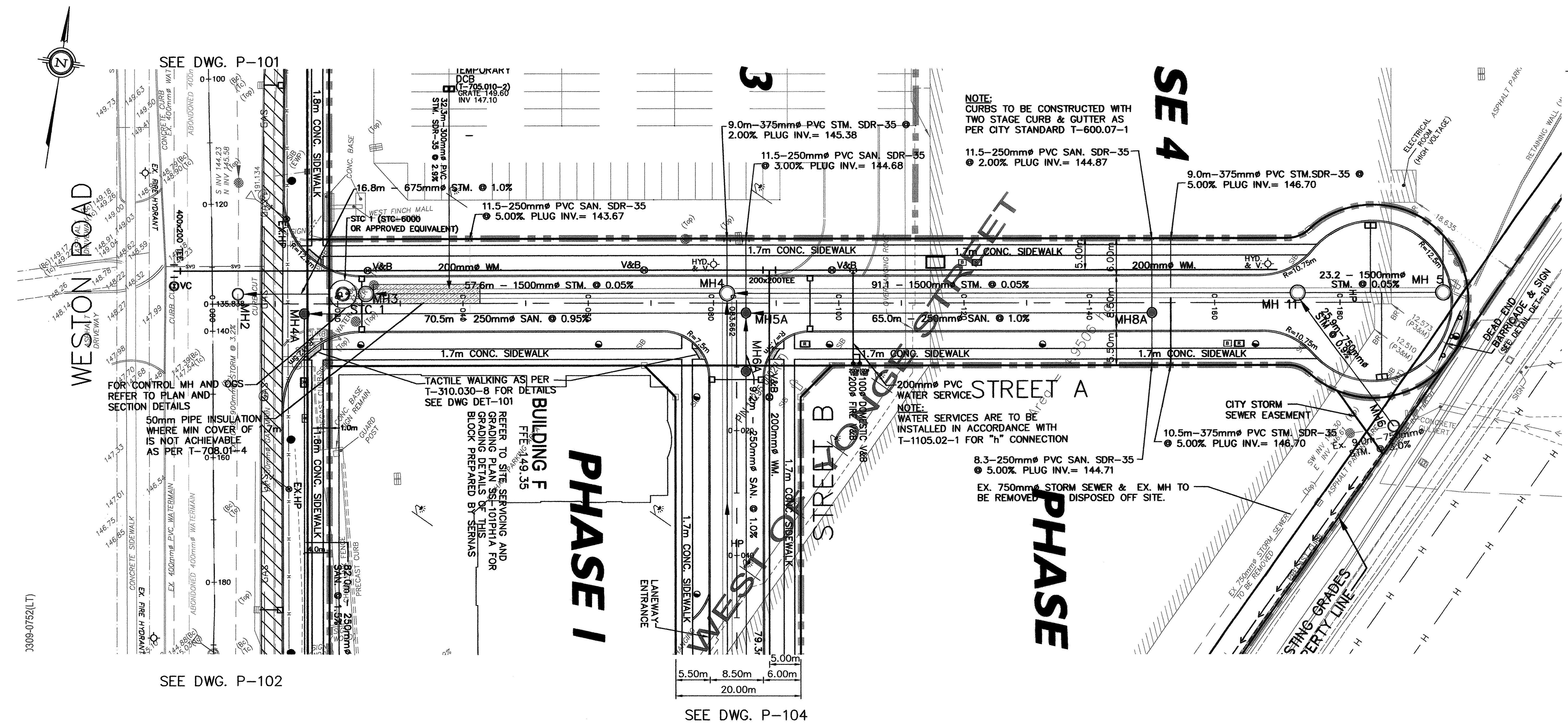
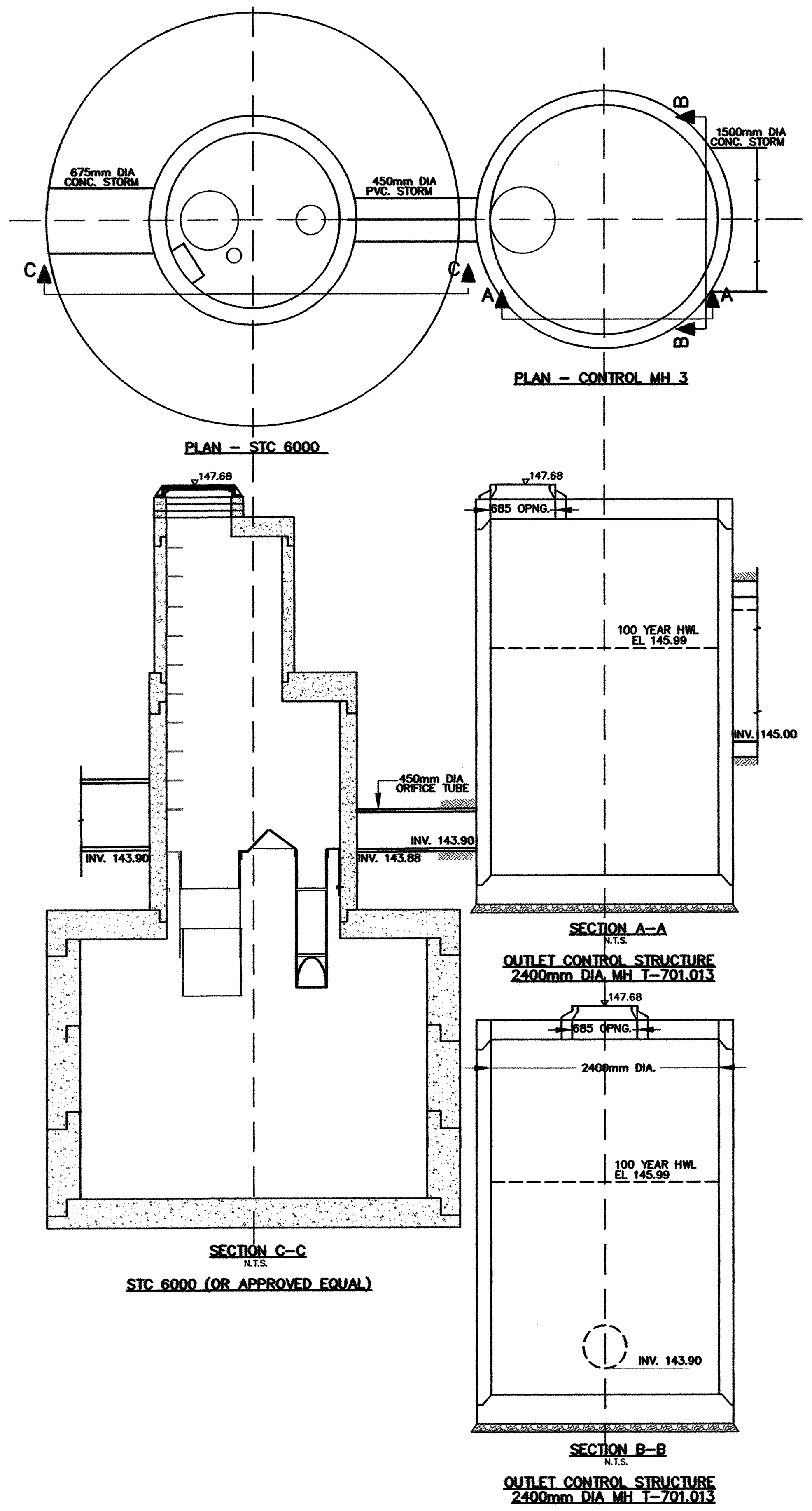
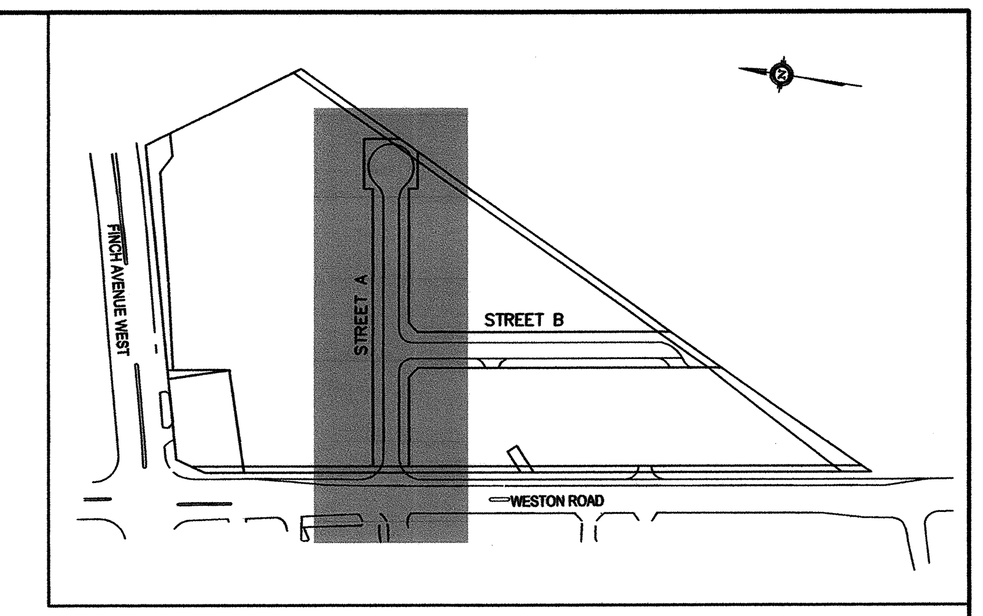






KEY PLAN
N.T.S.

NOTE

1) FOR GENERAL NOTES AND LEGEND SEE DWG. GN–1.
2) MEASUREMENTS IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE SHOWN.
3) SANITARY SERVICE CONNECTIONS SHOULD CROSS OVER THE WATERMAIN.
4) IT IS THE RESPONSIBILITY OF THE APPLICANT TO ENSURE COMPLIANCE WITH ALL APPLICABLE PROVISIONAL STANDARDS AND TO OBTAIN ALL PROVISIONAL APPROVALS, INCLUDING BUT NOT LIMITED TO ENVIRONMENTAL COMPLIANCE APPROVALS AND PRIVATE DRINKING WATER SYSTEM APPROVALS
5) THE SIGNED ACCEPTANCE BY ENGINEERING AND CONSTRUCTION SERVICES PERTAINS TO THE SERVICE CONNECTIONS LOCATED WITHIN THE MUNICIPAL RIGHT OF WAY
6) HYDRANT SHALL BE RATED FOR 250 PSI. FM WORKING PRESSURE AND 200 PSI. ULC WORKING PRESSURE
7) HYDRANT SHALL BE CLASS AA – RATED CAPACITY OF 5680 l/m OR GREATER – LIGHT BLUE

LEGEND

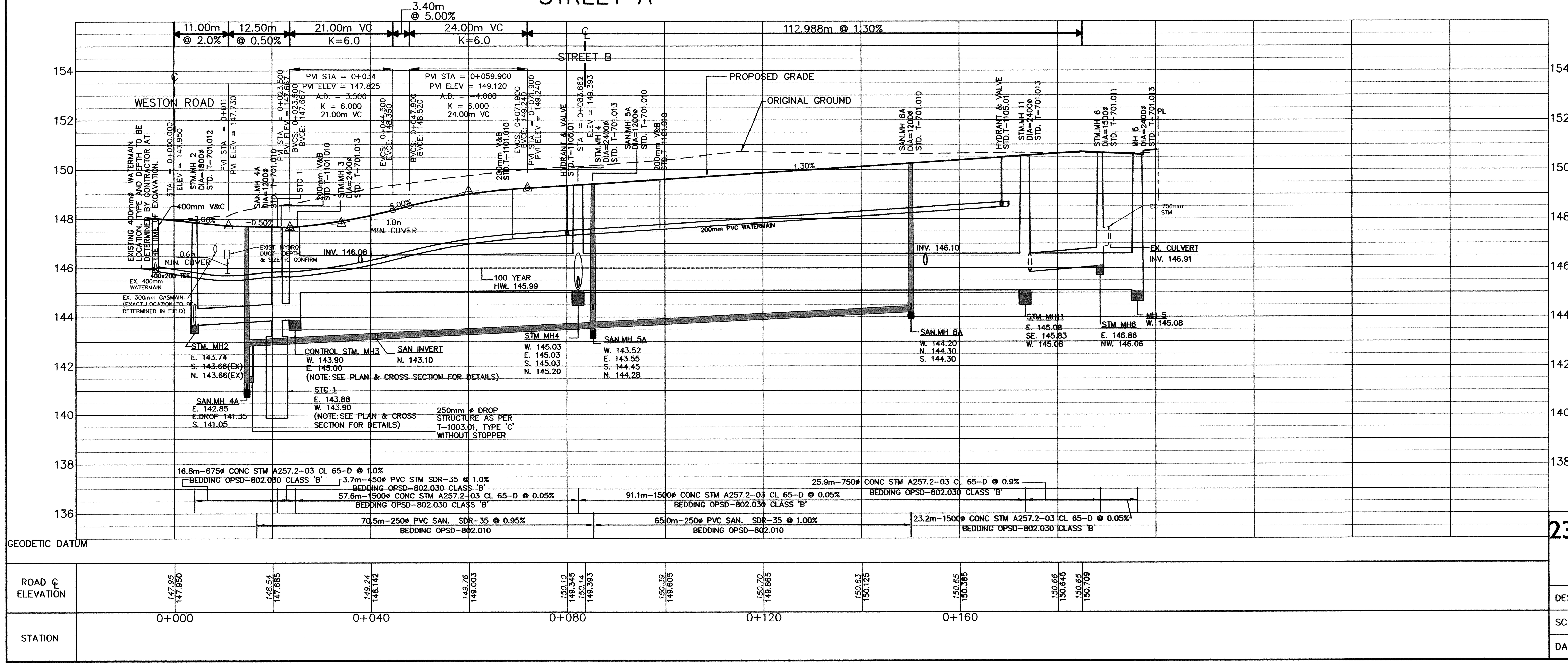
●	SANITARY SEWER MANHOLE	◒	STREETLIGHT
○	STORM SEWER MANHOLE	⊗	VALVE AND BOX
□	CATCHBASIN	EX. HP	EXISTING HYDRO POLL TO BE RELOCATED
▭	DOUBLE CATCHBASIN	●	NEW POLE LOCATION ALONG WESTON ROAD
HYD. & V.	HYDRANT AND VALVE	EX. HP	EX. POLE TO BE REMOVED ONCE TEMPORARY SERVICE HAS BEEN DECOMISSIONED
⊖	VALVE AND CHAMBER	HP	EXISTING HYDRO POLL TO REMAIN

