SITE SERVICING REPORT
21 HUNTMAR DRIVE

Project: 127134-6.04.01

Prepared for North American Development Group
by IBI Group
February 4, 2021

1 INTRODUCTION

1.1 Scope

The purpose of this report is to outline the required municipal services, including water supply, stormwater management and wastewater disposal, needed to support the redevelopment of the subject property. The property is approximately 1.6 hectares in area and is located on the west of Huntmar Drive just south of the intersection of Huntmar Drive and Hazeldean Road. The parcel is located across the road from the owners commercial development, and prior to the creation of Huntmar Drive the subject parcel was part of the main parcel located now located on the east side of Huntmar Dr.. Please refer to **Figure 1 – Location Plan** in **Appendix A** for more details.

This Site Servicing Study, which also includes the Stormwater Management Plan, and Erosion and Sedimentation Control Plans, are being completed in support of the Site Plan Application.

1.2 Subject Site

The subject lands are located within the Kanata West Development Area (KWDA) and therefore are subject to the requirements of the KWDA Master Servicing Reports. Since the first site plan approval in 2010, this parcel was intended to be developed as a commercial site, to address market demands the owner is submitting for Site Plan Approval for two six storey residential buildings, with a total of 344 residential units. The proposed development also includes two level of underground parking. Vehicular access to the site will be from Huntmar Drive, where the proposed driveway is opposite the existing entrance for the existing commercial site. Please refer to Site Plan prepared by RLA Architects located in **Appendix A** for more information.

The site currently consists of vacant lot, a copy of the site topographic survey and legal boundary plan prepared by Fairhall Moffatt and Woodland is included in **Appendix A**

1.3 Pre-consultation

It should be noted that a pre-consultation with the Ministry of the Environment is not required since this site is serviced by existing separated municipal sanitary and storm sewers and is a single owner residential site, thus an ECA is not required. A preconsulation meeting with the City of Ottawa was held on July 31, 2020 and a copy of the meeting notes are included in **Appendix A.**

2 WATER DISTRIBUTION

2.1 Existing Conditions

As previously noted, the site is located west of Huntmar Drive just north of Hazeldean Road. An existing 400 mm diameter watermain is located within the Huntmar Drive right of way. The watermains fall within the City of Ottawa's pressure zone 3W which will provide the water supply to the site. When the CDP and MSS were first completed to supported the Kanata West development area, the planning for this area envisioned the adjacent parcels to the west to be serviced through this site. As development projects have advance those parcels have been constructed or designed to be serviced independently from this site.

2.2 Design Criteria

2.2.1 Water Demands

The population for apartment buildings is assumed at 1.4, 2.1 and 2.8 persons per unit for one, two and three bedroom units respectively, as found in Table 4.1 of the Design Guidelines. A watermain demand calculation sheet is included in **Appendix B** and the total water demands are summarized as follows:

	Subject Site
Average Day	2.00 l/s
Maximum Day	5.01 l/s
Peak Hour	11.02 l/s

2.2.2 System Pressure

The Ottawa Design Guidelines – Water Distribution (WDG001), July 2010, City of Ottawa, Clause 4.2.2 states that the preferred practice for design of a new distribution system is to have normal operating pressures range between 345 kPa (50 psi) and 480 kPa (80 psi) under maximum daily flow conditions. Other pressure criteria identified in Clause 4.2.2 of the guidelines are as follows:

Minimum Pressure	Minimum system pressure under peak hour demand conditions shall not be less than 276 kPa (40 psi)
Fire Flow	During the period of maximum day demand, the system pressure shall not be less than 140 kPa (20 psi) during a fire flow event.
Maximum Pressure	In accordance with the Ontario Building/Plumbing Code, the maximum pressure should not exceed 552 kPa (80 psi). Pressure reduction controls will be required for buildings where it is not possible/feasible to maintain the system pressure below 552 kPa.

2.2.3 Fire Flow Rates

A calculation using the Fire Underwriting Survey (FUS) method was conducted to determine the fire flow requirement for both buildings on the site. The buildings are considered non-combustible construction. Results of the analysis provides a maximum fire flow rate of 11,000 l/min or 183 l/s is required. A copy of the FUS calculation is included in **Appendix B**. The buildings will be designed with a Siamese fire connection for each building and they will be located on the building's frontage on Huntmar Drive.

2.2.4 Boundary Conditions

A boundary condition was provided by the City of Ottawa for the adjacent development on the 400mm diameter watermain on Huntmar Drive. A copy of the boundary conditions is included in **Appendix B** and summarized as follows, an updated boundary condition has been requested and the below analysis will be updated for the next submission:

BOUNDARY CONDITIONS	
SCENARIO	HGL (m) Huntmar Drive
Maximum HGL	161.6m
Minimum HGL (Peak Hour)	156.5m
Max Day + Fire Flow	155.0m

2.3 Proposed Water Plan

The minimum water pressure inside the building at the connection is determined by the difference between the water entry elevation of 100.6m and the minimum HGL condition, resulting in a pressure 548 kPa which exceeds the minimum requirement of 276 kPa per the guidelines. Because the pressure at the 6th floor under minimum HGL conditions is close to the minimum requirement of 276 kPa, an onsite test will be required to confirm if a domestic water pump will be necessary for this building.

Maximum water pressure is determined by the difference between the water entry elevation of 100.6 m and the maximum HGL condition resulting in a pressure of 598 kPa, which is greater than the 552 kPa threshold in the guideline in which pressure control is required. Based on this result, pressure control is required for this building.

The boundary condition for Maximum Day and Fire Flow results in a pressure of 503 kPa at the ground floor level. In the guidelines, a minimum residual pressure of 140 kPa must be maintained in the distribution system for a fire flow and maximum day event. As a pressure of 503 kPa is achieved, the fire flow requirement is exceeded.

To service the property twin 200mm dia water services off Huntmar Drive are proposed, see site servicing plan 127134-C-001 in **Appendix B.** The proposed twin 200mm dia services will provide adequate supply to the building to meet demands while also providing service redundancy for the buildings.

3 WASTEWATER

3.1 Existing Conditions

When the MSS for the area was developed a 750mm dia trunk was designed to service this area, and as previously noted the usage was assumed to be commercial and based on the criteria at the time (50,000 l/d/Ha) this site was to drain into the 750 sewer. The site was also to convey flow from upstream lands to the west, however as previously noted the adjacent lands have been serviced independently.

3.2 Design Criteria

The sanitary sewers for the subject site will be based on the City of Ottawa design criteria. It should be noted that the sanitary sewer design for this study incorporates the latest City of Ottawa design parameters identified in Technical Bulletin ISTB-2018-01. Some of the key criteria will include the following:

- Commercial/Institutional flow 28,000 l/ha/d
- Residential flow 280 l/c/d
- Peaking factor 1.5 if ICI in contributing area >20%
  1.0 if ICI in contributing area <20%
- Infiltration allowance 0.33 l/s/ha
- Velocities 0.60 m/s min. to 3.0 m/s max.
-

Given the above criteria, the average wastewater flow from the proposed development will 2.51 l/s, the detailed sanitary sewer calculations and Tributary area plan are included in **Appendix C**. As noted previously when the supporting sewers were designed the site was assumed to be developed as a commercial site with an average flow of 50,000 l/d/Ha, and an infiltration factor of 0.28l/s/Ha, which would have resulted in an average flow of 1.33 l/s. The current plan estimates an average flow of 2.51 l/s which is approximately 1.18 l/s greater then original design, which within the larger context of discharging into a 750mm truck with a capacity of over 500l/s it is not anticipated to yield any negative impact on the down stream system.

3.3 Recommended Wastewater Plan

A 250mm dia sanitary service lateral is proposed to be extended from the existing sanitary MH in Huntmar Drive to service this site. Please refer to the site servicing plan 127134-C-001 in **Appendix A** for details.

4 STORMWATER SYSTEM

4.1 Existing Conditions

When the Kanata West MSS was completed this site was limited to a minor system flow (5yr) to 85 l/s/Ha and major flow was to be directed to Huntmar Drive. As noted previously the CDP envisioned a connection through this site to the adjacent sites to the west, however those parcels have advanced their design/construction and are now independent of servicing through this site for both minor and major flows.

4.2 Design Criteria

Since this site is serviced by a storm sewer system that was designed based on 85 l/s/Ha City of Ottawa requires the site to follow the following design criteria;

- Storm sewers designed to a 2 year level of service
- Site to be designed to limit the 100 year post development flow to a maximum of 132.74l/s (1.562 Ha @ 85 l/s/Ha).

The stormwater system was designed following the principles of dual drainage, making accommodations for both major and minor flow.

Some of the key criteria include the following:

- Design Storm — 1:2 year return (Ottawa)
- Rational Method Sewer Sizing
- Initial Time of Concentration — 10 minutes
- Runoff Coefficients
  - Landscaped Areas — C = 0.30
  - Asphalt/Concrete — C = 0.90
  - Roof — C = 0.90
- Pipe Velocities — 0.80 m/s to 6.0 m/s
- Minimum Pipe Size — 250 mm diameter (200 mm CB Leads)

4.3 Proposed Minor System

Using the above-noted criteria, the proposed on-site storm sewers were sized accordingly. A detailed storm sewer design sheet and the associated storm sewer drainage area plan are included in **Appendix D**. The current servicing drawing outlines the proposed underground parking structure, all of the deck drains are located above the underground parking structure will be routed inside the building via the mechanical plumbing systems and directed to the building cistern located adjacent to the northern wall. All roof deck inlets will be controlled and will utilize rooftop storage, restricted flow from the roof decks will bypass the cistern and discharge to the storm service. The runoff from the landscaped areas will be collected and conveyed through a series of clear stone infiltration cells. These cells will provide both infiltration and stormwater storage. Volume of storage below the invert of the perforated pipe will be used for infiltration, and the volume of storage above the invert of the perforated pipe will be used for stormwater storage. Flow from the system will be controlled with an ICD and the outlet will connect to the joint outlet servicing the roof drains, and onsite cistern.