BENCH MARK

ELEVATIONS ARE GEODETIC AND ARE REFERRED TO THE CITY OF NORTH YORK BENCHMARK No. 50036 ELEVATION 144.254 m.

CONTRACTOR TO BE RESPONSIBLE FOR LOCATION OF ALL EXIST'G U/G & OVERHEAD UTILITIES. VARIOUS UTILITIES CONCERNED TO BE GIVEN REQUIRED ADVANCE NOTICE PRIOR TO ANY DIGGING, FOR STAKE OUT. THE CONSULTANT ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE LOCATION OF EXISTING UTILITIES AS INDICATED ON THIS DRAWING.

STREET A



TOPOGRAPHIC SURVEY BY KRCHMAR (DATED 27/OCT/06)
DRAFT R PLAN BY KRCMAR (JOB NO. 85–023, DATED 05/DEC/2014)

DIGITAL INFORMATION

No.	DATE	REVISIONS	INITIAL	SIGNED
4.	15/APR/15	FINAL SUBMISSION	SP	
3.	13/MAR/15	THIRD SUBMISSION	S.P.	
2.	23/JAN/15	SECOND SUBMISSION	S.P.	
1.	18/JUL/14	FIRST SUBMISSION	S.P.	

CONSULTANT
GHD Inc.
6705 Millcreek Drive, Unit 1
Mississauga Ontario L5N 5M4
T 1 416 213 7121 F 1 416 890 8499
E ytomail@ghd.com W www.ghd.com

LICENSED PROFESSIONAL ENGINEER S.W. PASSMORE 90539925 PROVINCE OF ONTARIO

TORONTO ENGINEERING & CONSTRUCTION SERVICES
ACCEPTED TO BE IN ACCORDANCE WITH THE CITY OF TORONTO STANDARDS.
THIS ACCEPTANCE IS NOT TO BE CONSTRUED AS VERIFICATION OF ENGINEERING CONTENT.

MANAGER, DEVELOPMENT ENGINEERING DATE:

2345 FINCH ANE W. & 3415 WESTON ROAD
STREET A
STA 0+0.000 TO 0+184.888

DESIGN	MP	DRAWN	MP	CHECKED	SP
CONTRACT No. 98087					
SCALE:	HORIZONTAL 1:500 VERTICAL 1:100	SHEET NO: 9 OF 22		DRAWING NUMBER	P–103
DATE:	OCT, 2006				

APPENDIX B

STORMWATER MANGEMENT DESIGN CALCULATIONS

Rational Method Calc.

Project:	Finch & Weston (Phase 3/4)
Project No.:	15753
Municipality:	Toronto
Catchment:	Pre-Development

Pre Development Flow

	Pre (2 Yr)
Runoff Coefficient (C) =	0.48
Area (A) =	2.114
A:	21.80
B:	0.00
C:	-0.78
Tc:	0.167
Intensity (I) mm/hr =	88.2
Peak Flow (Q) L/s =	248.5

Site Area (100)

	Area (m^2)	C	CA
Pervious	13101	0.25	3275.25
Impervious	6912	0.90	6220.8
	20013	0.47	9496.05

Eastment along Finch Ave. (101)

	Area (m^2)	C	CA
Pervious	565	0.25	141.25
Impervious	562	0.90	505.8
	1127	0.57	647.05

Overall Area Drains to Zappacosta. (100+101)

	Area (m^2)	C	CA
Pervious	13666	0.25	3416.5
Impervious	7474	0.90	6726.6
	21140	0.48	10143.1

Rational Method Calc.

Project:	Finch & Weston (Phase 3/4)
Project No.:	15753
Municipality:	Toronto
Catchment:	Proposed Development

Easement Along Finch Ave. (203)

	Area (m^2)	C	CA
Pervious	892	0.25	223
Impervious	89	0.90	80.1
	981	0.31	303.1

Phase 3 Site Area (201)

	Area (m^2)	C	CA
Building	3087	0.90	2778.30
Pervious	665	0.25	166.25
Impervious	4370	0.90	3933.00
	8122	0.85	6877.55

Phase 3 Controlled Area (201)

	Area (m^2)	C	CA
Building	3087	0.90	2778.30
Pervious	1557	0.25	389.25
Impervious	4459	0.90	4013.10
	9103	0.79	7180.65

Phase 4 Controlled Area (202)

	Area (m^2)	C	CA
Building	6469	0.90	5822.10
Green Roof	405	0.50	202.50
Pervious	1008	0.25	252.00
Impervious	4009	0.90	3608.10
	11891	0.83	9884.70

Overall Site Area (201+202)

	Area (m^2)	C	CA
Building	9556	0.90	8600.40
Green Roof	405	0.50	202.50
Pervious	1673	0.25	418.25
Impervious	8379	0.90	7541.10
	20013	0.84	16762.25

Modified Rational Method

Project:	Finch & Weston (Phase 3/4)
Project No.:	15753
Municipality:	Toronto
Catchment:	Phase 4 Area (202)

Area:	1.189 ha	Rainfall $I=A*(T+B)^C$	
Runoff Coefficient:	0.83	A:	1579.4
		B:	0
Target Flow:	0.034 m^3/s	C:	-0.8
Storage Required	468 m^3		

Cistern Footprint =	159	m^2	
Cistern Height =	3.30	m^3	
Storage Provided =	525	m^3	

Initial Time 10 min Increment 10 min

Time (min)	Intensity (mm/hr)	Peak Flow (m^3/s)	Runoff Volume (m^3)	Discharge Volume (m^3)	Storage Volume (m^3)
10	250.3	0.687	412.39	20.40	392.0
20	143.8	0.395	473.71	40.80	432.9
30	103.9	0.285	513.73	61.20	452.5
40	82.6	0.227	544.15	81.60	462.6
50	69.1	0.190	568.99	102.00	467.0
60	59.7	0.164	590.12	122.40	467.7
70	52.8	0.145	608.59	142.80	465.8
80	47.4	0.130	625.07	163.20	461.9
90	43.2	0.119	639.96	183.60	456.4
100	39.7	0.109	653.59	204.00	449.6
110	36.8	0.101	666.17	224.40	441.8
120	34.3	0.094	677.87	244.80	433.1
130	32.2	0.088	688.80	265.20	423.6
140	30.3	0.083	699.09	285.60	413.5
150	28.7	0.079	708.80	306.00	402.8
160	27.2	0.075	718.01	326.40	391.6
170	25.9	0.071	726.77	346.80	380.0
180	24.8	0.068	735.13	367.20	367.9
190	23.7	0.065	743.12	387.60	355.5
200	22.8	0.063	750.78	408.00	342.8
210	21.9	0.060	758.14	428.40	329.7
220	21.1	0.058	765.23	448.80	316.4
230	20.4	0.056	772.06	469.20	302.9
240	19.7	0.054	778.66	489.60	289.1

Uncontrolled Flow =	0.0000	m^3/s
Total Proposed Flow =	0.0340	m^3/s

Modified Rational Method

Project:	Finch & Weston (Phase 3/4)
Project No.:	15753
Municipality:	Toronto
Catchment:	Phase 3 Area (201)

Area:	0.910 ha	Rainfall $I=A*(T+B)^C$	
Runoff Coefficient:	0.79	A:	1579.4
		B:	0
Target Flow:	0.011 m^3/s	C:	-0.8
Storage Required	416 m^3		

Initial Time	10 min		Increment	10 min	
Time (min)	Intensity (mm/hr)	Peak Flow (m^3/s)	Runoff Volume (m^3)	Discharge Volume (m^3)	Storage Volume (m^3)
10	250.3	0.499	299.58	6.60	293.0
20	143.8	0.287	344.12	13.20	330.9
30	103.9	0.207	373.19	19.80	353.4
40	82.6	0.165	395.29	26.40	368.9
50	69.1	0.138	413.33	33.00	380.3
60	59.7	0.119	428.68	39.60	389.1
70	52.8	0.105	442.11	46.20	395.9
80	47.4	0.095	454.07	52.80	401.3
90	43.2	0.086	464.90	59.40	405.5
100	39.7	0.079	474.80	66.00	408.8
110	36.8	0.073	483.93	72.60	411.3
120	34.3	0.068	492.43	79.20	413.2
130	32.2	0.064	500.38	85.80	414.6
140	30.3	0.060	507.85	92.40	415.4
150	28.7	0.057	514.90	99.00	415.9
160	27.2	0.054	521.59	105.60	416.0
170	25.9	0.052	527.96	112.20	415.8
180	24.8	0.049	534.03	118.80	415.2
190	23.7	0.047	539.83	125.40	414.4
200	22.8	0.045	545.40	132.00	413.4
210	21.9	0.044	550.75	138.60	412.1
220	21.1	0.042	555.89	145.20	410.7
230	20.4	0.041	560.86	151.80	409.1
240	19.7	0.039	565.65	158.40	407.3

Cistern Footprint =	156 m^2
Cistern Height =	3.20 m^3
Storage Provided =	499 m^3

Phase 4 Flow =	0.034 m^3/s
Uncontrolled Flow =	0.000 m^3/s
Total Proposed Flow =	0.045 m^3/s

Target as per GHD SWMR =	0.054 m^3/s
	(based on on 2.40ha)

Target as per WWFMG =	0.045 m^3/s
	(based on proposed drainage area of 2.10ha)

APPENDIX C

STORMFILTER SIZING

Determining Number of Cartridges for Flow Based Systems

Date	**03/12/2020**	**Black Cells =**	**Calculation**

Site Information

Project Name	**3499-3415 Weston Road**		
Project Location	**Toronto, ON**		
OGS ID	**OGS 1**		
Drainage Area, Ad	**3.01**	ac	(1.22 ha)
Impervious Area, Ai	**2.64**	ac	
Pervious Area, Ap	**0.37**		
% Impervious	**88%**		
Runoff Coefficient, Rc	**0.82**		
Treatment storm flow rate, Q_{treat}	**1.96**	cfs	(55.6 L/s)
Peak storm flow rate, Q_{peak}	**TBD**	cfs	

Filter System

Filtration brand	**StormFilter**	
Cartridge height	**27**	in
Specific Flow Rate	**2.00**	gpm/ft^2
Flow rate per cartridge	**22.50**	gpm

SUMMARY

Number of Cartridges	40
Media Type	Perlite

Event Mean Concentration (EMC)	**150**	mg/L
Annual TSS Removal	**80%**	
Percent Runoff Capture	**90%**	

Recommend SFPD0820 vault or CIP

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Scarborough, ME 04074
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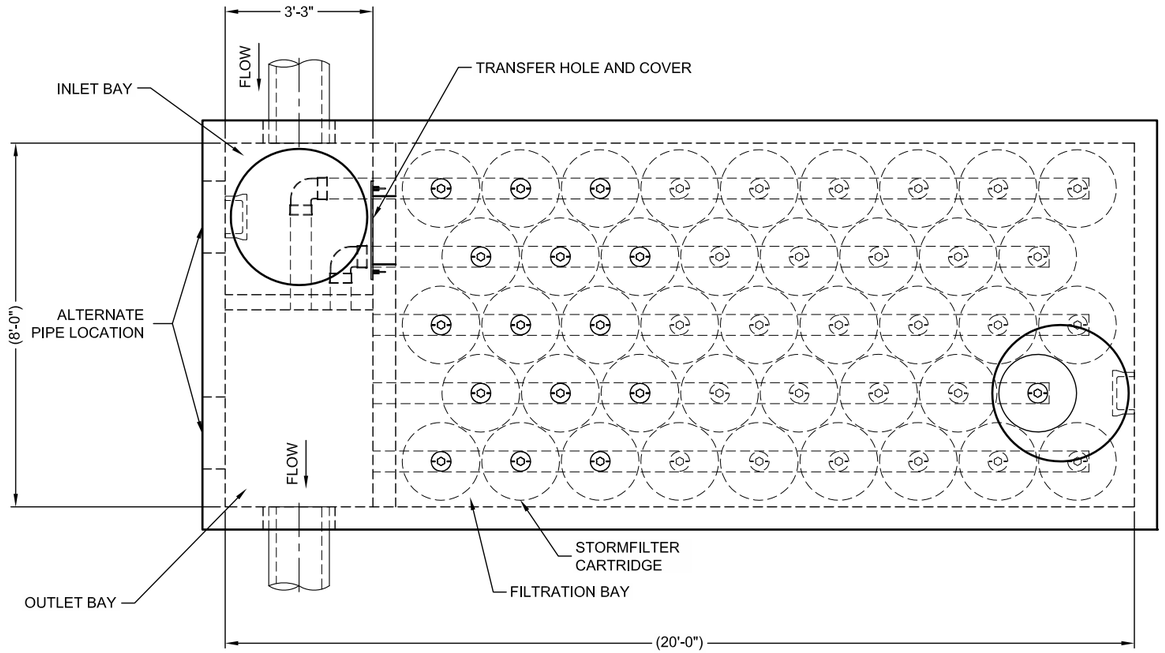
Fax 207-885-9825



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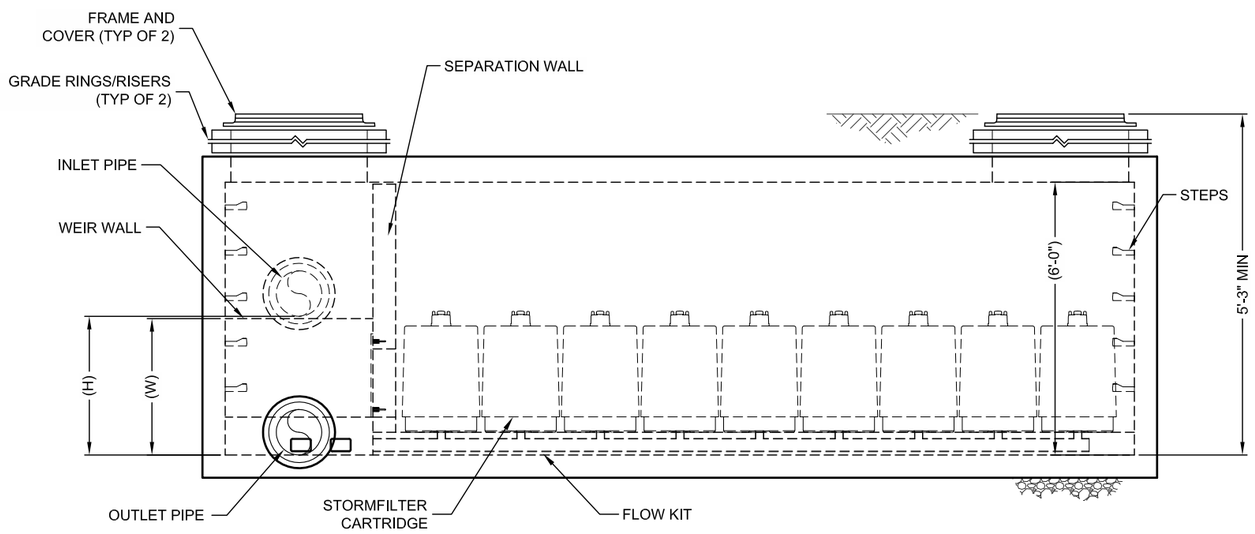


ELEVATION

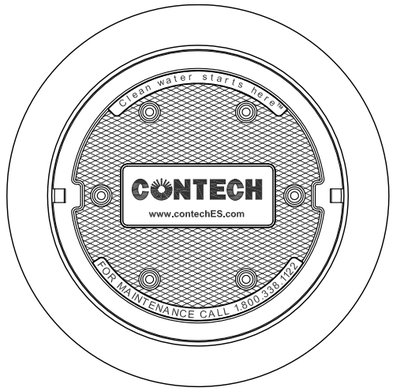
The Stormwater Management StormFilter®

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,322,629; 5,324,570; 5,707,527; 5,985,157; 6,027,639; 6,045,047; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

STORMFILTER DESIGN TABLE

- THE 8' x 20' PEAK DIVERSION STORMFILTER TREATMENT CAPACITY VARIES BY CARTRIDGE COUNT AND LOCALLY APPROVED SURFACE AREA SPECIFIC FLOW RATE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD.
- THE PEAK DIVERSION STORMFILTER IS AVAILABLE IN A LEFT INLET (AS SHOWN) OR RIGHT INLET CONFIGURATION.
- ALL PARTS AND INTERNAL ASSEMBLY PROVIDED BY CONTECH UNLESS OTHERWISE NOTED.

CARTRIDGE HEIGHT	27"		18"		LOW DROP	
SYSTEM HYDRAULIC DROP (H - REQ'D. MIN.)	3.05'		2.3'		1.8'	
HEIGHT OF WEIR (W)	3.00'		2.25'		1.75'	
TREATMENT BY MEDIA SURFACE AREA	2 gpm/ft²	1 gpm/ft²	2 gpm/ft²	1 gpm/ft²	2 gpm/ft²	1 gpm/ft²
CARTRIDGE FLOW RATE (gpm)	22.5	11.25	15	7.5	10	5



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	*
WATER QUALITY FLOW RATE (cfs)	*
PEAK FLOW RATE (cfs)	*
RETURN PERIOD OF PEAK FLOW (yrs)	*
# OF CARTRIDGES REQUIRED	*
CARTRIDGE FLOW RATE	*
MEDIA TYPE (CSF, PERLITE, ZPG)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE	*	*	*
OUTLET PIPE	*	*	*

INLET BAY RIM ELEVATION	*
FILTER BAY RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

PERFORMANCE SPECIFICATION

FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. **RADIAL MEDIA DEPTH SHALL BE 7-INCHES**. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST **37 SECONDS**. SPECIFIC FLOW RATE SHALL BE **2 GPM/SF (MAXIMUM)**. SPECIFIC FLOW RATE IS THE MEASURE OF THE FLOW (GPM) DIVIDED BY THE MEDIA SURFACE CONTACT AREA (SF). MEDIA VOLUMETRIC FLOW RATE SHALL BE **6 GPM/CF OF MEDIA (MAXIMUM).**

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH REPRESENTATIVE. www.ContechES.com
4. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
5. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH OUTLET PIPE INVERT WITH OUTLET BAY FLOOR.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.
F. CONTRACTOR TO REMOVE THE TRANSFER HOLE COVER WHEN THE SYSTEM IS BROUGHT ONLINE.

CONTECH® ENGINEERED SOLUTIONS LLC
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800-338-1122 513-645-7000 513-645-7993 FAX

THE STORMWATER MANAGEMENT STORMFILTER 8' x 20' PEAK DIVERSION STORMFILTER STANDARD DETAIL

Determining Number of Cartridges for Flow Based Systems

Date	**03/12/2020**	**Black Cells =**	**Calculation**

Site Information

Project Name	**3499-3415 Weston Road**		
Project Location	**Toronto, ON**		
OGS ID	**OGS 2**		
Drainage Area, Ad	**2.22**	ac	(0.9 ha)
Impervious Area, Ai	**1.85**	ac	
Pervious Area, Ap	**0.38**		
% Impervious	**83%**		
Runoff Coefficient, Rc	**0.79**		
Treatment storm flow rate, Q_{treat}	**1.40**	cfs	(39.5 L/s)
Peak storm flow rate, Q_{peak}	**TBD**	cfs	

Filter System

Filtration brand	**StormFilter**	
Cartridge height	**27**	in
Specific Flow Rate	**2.00**	gpm/ft^2
Flow rate per cartridge	**22.50**	gpm

SUMMARY

Number of Cartridges	28
Media Type	Perlite

Event Mean Concentration (EMC)	**150**	mg/L
Annual TSS Removal	**80%**	
Percent Runoff Capture	**90%**	

Recommend SFPD0816 vault or CIP

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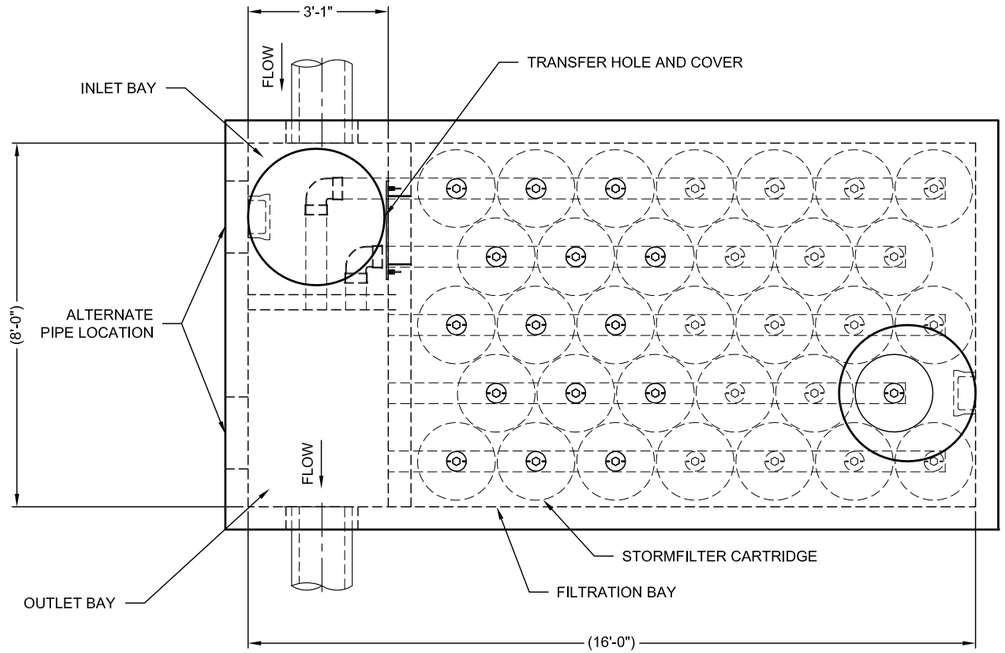
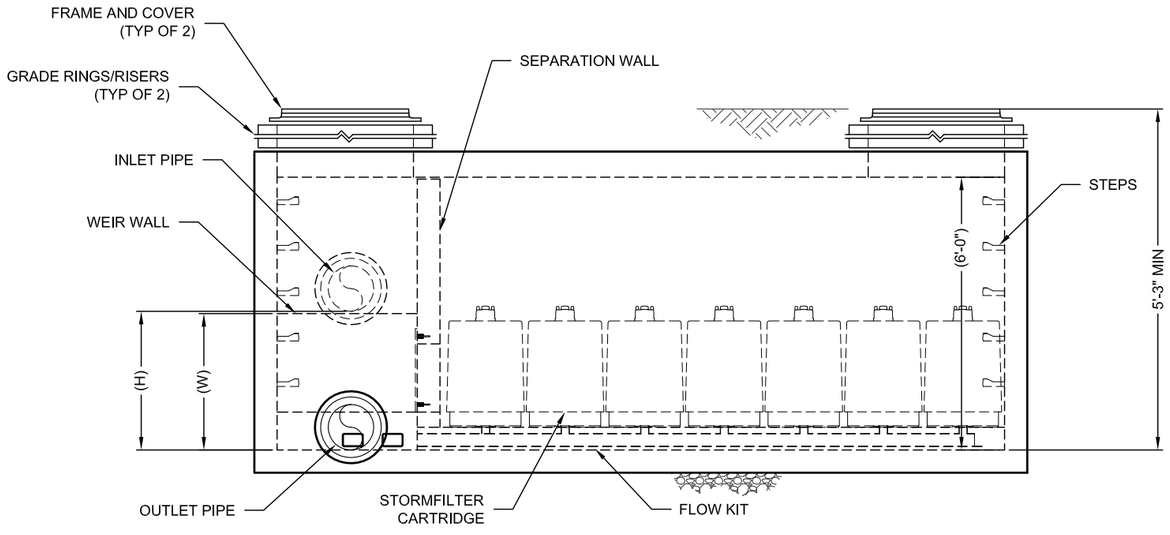
Scarborough, ME 04074
Phone 877-907-8676
Fax 207-885-9825



PLAN



ELEVATION

The Stormwater Management StormFilter®

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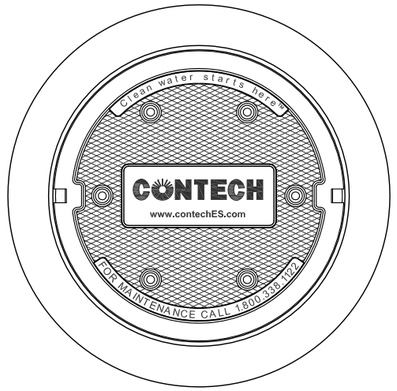
STORMFILTER DESIGN NOTES

- THE 8' x 16' PEAK DIVERSION STORMFILTER TREATMENT CAPACITY VARIES BY CARTRIDGE COUNT AND LOCALLY APPROVED SURFACE AREA SPECIFIC FLOW RATE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD.
- THE PEAK DIVERSION STORMFILTER IS AVAILABLE IN A LEFT INLET (AS SHOWN) OR RIGHT INLET CONFIGURATION.
- ALL PARTS AND INTERNAL ASSEMBLY PROVIDED BY CONTECH UNLESS OTHERWISE NOTED.

CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27"			18"			LOW DROP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			1.8'		
HEIGHT OF WEIR (W)	3.00'			2.25'			1.75'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	10	8.35	5

* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB ® (PSORB) MEDIA ONLY



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	*
WATER QUALITY FLOW RATE (cfs)	*
PEAK FLOW RATE (cfs)	*
RETURN PERIOD OF PEAK FLOW (yrs)	*
CARTRIDGE HEIGHT (27", 18", LOW DROP(LD))	*
NUMBER OF CARTRIDGES REQUIRED	*
CARTRIDGE FLOW RATE	*
MEDIA TYPE (PERLITE, ZPG, PSORB)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE	*	*	*
OUTLET PIPE	*	*	*

UPSTREAM RIM ELEVATION	*
DOWNSTREAM RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

PERFORMANCE SPECIFICATION

FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. **RADIAL MEDIA DEPTH SHALL BE 7-INCHES**. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST **38 SECONDS**.
SPECIFIC FLOW RATE SHALL BE 2 **GPM/SF (MAXIMUM)**. SPECIFIC FLOW RATE IS THE MEASURE OF THE FLOW (GPM) DIVIDED BY THE MEDIA SURFACE CONTACT AREA (SF). MEDIA VOLUMETRIC FLOW RATE SHALL BE **6 GPM/CF OF MEDIA (MAXIMUM).**

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
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4. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
5. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.

INSTALLATION NOTES

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C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH OUTLET PIPE INVERT WITH OUTLET BAY FLOOR.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.
F. CONTRACTOR TO REMOVE THE TRANSFER HOLE COVER WHEN THE SYSTEM IS BROUGHT ONLINE.

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ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

THE STORMWATER MANAGEMENT STORMFILTER 8' x 16' PEAK DIVERSION STORMFILTER STANDARD DETAIL

APPENDIX D

HYDROGEOLOGICAL SUMMARY

August 2018

HYDROLOGICAL REVIEW SUMMARY

The form is to be completed by the Professional that prepared the Hydrological Review.
Use of the form by the City of Toronto is not to be construed as verification of engineering/hydrological content.

Refer to the Terms of Reference, Hydrological Review:
Link to Terms of Reference Hydrological Review

For City Staff Use Only:	
Name of ECS Case Manager (Please print)	
Date Review Summary provided to to TW, EM&P	

IF ANY OF THE REQUIREMENTS LISTED BELOW HAVE NOT BEEN INLCUDED IN THE HYDROLOGICAL REVIEW, THE REVIEW WILL BE CONSIDERED INCOMPLETE.
THE GREY SHADED BOXES WILL REQUIRE A CONSISTANCY CHECK BY THE ECS CASE MANAGER.

Summary of Key Information:

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
Site Address	3415 - 3499 Weston Rd, Toronto, ON Toronto, Ontario	pg. 1, sec 1	
Postal Code	M9M 1T7	pg. 1, sec 1	
Property Owner (on request for comments memo)	Medallion Developments (Finch/Weston) Inc.	pg. 1, sec 1	
Proposed description of the project (if applicable) (point towers, number of podiums)	Two multi-storey residential/commercial buildings with up to two towers and two (2) levels of underground parking	pg. 1, sec 1	
Land Use (ex. commercial, residential, mixed, institutional, industrial)	mixed-use area	pg. 1, sec 1	
Number of below grade levels for the proposed structure	Two (2) underground parking levels	pg. 1, sec 1	
HYDROLOGICAL REVIEW INFORMATION			
Date Hydrological Review was prepared:	December 4, 2020		
Who Performed the Hydrological Review (Consulting Firm)	WSP Canada Group Limited		
Name of Author of Hydrological Review	Natalia Codoban		

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HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
Check the directories on the website for Professional Geoscientists and/or Professional Engineers of Ontario been checked to ensure that the Hydrological Report has been prepared by a qualified person who is a licensed Professional Geoscientist as set out in the Professional Geoscientist Act of Ontario or a Professional Engineer? PEO: Professional Engineers of Ontario APGO: Association of Professional Geoscientists of Ontario	P.Eng.	N/A	
Has the Hydrological Review been prepared in accordance with all the following: • Ontario Water Resources Act • Ontario Regulation 387/04 • Toronto Municipal Code Chapter 681-Sewers	yes	pg. 2, sec 1.2	
		Page # & Section # of every occurrence in the Review	**Review Includes this Information City Staff (Check)**

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HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
Total Volume (L/day) Short Term Discharge of groundwater (construction dewatering) **with safety factor included**	17,300 L/day What safety factor was used? Safety factor of 2	pg. 15, sec 4.1.3 Appendix E	
Total Volume (L/day) Short Term Discharge of groundwater (construction dewatering) **without safety factor included**	8,600 L/day	pg. 15, sec 4.1.3 Appendix E	
Total Volume (L/day) Long Term drainage of groundwater (from foundation drainage, weeping tiles, sub slab drainage) **with safety factor included** If the development is part of a multiple tower complex, include total volume for each separate tower	2,900 L/day What safety factor was used? Safety factor of 2.0	pg. 16, sec 4.2 Appendix E	
List the nearest surface water (river, creek, lake)	Humber River	pg. 3, sec 2.1	

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HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
Lowest basement elevation	139.90 masl	Appendix E	
Foundation elevation	141.90 masl	pg. 13 sec 4.1 Appendix E	
Ground elevation	150.95 masl	pg. 13 sec 4.1 Appendix E	
STUDY AREA MAP		**Page # & Section # of every occurrence in the Review**	**Review Includes this Information City Staff (Check)**
Study area map(s) have been included in the report.	Ⓧ **Yes**		N/A
Study area map(s) been prepared according to the Hydrological Review Terms of Reference.	Ⓧ **Yes**		N/A
WATER LEVEL AND WELLS		**Page # & Section # of every occurrence**	**Review Includes this Information (City Staff Initial)**

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HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
		in the Review	
The groundwater level has been monitored using all wells located on site (within property boundary).	yes	pg. 7-8, sec 3.4.1	
The static water level measurements have been monitored at all monitoring wells for a minimum of 3 months with samples taken every 2 weeks for a minimum of 6 samples. The intent is for the qualified professional to use professional judgement to estimate the seasonally high groundwater level.	yes, monitoring is ongoing	pg. 7-8, sec 3.4.1	
All water levels in the wells have been measured with respect to masl.	yes	pg. 7-8, sec 3.4.1	
A table of geology/soil stratigraphy for the property has been included.	yes	pg. 3-4, sec 2.4	
GEOLOGY AND PHYSICAL HYDROLOGY		**Page # & Section # of every occurrence in the Review**	**Review Includes this Information (City Staff Initial)**
The review has made reference to the soil materials including thickness, composition and texture, and bedrock environments.	yes	pg. 3-4, sec 2.4 Appendix A	
Key aquifers and the site's proximity to nearby surface water has been identified.	ⓧ **Yes**	pg. 3, sec 2.1	N/A

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HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
PUMP TEST/SLUG TEST/DRAWDOWN ANALYSIS		**Page # & Section # of every occurrence in the Review**	**Review Includes this Information City Staff (Check)**
A summary of the pumping test data and analysis is included in the review.	N/A		
The pump test been carried out for at least 24 hours if possible. If not, has a slug test been conducted?	N/A		
Have the monitoring well(s) have been monitored using digital devices? If yes how frequently?	yes, monitoring is ongoing. Dataloggers set to record at 1 hour interval		
If a slug or pump test has been conducted has the static groundwater level been monitored at all monitoring well(s) multiple times to measure recovery? -prior to the slug or pumping test(s)? -post slug or pumping test(s)?	ⓧ **Yes**		N/A
The above noted slug or pump tests have been included in the report.	ⓧ **Yes**	pg. 10-11, sec 3.5 Appendix D	
WATER QUALITY		**Page # & Section # of every occurrence in the Review**	**Review Includes this Information City Staff (Check)**

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HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
The report includes baseline water quality samples from a laboratory. The water quality must be analyzed for all parameters listed in Tables 1 and 2 of Chapter 681 Sewers of the Toronto Municipal Code (found in Appendix A) and the samples must have to be taken unfiltered within 9 months of the date of submission.	yes	pg. 11-12, sec 3.7 Appendix D	
The water quality data templates in Appendix A have been completed for each sample taken for both sanitary/combined and storm sewer limits.	For sanitary discharge- See the sanitary/combined sewer parameter limit template For storm discharge- See the storm sewer parameter limit template		
Qualified professional to list all sample parameters that have violated the Bylaw limits for each sample taken for the sanitary/combined Bylaw limits **If there are any sample parameter Exceedances the groundwater can't be discharged as is.**	yes	pg. 11-12, sec 3.7 Appendix D	
Qualified professional to list all sample parameters that have violated the Bylaw limits for each sample taken for the storm Bylaw limits. **If there are any sample parameter exceedances the groundwater can't be discharged as is.**	yes	pg. 11-12 sec 3.7 Appendix D	
The water quality samples have been analyzed by a Canadian laboratory accredited and licensed by Standards Council of Canada and/or Canadian Association for Laboratory Accreditation.	ⓧ **Yes**	Appendix D	N/A

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HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
List of Canadian accredited laboratories: Standards Council of Canada			
A chain of custody record for the samples is included with the report.	yes	Appendix D	
Has the chain of custody reference any filtered sample? If yes, the report has to be amended and re-submitted to include only non-filtered samples.	no	Appendix D	
List any of the sample parameters that exceed the Bylaw limits with the reporting detection limit (RDL) included.	yes	Appendix D	
A true copy of the Certificate of Analysis report, is included with the report.	yes	Appendix D	
EVALUATION OF IMPACT		**Page # & Section # of every occurrence in the Review**	**Review Includes this Information City Staff (Check)**
Does the report recommend a back-up system or relief safety valve(s)?	◯ **Yes** ⓧ **No**		
Does the associated Geotechnical report recommend a back-up system or relief safety valve(s)?	◯ **Yes** ⓧ **No**		
The taking and discharging of groundwater on site has been analyzed to ensure that no negative	ⓧ **Yes**	pg.18, sec 5	N/A

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HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
impacts will occur to: the City sewage works in terms of quality and quantity (including existing infrastructure), the natural environment, and settlement issues.			
Has it been determined that there will be a negative impact to the natural environment, City sewage works, or surrounding properties has the study identified the following: the extent of the negative impact, the detail of the precondition state of all the infrastructure, City sewage works, and natural environment within the effected zone and the proposed remediation and monitoring plan?	◯ **Yes** **If yes, identify impact:** Ⓧ **No**	pg.18, sec 5	N/A

Summary of Additional Information and Key Items (if applicable):

Appendix A:

SANITARY/COMBINED **Sample Location:** MW20-6 MW20-12

Inorganics		Sample Result		Sample Result with upper RDL included	
Parameter	mg/L				ug/L
BOD	300	>22	>22	2	300,000
Fluoride	10	0.17	0.20	0.05	10,000
TKN	100	4.00	2.00	0.10	100,000
pH	6.0 - 11.5	7.94	8.02		6.0 - 11.5
Phenolics 4AAP	1	0.004	0.003	0.001	1,000
TSS	350	459	539	10	350,000
Total Cyanide	2	<0.002	<0.002	0.002	2,000
Metals					
Chromium Hexavalent	2	<0.005	<0.005	0.005	2,000
Mercury	0.01	<0.0002	<0.0002	0.0002	10
Total Aluminum	50	3.05	3.81	0.010	50,000
Total Antimony	5	<0.020	<0.020	0.020	5,000
Total Arsenic	1	<0.015	<0.015	0.015	1,000
Total Cadmium	0.7	<0.005	<0.005	0.005	700
Total Chromium	4	<0.020	<0.020	0.020	4,000
Total Cobalt	5	<0.010	<0.010	0.010	5,000
Total Copper	2	<0.020	<0.020	0.020	2,000
Total Lead	1	<0.020	<0.020	0.020	1,000
Total Manganese	5	0.195	0.112	0.020	5,000
Total Molybdenum	5	<0.020	<0.020	0.020	5,000
Total Nickel	2	<0.003	<0.003	0.003	2,000
Total Phosphorus	10	0.12	0.06	0.02	10,000
Total Selenium	1	<0.020	<0.020	0.020	1,000
Total Silver	5	<0.020	<0.020	0.020	5,000
Total Tin	5	<0.020	<0.020	0.020	5,000
Total Titanium	5	0.075	0.103	0.020	5,000
Total Zinc	2	<0.020	<0.020	0.020	2,000
Petroleum Hydrocarbons					
Animal/Vegetable Oil & Grease	150	1.5	<0.5	0.5	150,000
Mineral/Synthetic Oil & Grease	15	<0.5	<0.5	0.5	15,000

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HYDROLOGICAL REVIEW SUMMARY

		MW20-6	MW20-12		
Volatile Organics		**Sample Result**		**Sample Result with upper RDL included**	
Parameter	**mg/L**				**ug/L**
Benzene	0.01	<0.0002	<0.0002	0.0002	10
Chloroform	0.04	0.0012	0.0008	0.0002	40
1,2-Dichlorobenzene	0.05	<0.0001	<0.0001	0.0001	50
1,4-Dichlorobenzene	0.08	<0.0001	<0.0001	0.0001	80
Cis-1,2-Dichloroethylene	4	<0.0002	<0.0002	0.0002	4,000
Trans-1,3-Dichloropropylene	0.14	<0.0003	<0.0003	0.0003	140
Ethyl Benzene	0.16	<0.0001	<0.0001	0.0001	160
Methylene Chloride	2	<0.0003	<0.0003	0.0003	2,000
1,1,2,2-Tetrachloroethane	1.4	<0.0001	<0.0001	0.0001	1,400
Tetrachloroethylene	1	<0.0001	<0.0001	0.0001	1,000
Toluene	0.016	<0.0002	<0.0002	0.0002	16
Trichloroethylene	0.4	<0.0002	<0.0002	0.0002	400
Total Xylenes	1.4	<0.0002	<0.0002	0.0002	1,400
Semi-Volatile **Organics**					
Di-n-butyl Phthalate	0.08	<0.0005	<0.0005	0.0005	80
Bis (2-ethylhexyl) Phthalate	0.012	<0.0005	<0.0005	0.0005	12
3,3'-Dichlorobenzidine	0.002	<0.0005	<0.0005	0.0005	2
Pentachlorophenol	0.005	<0.0001	<0.0001	0.0001	5
Total PAHs	0.005	<0.0003	<0.0003	0.0003	5
Misc **Parameters**					
Nonylphenols	0.02	<0.001	<0.001	0.001	20
Nonylphenol Ethoxylates	0.2	<0.001	<0.001	0.001	200

Sample Collected:
Temperature:

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HYDROLOGICAL REVIEW SUMMARY

STORM **Sample Location:** MW20-6 MW20-12

Inorganics		**Sample Result**		**Sample Result with upper RDL included**	
Parameter	**mg/L**				**ug/L**
pH	6.0 - 9.5	7.94	8.02		
BOD	15	>22	>22	2	15,000
Phenolics 4AAP	0.008	0.004	0.003	0.001	8
TSS	15	459	539	10	15,000
Total Cyanide	0.02	<0.002	<0.002	0.002	20
Metals					
Total Arsenic	0.02	<0.015	<0.015	0.015	20
Total Cadmium	0.008	<0.005	<0.005	0.005	8
Total Chromium	0.08	<0.020	<0.020	0.020	80
Chromium Hexavalent	0.04	<0.005	<0.005	0.005	40
Total Copper	0.04	<0.020	<0.020	0.020	40
Total Lead	0.12	<0.020	<0.020	0.020	120
Total Manganese	0.05	0.195	0.112	0.020	50
Total Mercury	0.0004	<0.0002	<0.0002	0.0002	0.4
Total Nickel	0.08	<0.003	<0.003	0.003	80
Total Phosphorus	0.4	0.12	0.06	0.02	400
Total Selenium	0.02	<0.020	<0.020	0.020	20
Total Silver	0.12	<0.020	<0.020	0.020	120
Total Zinc	0.04	<0.020	<0.020	0.020	40
Microbiology					
E.coli	200	1	1	1	200,000
Volatile Organics					
Parameter	**mg/L**				**ug/L**
Benzene	0.002	<0.0002	<0.0002	0.0002	2
Chloroform	0.002	0.0012	0.0008	0.0002	2
1,2-Dichlorobenzene	0.0056	<0.0001	<0.0001	0.0001	6
1,4-Dichlorobenzene	0.0068	<0.0001	<0.0001	0.0001	7
Cis-1,2-Dichloroethylene	0.0056	<0.0002	<0.0002	0.0002	6
Trans-1,3-Dichloropropylene	0.0056	<0.0003	<0.0003	0.0003	6
Ethyl Benzene	0.002	<0.0001	<0.0001	0.0001	2
Methylene Chloride	0.0052	<0.0003	<0.0003	0.0003	5
1,1,2,2-Tetrachloroethane	0.017	<0.0001	<0.0001	0.0001	17
Tetrachloroethylene	0.0044	<0.0001	<0.0001	0.0001	4
Toluene	0.002	<0.0002	<0.0002	0.0002	2
Trichloroethylene	0.0076	<0.0002	<0.0002	0.0002	8
Total Xylenes	0.0044	<0.0002	<0.0002	0.0002	4

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HYDROLOGICAL REVIEW SUMMARY

Semi-Volatile Organics		Sample Result		Sample Result with upper RDL included	
Di-n-butyl Phthalate	0.015	<0.0005	<0.0005	0.0005	5
Bis (2-ethylhexyl) Phthalate	0.0088	<0.0005	<0.0005	0.0005	8.8
3,3'-Dichlorobenzidine	0.0008	<0.0005	<0.0005	0.0005	0.8
Pentachlorophenol	0.002	<0.0001	<0.0001	0.0001	2
Total PAHs	0.002	<0.0003	<0.0003	0.0003	2
PCBs	0.0004	<0.0002	<0.0002	0.0002	0.4
Misc Parameters					
Nonylphenols	0.001	<0.001	<0.001	0.001	1
Nonylphenol Ethoxylates	0.01	<0.001	<0.001	0.001	10

Sample Collected:
Temperature:

Consulting Firm that prepared Hydrological Report: WSP Canada Group Limited

Qualified Professional who completed the report summary: Natalia Codoban

Print Name

Qualified Professional who completed the report summary: _____

Signature Date & Stamp

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HYDROLOGICAL REVIEW SUMMARY

The form is to be completed by the Professional that prepared the Hydrological Review.
Use of the form by the City of Toronto is not to be construed as verification of engineering/hydrological content.

Refer to the Terms of Reference, Hydrological Review:
Link to Terms of Reference Hydrological Review

For City Staff Use Only:	
Name of ECS Case Manager (Please print)	
Date Review Summary provided to to TW, EM&P	

IF ANY OF THE REQUIREMENTS LISTED BELOW HAVE NOT BEEN INLCUDED IN THE HYDROLOGICAL REVIEW, THE REVIEW WILL BE CONSIDERED INCOMPLETE.
THE GREY SHADED BOXES WILL REQUIRE A CONSISTANCY CHECK BY THE ECS CASE MANAGER.

Summary of Key Information:

SITE INFORMATION		**Page # & Section # of Review**	**Review Includes this Information City Staff (Check)**
Site Address	3415 - 3499 Weston Road, Toronto, ON	pg. 1, sec 1	
Postal Code	M9M 1T7	pg. 1, sec 1	
Property Owner (on request for comments memo)	Medallion Developments (Finch/Weston) Inc.	pg. 1, sec 1	
Proposed description of the project (if applicable) (point towers, number of podiums)	One multi-storey residential/commercial buildings with up to three towers and two (2) or three (3) levels of underground parking	pg. 1, sec 1	
Land Use (ex. commercial, residential, mixed, institutional, industrial)	mixed-use area	pg. 1, sec 1	
Number of below grade levels for the proposed structure	Two (2) or three (3) underground parking levels	pg. 1, sec 1	
HYDROLOGICAL REVIEW INFORMATION			
Date Hydrological Review was prepared:	December 7, 2020		
Who Performed the Hydrological Review (Consulting Firm)	WSP Canada Group Limited		
Name of Author of Hydrological Review	Natalia Codoban		

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HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
Check the directories on the website for Professional Geoscientists and/or Professional Engineers of Ontario been checked to ensure that the Hydrological Report has been prepared by a qualified person who is a licensed Professional Geoscientist as set out in the Professional Geoscientist Act of Ontario or a Professional Engineer? PEO: Professional Engineers of Ontario APGO: Association of Professional Geoscientists of Ontario	P.Eng.	N/A	
Has the Hydrological Review been prepared in accordance with all the following: • Ontario Water Resources Act • Ontario Regulation 387/04 • Toronto Municipal Code Chapter 681-Sewers	yes	pg. 2, sec 1.2	
		Page # & Section # of every occurrence in the Review	**Review Includes this Information City Staff (Check)**

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HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
Total Volume (L/day) Short Term Discharge of groundwater (construction dewatering) **with safety factor included**	56,600 L/day What safety factor was used? Safety factor of 2	pg. 13, sec 4.1.3 Appendix E	
Total Volume (L/day) Short Term Discharge of groundwater (construction dewatering) **without safety factor included**	28,300 L/day	pg. 13, sec 4.1.3 Appendix E	
Total Volume (L/day) Long Term drainage of groundwater (from foundation drainage, weeping tiles, sub slab drainage) **with safety factor included** If the development is part of a multiple tower complex, include total volume for each separate tower	35,000 L/day What safety factor was used? Safety factor of 2.0	pg. 14, sec 4.2 Appendix E	
List the nearest surface water (river, creek, lake)	Humber River	pg. 3, sec 2.1	

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HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
Lowest basement elevation	for P2 - 143.90 masl for P3 - 141.15 masl	Appendix E	
Foundation elevation	for P2 - 141.90 masl for P3 - 139.15 masl	pg. 11, sec 4.1 Appendix E	
Ground elevation	150.95 masl	pg. 11, sec 4.1 Appendix E	
STUDY AREA MAP		**Page # & Section # of every occurrence in the Review**	**Review Includes this Information City Staff (Check)**
Study area map(s) have been included in the report.	ⓧ **Yes**		N/A
Study area map(s) been prepared according to the Hydrological Review Terms of Reference.	ⓧ **Yes**		N/A
WATER LEVEL AND WELLS		**Page # & Section # of every occurrence**	**Review Includes this Information (City Staff Initial)**

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HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
		in the Review	
The groundwater level has been monitored using all wells located on site (within property boundary).	yes	pg. 7-8, sec 3.4.1	
The static water level measurements have been monitored at all monitoring wells for a minimum of 3 months with samples taken every 2 weeks for a minimum of 6 samples. The intent is for the qualified professional to use professional judgement to estimate the seasonally high groundwater level.	yes, monitoring is ongoing	pg. 7-8, sec 3.4.1	
All water levels in the wells have been measured with respect to masl.	yes	pg. 7-8, sec 3.4.1	
A table of geology/soil stratigraphy for the property has been included.	yes	pg. 3-4, sec 2.4	
GEOLOGY AND PHYSICAL HYDROLOGY		**Page # & Section # of every occurrence in the Review**	**Review Includes this Information (City Staff Initial)**
The review has made reference to the soil materials including thickness, composition and texture, and bedrock environments.	yes	pg. 3-4, sec 2.4 Appendix A	
Key aquifers and the site's proximity to nearby surface water has been identified.	ⓧ **Yes**	pg. 3, sec 2.1	N/A

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HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
PUMP TEST/SLUG TEST/DRAWDOWN ANALYSIS		**Page # & Section # of every occurrence in the Review**	**Review Includes this Information City Staff (Check)**
A summary of the pumping test data and analysis is included in the review.	N/A		
The pump test been carried out for at least 24 hours if possible. If not, has a slug test been conducted?	N/A		
Have the monitoring well(s) have been monitored using digital devices? If yes how frequently?	yes, monitoring is ongoing. Dataloggers set to record at 1 hour interval		
If a slug or pump test has been conducted has the static groundwater level been monitored at all monitoring well(s) multiple times to measure recovery? -prior to the slug or pumping test(s)? -post slug or pumping test(s)?	ⓧ **Yes**		N/A
The above noted slug or pump tests have been included in the report.	ⓧ **Yes**	pg. 9, sec 3.5 Appendix D	
WATER QUALITY		**Page # & Section # of every occurrence in the Review**	**Review Includes this Information City Staff (Check)**

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HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
The report includes baseline water quality samples from a laboratory. The water quality must be analyzed for all parameters listed in Tables 1 and 2 of Chapter 681 Sewers of the Toronto Municipal Code (found in Appendix A) and the samples must have to be taken unfiltered within 9 months of the date of submission.	yes	pg. 10, sec 3.6 Appendix D	
The water quality data templates in Appendix A have been completed for each sample taken for both sanitary/combined and storm sewer limits.	For sanitary discharge- See the sanitary/combined sewer parameter limit template For storm discharge- See the storm sewer parameter limit template		
Qualified professional to list all sample parameters that have violated the Bylaw limits for each sample taken for the sanitary/combined Bylaw limits **If there are any sample parameter Exceedances the groundwater can't be discharged as is.**	yes	pg. 10, sec 3.6 Appendix D	
Qualified professional to list all sample parameters that have violated the Bylaw limits for each sample taken for the storm Bylaw limits. **If there are any sample parameter exceedances the groundwater can't be discharged as is.**	yes	pg. 10, sec 3.6 Appendix D	
The water quality samples have been analyzed by a Canadian laboratory accredited and licensed by Standards Council of Canada and/or Canadian Association for Laboratory Accreditation.	ⓧ **Yes**	Appendix D	N/A

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HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
List of Canadian accredited laboratories: Standards Council of Canada			
A chain of custody record for the samples is included with the report.	yes	Appendix D	
Has the chain of custody reference any filtered sample? If yes, the report has to be amended and re-submitted to include only non-filtered samples.	no	Appendix D	
List any of the sample parameters that exceed the Bylaw limits with the reporting detection limit (RDL) included.	yes	Appendix D	
A true copy of the Certificate of Analysis report, is included with the report.	yes	Appendix D	
EVALUATION OF IMPACT		**Page # & Section # of every occurrence in the Review**	**Review Includes this Information City Staff (Check)**
Does the report recommend a back-up system or relief safety valve(s)?	◯ **Yes** ⓧ **No**		
Does the associated Geotechnical report recommend a back-up system or relief safety valve(s)?	◯ **Yes** ⓧ **No**		
The taking and discharging of groundwater on site has been analyzed to ensure that no negative	ⓧ **Yes**	pg.16, sec 5	N/A

HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
impacts will occur to: the City sewage works in terms of quality and quantity (including existing infrastructure), the natural environment, and settlement issues.			
Has it been determined that there will be a negative impact to the natural environment, City sewage works, or surrounding properties has the study identified the following: the extent of the negative impact, the detail of the precondition state of all the infrastructure, City sewage works, and natural environment within the effected zone and the proposed remediation and monitoring plan?	◯ **Yes** **If yes, identify impact:** Ⓧ **No**	pg.16, sec 5	N/A

Summary of Additional Information and Key Items (if applicable):

Appendix A:

SANITARY/COMBINED **Sample Location:** MW20-111 MW20-101

Inorganics		Sample Result		Sample Result with upper RDL included	
Parameter	mg/L				ug/L
BOD	300	5	7	2	300,000
Fluoride	10	0.18	0.21	0.05	10,000
TKN	100	2.57	1.78	0.10	100,000
pH	6.0 - 11.5	7.97	7.96		6.0 - 11.5
Phenolics 4AAP	1	0.002	0.006	0.001	1,000
TSS	350	109	73	10	350,000
Total Cyanide	2	<0.002	<0.002	0.002	2,000
Metals					
Chromium Hexavalent	2	<0.005	<0.005	0.005	2,000
Mercury	0.01	<0.0002	<0.0002	0.0002	10
Total Aluminum	50	0.269	1.96	0.010	50,000
Total Antimony	5	<0.020	<0.020	0.020	5,000
Total Arsenic	1	<0.015	<0.015	0.015	1,000
Total Cadmium	0.7	<0.005	<0.005	0.005	700
Total Chromium	4	<0.020	<0.020	0.020	4,000
Total Cobalt	5	<0.010	<0.010	0.010	5,000
Total Copper	2	<0.020	<0.020	0.020	2,000
Total Lead	1	<0.020	<0.020	0.020	1,000
Total Manganese	5	0.041	0.118	0.020	5,000
Total Molybdenum	5	<0.020	<0.020	0.020	5,000
Total Nickel	2	<0.030	<0.030	0.030	2,000
Total Phosphorus	10	<0.02	0.05	0.02	10,000
Total Selenium	1	<0.020	<0.020	0.020	1,000
Total Silver	5	<0.020	<0.020	0.020	5,000
Total Tin	5	<0.020	<0.020	0.020	5,000
Total Titanium	5	<0.020	0.067	0.020	5,000
Total Zinc	2	<0.020	0.035	0.020	2,000
Petroleum Hydrocarbons					
Animal/Vegetable Oil & Grease	150	2.3	0.8	0.5	150,000
Mineral/Synthetic Oil & Grease	15	0.5	<0.5	0.5	15,000

August 2018

HYDROLOGICAL REVIEW SUMMARY

		MW20-111	MW20-101		
Volatile Organics		**Sample Result**		**Sample Result with upper RDL included**	
Parameter	**mg/L**				**ug/L**
Benzene	0.01	<0.0002	<0.0002	0.0002	10
Chloroform	0.04	<0.0002	0.0003	0.0002	40
1,2-Dichlorobenzene	0.05	<0.0001	<0.0001	0.0001	50
1,4-Dichlorobenzene	0.08	<0.0001	<0.0001	0.0001	80
Cis-1,2-Dichloroethylene	4	<0.0002	<0.0002	0.0002	4,000
Trans-1,3-Dichloropropylene	0.14	<0.0003	<0.0003	0.0003	140
Ethyl Benzene	0.16	<0.0001	<0.0001	0.0001	160
Methylene Chloride	2	<0.0003	<0.0003	0.0003	2,000
1,1,2,2-Tetrachloroethane	1.4	<0.0001	<0.0001	0.0001	1,400
Tetrachloroethylene	1	<0.0001	<0.0001	0.0001	1,000
Toluene	0.016	<0.0002	<0.0002	0.0002	16
Trichloroethylene	0.4	<0.0002	<0.0002	0.0002	400
Total Xylenes	1.4	<0.0002	<0.0002	0.0002	1,400
Semi-Volatile **Organics**					
Di-n-butyl Phthalate	0.08	<0.0005	<0.0005	0.0005	80
Bis (2-ethylhexyl) Phthalate	0.012	<0.0005	<0.0005	0.0005	12
3,3'-Dichlorobenzidine	0.002	<0.0005	<0.0005	0.0005	2
Pentachlorophenol	0.005	<0.0001	<0.0001	0.0001	5
Total PAHs	0.005	<0.0003	<0.0003	0.0003	5
Misc **Parameters**					
Nonylphenols	0.02	<0.001	<0.001	0.001	20
Nonylphenol Ethoxylates	0.2	<0.001	<0.001	0.001	200

Sample Collected:
Temperature:

TORONTO

August 2018

HYDROLOGICAL REVIEW SUMMARY

STORM **Sample Location:** MW20-111 MW20-101

Inorganics		Sample Result		Sample Result with upper RDL included	
Parameter	**mg/L**				**ug/L**
pH	6.0 - 9.5	7.97	7.96		
BOD	15	5	7	2	15,000
Phenolics 4AAP	0.008	0.002	0.006	0.001	8
TSS	15	109	73	10	15,000
Total Cyanide	0.02	<0.002	<0.002	0.002	20
Metals					
Total Arsenic	0.02	<0.015	<0.015	0.015	20
Total Cadmium	0.008	<0.005	<0.005	0.005	8
Total Chromium	0.08	<0.020	<0.020	0.020	80
Chromium Hexavalent	0.04	<0.005	<0.005	0.005	40
Total Copper	0.04	<0.020	<0.020	0.020	40
Total Lead	0.12	<0.020	<0.020	0.020	120
Total Manganese	0.05	0.041	0.118	0.020	50
Total Mercury	0.0004	<0.0002	<0.0002	0.0002	0.4
Total Nickel	0.08	<0.030	<0.030	0.030	80
Total Phosphorus	0.4	<0.02	0.05	0.02	400
Total Selenium	0.02	<0.020	<0.020	0.020	20
Total Silver	0.12	<0.020	<0.020	0.020	120
Total Zinc	0.04	<0.020	0.035	0.020	40
Microbiology					
E.coli	200	ND	ND	1	200,000
Volatile Organics					
Parameter	**mg/L**				**ug/L**
Benzene	0.002	<0.0002	<0.0002	0.0002	2
Chloroform	0.002	<0.0002	0.0003	0.0002	2
1,2-Dichlorobenzene	0.0056	<0.0001	<0.0001	0.0001	6
1,4-Dichlorobenzene	0.0068	<0.0001	<0.0001	0.0001	7
Cis-1,2-Dichloroethylene	0.0056	<0.0002	<0.0002	0.0002	6
Trans-1,3-Dichloropropylene	0.0056	<0.0003	<0.0003	0.0003	6
Ethyl Benzene	0.002	<0.0001	<0.0001	0.0001	2
Methylene Chloride	0.0052	<0.0003	<0.0003	0.0003	5
1,1,2,2-Tetrachloroethane	0.017	<0.0001	<0.0001	0.0001	17
Tetrachloroethylene	0.0044	<0.0001	<0.0001	0.0001	4
Toluene	0.002	<0.0002	<0.0002	0.0002	2
Trichloroethylene	0.0076	<0.0002	<0.0002	0.0002	8
Total Xylenes	0.0044	<0.0002	<0.0002	0.0002	4

August 2018

HYDROLOGICAL REVIEW SUMMARY

		MW20-111	MW20-101		
Semi-Volatile Organics		**Sample Result**		**Sample Result with upper RDL included**	
Di-n-butyl Phthalate	0.015	<0.0005	<0.0005	0.0005	5
Bis (2-ethylhexyl) Phthalate	0.0088	<0.0005	<0.0005	0.0005	8.8
3,3'-Dichlorobenzidine	0.0008	<0.0005	<0.0005	0.0005	0.8
Pentachlorophenol	0.002	<0.0001	<0.0001	0.0001	2
Total PAHs	0.002	<0.0003	<0.0003	0.0003	2
PCBs	0.0004	<0.0002	<0.0002	0.0002	0.4
Misc Parameters					
Nonylphenols	0.001	<0.001	<0.001	0.001	1
Nonylphenol Ethoxylates	0.01	<0.001	<0.001	0.001	10

Sample Collected:
Temperature:

Consulting Firm that prepared Hydrological Report: WSP Canada Group Limited

Qualified Professional who completed the report summary: Natalia Codoban

Print Name

Qualified Professional who completed the report summary: _____

Signature Date & Stamp

TORONTO

October 2017

SERVICING REPORT GROUNDWATER SUMMARY

The form is to be completed by the Professional that prepared the Servicing Report.
Use of the form by the City of Toronto is not to be construed as verification of engineering/hydrological content.

For City Staff Use Only:	
Name of ECS Case Manager (please print)	
Date Review Summary provided to to TW	

A. SITE INFORMAITON		**Included in SR (reference page number)**	**Report Includes this information City staff (Check)**
Date Servicing Report was prepared: December 2020		Cover	
Title of Servicing Report: Functional Servicing and Stormwater Mangement Report		Cover	
Name of Consulting Firm that prepared Servicing Report: HUSSON		Cover	
Site Address 3415-3499 Weston Road Finch and Weston Plaza Ph3/4	Toronto, Ontario	Cover	
Postal Code	M9M 1T7	Cover	
Property Owner (identified on planning request for comments memo)	Medallion	Cover	
Proposed description of the project (ex. number of point towers, number of podiums, etc.)	Five multi-storey residential/commercial buildings with up to five towers and three (3) levels of underground parking	1	
Land Use (ex. commercial, residential, mixed, industrial, institutional) as defined by the Planning Act	mixed	1	
Number of below grade levels	Zero Existing, 3 levels proposed.	1	

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SERVICING REPORT GROUNDWATER SUMMARY

Does the SR include a private water drainage system (PWDS)? **PWDS: Private Water Drainage System:** A subsurface drainage system which may consist of but is not limited to weeping tile(s), foundation drain(s), private water collection sump(s), private water pump or any combination thereof for the disposal of private water on the surface of the ground or to a private sewer connection or drainage system for disposal in a municipal sewer.	If **Yes** continue completing Section B (Information Relating to Groundwater) **ONLY** **If Yes, Number of PWDS?** 1 *(Each of these PWDS may require a separate Toronto Water agreement)* If **No** skip to Sections C (On-site Groundwater Containment) and/or D (Water Tight Requirements) as applicable	ⓧ YES ◯ NO	
B. INFORMATION RELATING TO GROUNDWATER		**Included in SR (reference page number)**	**Report Includes this information City Staff (Check)**
A copy of the pump schedule(s) for **ALL** groundwater sump pump(s) for the development site has been included in the FSR **or** A letter written by a Mechanical Consultant (signed and stamped by a Professional Engineer of Ontario) shall be attached to the SR stating the peak flow rate of the groundwater discharge for the development site for all groundwater sump pump(s). This peak flow rate must be based on the pump schedule(s) that have been designed by the Mechanical Consultant. A template of this letter is attached in Schedule A.	This details will be confirmed as part of the SPA Design.	N/A	

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SERVICING REPORT GROUNDWATER SUMMARY

****If there is more than one sump they must ALL be included in the letters along with a combined flow****			
Is it proposed that the groundwater from the development site will be discharged to the sanitary, combined or storm sewer?	◯x Sanitary Sewer ◯ Combined Sewer ◯ Storm Sewer		
Will the proposed PWDS discharge from the site go to the Western Beaches Tunnel (WBT)? *Reference attached WBT drainage map*	◯ YES ⓧ NO **If Yes, private water discharge fees will apply and site requires a sanitary discharge agreement.**		
What is the street name where the receiving sewer is located?	Zappacosta Drive		
What is the diameter of the receiving sewer?	250mm		
Is there capacity in the proposed local sewer system? ⓧ YES ◯ NO	Are there any improvements required to the sewer system? If yes, identify them below and refer to the section and page number of the FSR where this information can be found. If a sewer upgrade is required, the owner is required to enter into an Agreement with the City to improve the infrastructure? ◯ YES		
Total allowable peak flow rate during a 100 year storm event (L/sec) to storm sewer When groundwater is to be discharged to the storm sewer the total groundwater and stormwater discharge shall not exceed the permissible peak flow rate during a 2 year pre development storm event, as per the City's	_____45_____ L/sec	4	

SERVICING REPORT GROUNDWATER SUMMARY

Wet Weather Flow Management Guidelines, dated 2006			
Short-Term Groundwater Discharge Provide proposed total flow rate to the sanitary/combined sewer in post-development scenario Total Flow (L/sec) = sanitary flow + peak short-term groundwater flow rate	1.1 L/sec	8	
Long-Term Groundwater Discharge Provide proposed total flow rate to the sanitary/combined sewer in post-development scenario Total Flow (L/sec) = sanitary flow + peak long-term groundwater flow rate	0.03 L/sec	9	
Does the water quality meet the receiving sewer Bylaw limits? ⓧ YES ◯ NO	If the water quality does not meet the applicable receiving sewer Bylaw limits and the applicant is proposing a treatment system the applicant will need to include a letter stating that a treatment system will be installed and the details of the treatment system will be included in the private water discharge application that will be submitted to TW EM&P.		
C. ON-SITE GROUNDWATER CONTAINMENT		**Included in SR (reference page number)**	**Report Includes this information City Staff (Check)**
How is the site proposing to manage the groundwater discharge on site?	N/A		

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SERVICING REPORT GROUNDWATER SUMMARY

Has the above proposal been approved by:	◯ TW-WIM And ◯ TW-EM&P And ◯ ECS		
If the site is proposing a groundwater infiltration gallery, has it been stated that the groundwater infiltration gallery will not be connected to the municipal sewer? A connection between the infiltration gallery/dry well and the municipal sewer is not permitted Please be advised if an infiltration gallery/dry well on site is not connected to the municipal sewer, the site **must** submit two letters using the templates in Schedule B and Schedule C.	◯ YES ◯ NO N/A		
Confirm that the infiltration gallery can infiltrate 100% of the expected peak groundwater flow year round, ensure that the top of the infiltration trench is below the frost line (1.8m depth), not less than 5 m from the building foundation, bottom of the trench 1m above the seasonally high water table, and located so that the drainage is away from the building.	N/A		
D. WATER TIGHT REQUIREMENTS		**Included in SR (reference page number)**	**Report Includes this information City Staff**

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SERVICING REPORT GROUNDWATER SUMMARY

		(Check)
If the site is proposing a water tight structure: 1. The owner must submit a letter using the template in Schedule D. 2. A Professional Engineer (Structural), licensed to practice in Ontario and qualified in the subject must submit a letter using the template in Schedule E.		

Provide a copy of the approved SR to Toronto Water Environmental Monitoring & Protection Unit at pwapplication@toronto.ca.

Consulting Firm that prepared Servicing Report: HUSSON

Professional Engineer who completed the report summary: David Sharp
Print Name

Professional Engineer who completed the report summary: _____
Signature Date & Stamp

HUSSON

APPENDIX E

DOWNSTREAM SANITARY SEWER ASSESSMENT

OUTPUT:

Minimum Dia. = 300 mm
Mannings "n"= 0.013
Minimum Velocity = 0.6 m/s
Minimum Grade = 0.5 %
Avg. Proposed Domestic Flow = 450 l/c/d
Avg. Existing Domestic Flow = 240 l/c/d
Infiltration = 0.26 l/s/ha
Peaking Factors calculated as per City Criteria
Harmon equation: PF=1 + (14/(4+(P/1000)½))
Maximum Velocity = 5 m/s

Finch and Weston Phase 3
Estimated Pipe Capacities for Dry & Wet Weather Flows

Project: Finch and Weston Phase 3
Project No: 15753
Date: 7-Dec-20
Designed by: WZ
NOMINAL PIPE SIZE USED

			RESIDENTIAL						COMMERCIAL/INDUSTRIAL/INSTITUTIONAL				FLOW CALCULATIONS						PIPE DATA					
STREET	FROM MH	TO MH	AREA (ha)	ACC. AREA (ha)	UNITS (#)	DENSITY (P/unit)	POP	ACC. RES. POP.	AREA (ha)	ACC. AREA (ha)	EQUIV. POP. (p/ha)	ACC. EQUIV. POP.	INFILTRATION (l/s)	TOTAL ACC. POP.	PEAKING FACTOR (Res Only)	RES. FLOW (l/s)	GROUNDWATER FLOW (l/s)	TOTAL FLOW (l/s)	DIA. (mm)	SLOPE (%)	Q FULL (l/s)	V FULL (m/s)	V ACT (m/s)	% FULL
Street A	NE Block	MH8A	1.36	1.36	1	2681	2681	2681	0	0.00	110	0	0.35	2681	3.48	25.94	0.950	27.25	250	1.00	59.44	1.21	1.18	46%
Street A	NW Block	MH5A	0.93	0.93	1	1190	1190	1190	0.11	0.11	110	12.1	0.27	1202	3.75	12.51	0.950	13.73	250	1.26	66.72	1.36	1.05	21%
Street A	MH8A	MH5A		1.36				2681	0.13	0.13		0	0.39	2681	3.48	25.94	0.950	27.28	250	1.00	59.44	1.21	1.18	46%
Street B	SE Block	MH7A	0.72	0.72	1	914	914	914	0.02	0.02	62	1.24	0.19	915	3.82	9.72	0.950	10.87	250	1.00	59.44	1.21	0.90	18%
Street B	MH7A	MH6A		0.72				914	0.16	0.18		1.24	0.23	915	3.82	9.72	0.950	10.91	250	1.00	59.44	1.21	0.92	18%
Street B	MH6A	MH5A		0.72				914	0.02	0.20		1.24	0.24	915	3.82	9.72	0.950	10.91	250	1.00	59.44	1.21	0.92	18%
Street A	MH5A	MH4A		3.01				4785	0.12	0.56		13.34	0.93	4798	3.26	43.47	1.900	46.30	250	0.95	57.93	1.18	1.31	80%
Weston Rd	MH4A	MH3A	0.72	3.73	270	2.7	729	5514	0.0688	0.63	62	17.6056	1.13	5532	3.20	49.23	1.900	52.27	250	1.50	72.80	1.48	1.61	72%
Weston Rd	MH3A	MH2A	0.84	4.57	362	2.7	977	6491	0.13	0.76	62	25.6656	1.39	6517	3.14	56.78	1.900	60.06	250	1.95	83.00	1.69	1.84	72%
Weston Rd	MH2A	MH1A	0.34	4.91	272	2.7	734	7226	0.03	0.79	62	27.5256	1.48	7253	3.09	62.29	1.900	65.67	250	2.80	99.46	2.03	2.16	66%
Weston Rd	MH1A	MH4		4.91				7226		0.79		27.5256	1.48	7253	3.09	62.29	1.900	65.67	250	5.20	135.54	2.76	2.74	48%
Weston Rd	MH4	MH5		4.91				7226		0.79		27.5256	1.48	7253	3.09	62.29	1.900	65.67	250	3.00	102.95	2.10	2.22	64%
MTRCA Lands	MH5	MH6		4.91				7226		0.79		27.5256	1.48	7253	3.09	62.29	1.900	65.67	250	13.00	214.30	4.37	3.79	31%
MTRCA Lands	MH6	Trunk		4.91				7226		0.79		27.5256	1.48	7253	3.09	62.29	1.900	65.67	250	1.00	59.44	1.21	1.38	110%

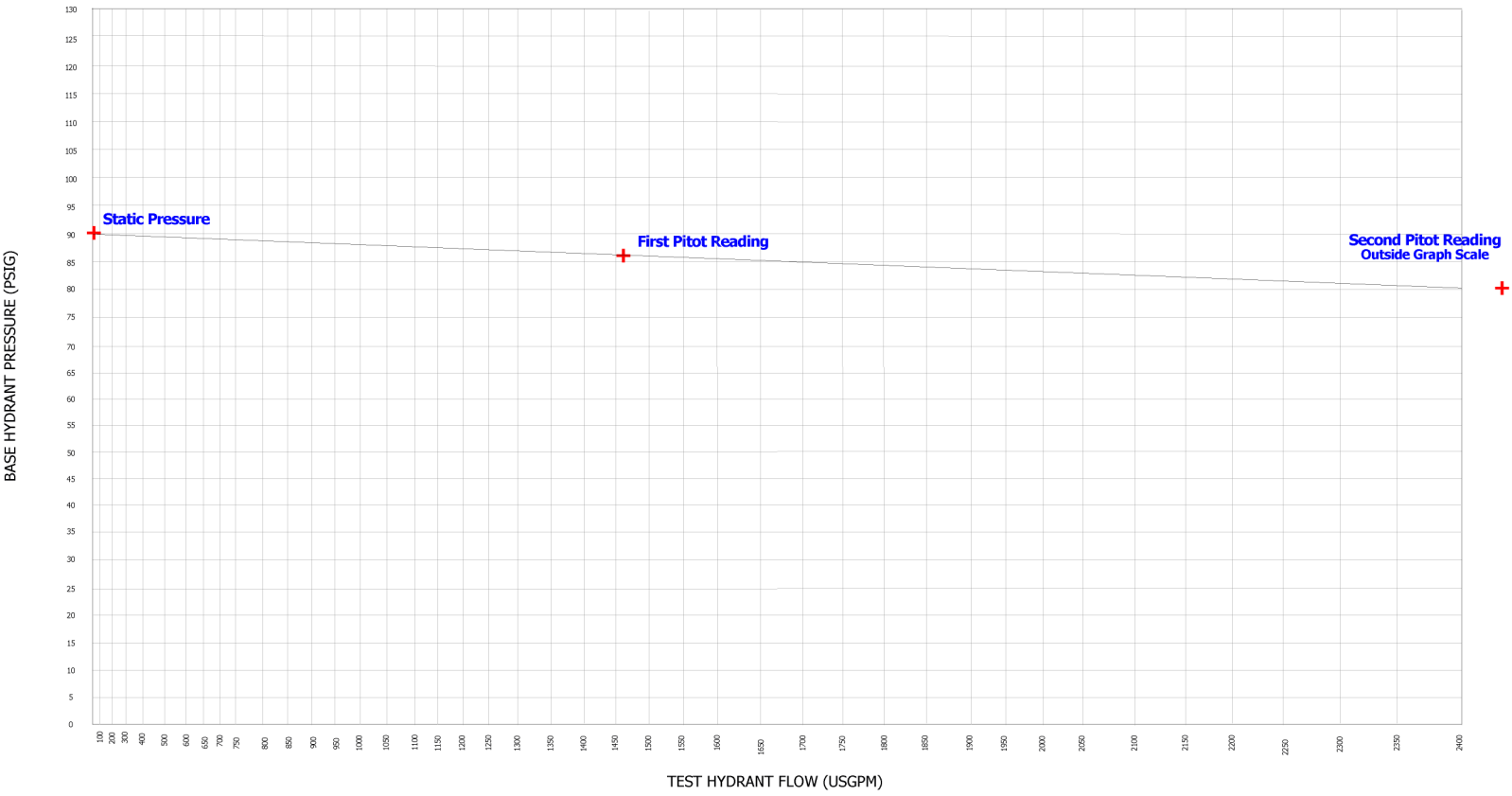
APPENDIX F

WATER DEMAND ANALYSIS

JACKSON WATERWORKS

Telephone: (905) 547-6770
Toll Free: (800)-734-5732
E-mail: jww@bellnet.ca
Website: www.jacksonwaterworks.ca

FIRE HYDRANT FLOW TEST RESULTS



No. of Ports Open	Port Dia. (in)	Pitot Reading (psig)	Pitot Conversion (usgpm) Conversion Factor = 0	Residual Pressure (psig)
1	2.50	76	1463	86
2	2.50	56/56	2512	80
THEORETICAL FLOW @ 20psi			**6862**	

Test Date	18 May 2017
Test Time	5:30pm
Pipe Diameter (in)	Unknown
Static Pressure (psig)	90

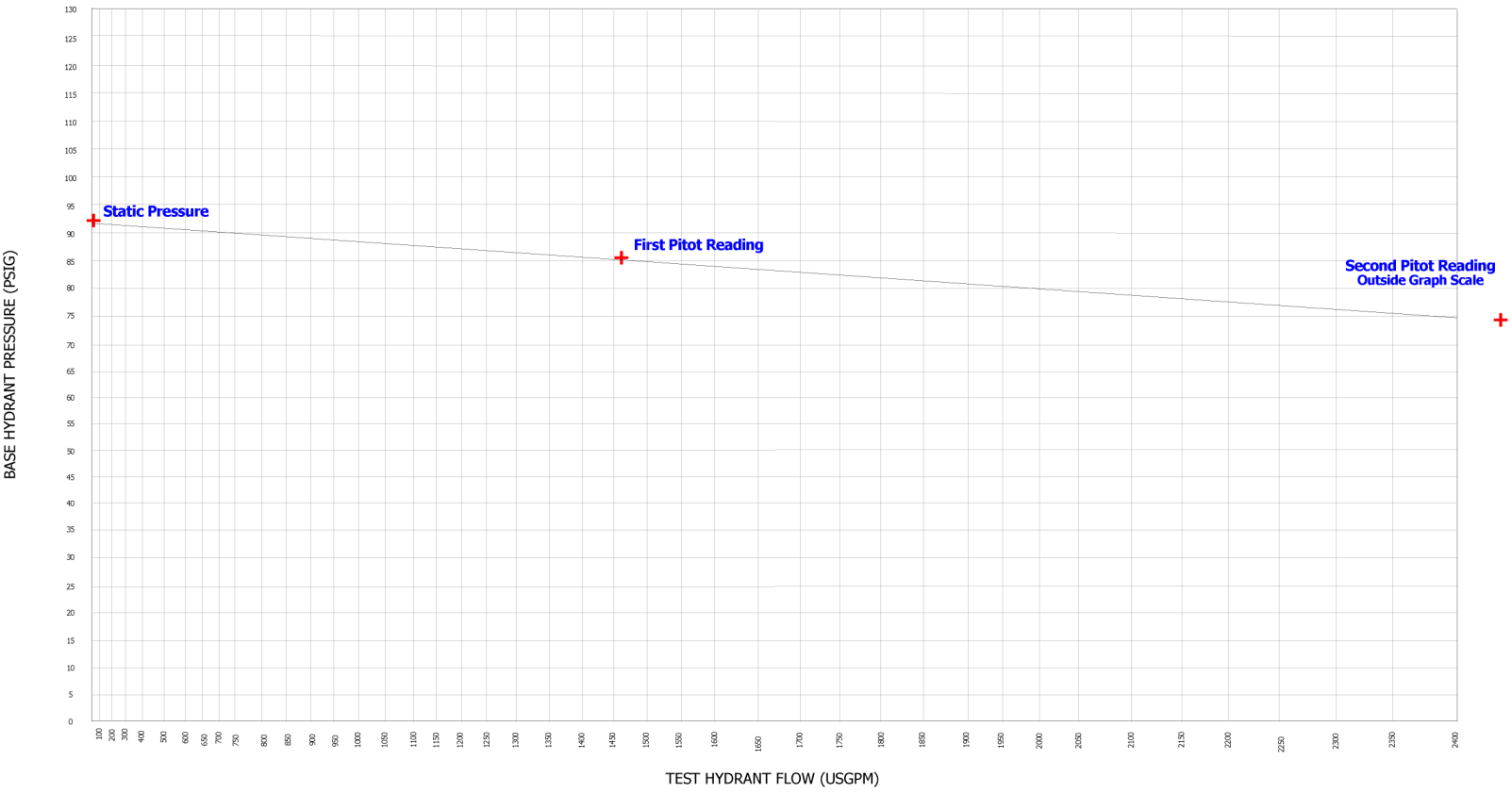
SITE INFORMATION		
Site Name, Developer Name & Engineer	Medallion Developments Inc.	The Municipal Infrastructure Group Ltd.
Site Address/Municipality	Finch Avenue & Weston Road, Toronto	
Location of Test Hydrant	Corner of Street A and Street B	
Location of Base Hydrant	Street B, Center	
Comments	Testing has been completed in accordance with NFPA-291 guidelines wherever and whenever possible and practical. Conversion factors for pitot tube readings have been used depending on hose nozzle internal design and installation profile. Refer to attached cover letter for additional information.	
Verified By	Mark Schmidt	

221 Sherman Avenue North, Hamilton, Ontario L8L 6N2

JACKSON WATERWORKS

Telephone: (905) 547-6770
Toll Free: (800)-734-5732
E-mail: jww@bellnet.ca
Website: www.jacksonwaterworks.ca

FIRE HYDRANT FLOW TEST RESULTS



No. of Ports Open	Port Dia. (in)	Pitot Reading (psig)	Pitot Conversion (usgpm) Conversion Factor = 0	Residual Pressure (psig)
1	2.50	76	1463	85
2	2.50	58/58	2556	74
THEORETICAL FLOW @ 20psi			5150	

Test Date	18 May 2017
Test Time	5:45pm
Pipe Diameter (in)	Unknown
Static Pressure (psig)	92

SITE INFORMATION		
Site Name, Developer Name & Engineer	Medallion Developments Inc.	The Municipal Infrastructure Group Ltd.
Site Address/Municipality	Finch Avenue & Weston Road, Toronto	
Location of Test Hydrant	SStreet B in Center	
Location of Base Hydrant	Street B at End of Cul-de-Sac	
Comments	Testing has been completed in accordance with NFPA-291 guidelines wherever and whenever possible and practical. Conversion factors for pitot tube readings have been used depending on hose nozzle internal design and installation profile. Refer to attached cover letter for additional information.	
Verified By	Mark Schmidt	

Fire Flow Requirements

Project:	Finch & Weston Phase 3
Project No.:	15753
Municipality:	Toronto
Building:	Building A

Residential Development

GUIDE FOR DETERMINATION OF REQUIRED FIRE FLOW
(as per the Water Supply for Public Fire Protection 1999 manual by the Fire Underwriters Survey)

STEP 1
Determine the fire flow.

Required Fire Flow (F)	F = 220 x C x sqrt(A)	The required fire flow in litres per minute.
Maximum Floor Area (A) =	2233.14 m2	If the vertical openings and exterior vertical communications are properly protected (one hour rating), consider 2nd-1,416.96m^2 plus 25% of immediately adjoining floors (3rd-1,541m^2 and 1st-1,723.71m^2).
Coefficient (C) =	0.6	Coefficient related to the type of construction. = 1.5 for wood frame construction (structure essentially all combustible). = 1.0 for ordinary construction (brick or other masonry walls, combustible floor = 0.8 for non-combustible construction (unprotected metal structural) = 0.6 for fire-resistive construction (fullyprotected frame,floors, roof).
F =	6300 L/min.	

STEP 2
Determine the increase or decrease for occupancy.

	0%	Reduction for Low Hazard Occupancy (Dwellings).
Decrease	0 L/min.	

STEP 3
Determine the decrease, if any, for automatic sprinkler protection.

	50%	Complete, fully supervised, automatic sprinkler system, with water flow and control valve alarm service.
Decrease	3150 L/min.	

STEP 4
Determine the total increase for exposures.

		Separation / Charge
		0 to 3m / 25%
North (Building B)	15%	3.1 to 10m / 20%
East (Phase 4)	0%	10.1 to 20m / 15%
South (Phase 2)	15%	20.1 to 30m / 10%
West (Commercial across Weston Rd.)	0%	30.1 to 45m / 5%
	30.0%	Maximum exposure increase is 75%.
Increase	1890 L/min.	

STEP 5
Determine the minimum required fire flow.

F =	**6,000 L/min.**	
Q_R =	**5150 GPM**	
	19,495 L/min	

Fire Flow Requirements

Project:	Finch & Weston Phase 3
Project No.:	15753
Municipality:	Toronto
Building:	Building B

Residential Development

GUIDE FOR DETERMINATION OF REQUIRED FIRE FLOW
(as per the Water Supply for Public Fire Protection 1999 manual by the Fire Underwriters Survey)

STEP 1
Determine the fire flow.

Required Fire Flow (F)	F = 220 x C x sqrt(A)	The required fire flow in litres per minute.
Maximum Floor Area (A) =	1461.39 m2	If the vertical openings and exterior vertical communications are properly protected (one hour rating), consider only the area of the largest floor (4rd-974.26m^2) plus 25% of each of the two immediately adjoining floors (3rd-974.26m^2 & 5th-974.26m^2).
Coefficient (C) =	0.6	Coefficient related to the type of construction. = 1.5 for wood frame construction (structure essentially all combustible). = 1.0 for ordinary construction (brick or other masonry walls, combustible floor = 0.8 for non-combustible construction (unprotected metal structural) = 0.6 for fire-resistive construction (fullyprotected frame,floors, roof).
F =	5100 L/min.	

STEP 2
Determine the increase or decrease for occupancy.

	0%	Reduction for Low Hazard Occupancy (Dwellings).
Decrease	0 L/min.	

STEP 3
Determine the decrease, if any, for automatic sprinkler protection.

	50%	Complete, fully supervised, automatic sprinkler system, with water flow and control valve alarm service.
Decrease	2550 L/min.	

STEP 4
Determine the total increase for exposures.

		Separation / Charge
		0 to 3m / 25%
North (Commercial across Finch Ave.)	5%	3.1 to 10m / 20%
East (Phase 4)	10%	10.1 to 20m / 15%
South (Building A)	15%	20.1 to 30m / 10%
West (Commercial across Weston Rd.)	5%	30.1 to 45m / 5%
	35.0%	Maximum exposure increase is 75%.
Increase	1785 L/min.	

STEP 5
Determine the minimum required fire flow.

F =	**5,000 L/min.**
Q_R =	**5150 GPM**
	19,495 L/min

Fire Flow Requirements

Project:	Finch & Weston Phase 3
Project No.:	15753
Municipality:	Toronto
Building:	Building C,D,E

Residential Development

GUIDE FOR DETERMINATION OF REQUIRED FIRE FLOW
(as per the Water Supply for Public Fire Protection 1999 manual by the Fire Underwriters Survey)

STEP 1
Determine the fire flow.

Required Fire Flow (F)	F = 220 x C x sqrt(A)	The required fire flow in litres per minute.
Maximum Floor Area (A) =	9652.02 m2	If the vertical openings and exterior vertical communications are properly protected (one hour rating), consider only the area of the largest floor (4th-6,434.68m^2) plus 25% of each of the two immediately adjoining floors (5th-6,434.68m^2 & 3rd-6,434.68m^2).
Coefficient (C) =	0.6	Coefficient related to the type of construction. = 1.5 for wood frame construction (structure essentially all combustible). = 1.0 for ordinary construction (brick or other masonry walls, combustible floor = 0.8 for non-combustible construction (unprotected metal structural) = 0.6 for fire-resistive construction (fullyprotected frame,floors, roof).
F =	13000 L/min.	

STEP 2
Determine the increase or decrease for occupancy.

	0%	Reduction for Low Hazard Occupancy (Dwellings).
Decrease	0 L/min.	

STEP 3
Determine the decrease, if any, for automatic sprinkler protection.

	50%	Complete, fully supervised, automatic sprinkler system, with water flow and control valve alarm service.
Decrease	6500 L/min.	

STEP 4
Determine the total increase for exposures.

		Separation / Charge
		0 to 3m / 25%
North (Commercial across Finch Ave	5%	3.1 to 10m / 20%
East (Hydro Corridor)	0%	10.1 to 20m / 15%
South (Phase 2)	15%	20.1 to 30m / 10%
West (Phase 4)	10%	30.1 to 45m / 5%
	30.0%	Maximum exposure increase is 75%.
Increase	3900 L/min.	

STEP 5
Determine the minimum required fire flow.

F =	**11,000**	**L/min.**
Q_R =	**5150**	**GPM**
	19,495	**L/min**

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