4.4 Stormwater Management

The subject site will be limited to a release rate established using the criteria described in section 4.2. This will be achieved through an inlet control device (ICD) at the outlet of the cistern, and inlet control devices on all roof deck inlets, and ICD at the outlet of the infiltration cells.

When rainfall events generate flows that are in excess of the site`s allowable release rate excess volume will be stored within the combination of a cistern, roof top and infiltration cells.

At certain locations within the site, the opportunity to capture runoff is limited due to grading constraints and building geometry. These locations are generally located at the perimeter of the site where it is necessary to tie into public boulevards and adjacent properties, and it is not always feasible to capture or store stormwater runoff. These “uncontrolled” areas, 0.123 hectares in total, based on 1:100 year storm uncontrolled flows the uncontrolled areas generate 53.3 l/s runoff (refer to Section 4.5 for calculation). The various roof decks will have inlets that control flow to a total of 27.72 l/s, which leaves 51.72l/s for the remaining surface inlets discharging into the cistern and infiltration cell, which have been sized to accommodate flow during the 1:100-year event, with no overflow leaving the site.

4.5 Inlet Controls

The allowable release rate for the 1.562 Ha site as noted previously is 132.74 l/s.

As noted in Section 4.4, a portion of the site will be left to discharge to the surrounding boulevards and roadways uncontrolled.

Based on a 1:100 year event, the flow from the three uncontrolled areas can be determined as:

$\mathbf{Q_{uncontrolled}}$ = $\mathbf{2.78} \times \mathbf{C} \times \mathbf{i_{100yr}} \times \mathbf{A}$ where:

C = Average runoff coefficient of uncontrolled area

$\mathbf{i_{100yr}}$ = Intensity of 100-year storm event (mm/hr)

= $1735.688 \times (T_c + 6.014)^{0.820}$ = 178.56 mm/hr; where T_c = 10 minutes

$\mathbf{A_1}$ = Uncontrolled Area = 0.037 Ha, C_{100} =1.0, Q_1=18.37l/s
$\mathbf{A_2}$ = Uncontrolled Area = 0.025 Ha, C_{100} =0.375, Q_2=4.65l/s
$\mathbf{A_3}$ = Uncontrolled Area = 0.061 Ha, C_{100} =1.00, Q3=30.28l/s

Therefore, the uncontrolled release rate can be determined as:

$\mathbf{Q_{uncontrolled}}$ = **18.37+4.65+30.28**= 53.**3L/s**

The maximum allowable release rate from the remainder of the site can then be determined as:

$\mathbf{Q_{max\ allowable}}$ = $\mathbf{Q_{restricted} - Q_{uncontrolled}}$

= 132.74 L/s – 53.3 L/s = **79.44 L/s**

4.6 On-Site Detention

As noted in section 4.4 any excess storm water up to the 100-year event is to be stored on-site within the building cistern, infiltration cells, and on the roof decks in order to not surcharge the downstream municipal storm sewer system.

4.6.1 Site Inlet Control

The roof decks will utilize restrictor inlets such as the Watts RD-100-A-ADJ (or approved equal) to limit the inflow from each section of roof to the identified flow rates. Storage of runoff on the roof decks will be required to accommodate the 1:100 yr event, and scuppers will provide for overflow should a more extreme event occur or should an inlet become blocked. The Modified Rational Method (MRM) was used to identify the required storage, see the MRM calculations in **Appendix D** for details. The deck and driveway areas drain to the storm water cistern located adjacent to the building north wall, where an ICD will restrict the flow from the tank to 41.05l/s. The landscape areas will drain to the infiltration cells where additional storage above the infiltration volume will be used to accommodate restricting the flow from this system to 10.66 l/s the MRM spreadsheet in **Appendix D** identifies the required storage to accommodate the 1:100yr event. The following table summarizes the on-site storage requirements during both the 1:5-year and 1:100-year events.

ICD AREA	TRIBUTARY AREA	AVAILABLE STORAGE (M^3)	100-YEAR STORM		2-YEAR STORM	
			RESTRICTED FLOW (L/S)	REQUIRED STORAGE (M^3)	RESTRICTED FLOW (L/S)	REQUIRED STORAGE (M^3)
Cistern	0.507	210.0	41.05	209.70	41.05	55.15
Roof Deck 1A	0.044	17.6	2.52	16.02	2.52	3.88
Roof Deck 1B	0.041	16.4	2.52	14.5	2.52	3.43
Roof Deck 1C	0.029	11.6	1.89	10.01	1.89	2.33
Roof Deck 1D	0.057	23.09	2.52	22.86	2.52	5.89
Roof Deck 1E	0.063	25.2	3.15	24.15	3.15	6.06
Roof Deck 2A	0.044	17.6	2.52	16.01	2.52	3.87
Roof Deck 2B	0.077	32.73	3.15	31.73	3.15	8.33
Roof Deck 2C	0.029	11.6	1.89	10.01	1.89	2.33
Roof Deck 2D	0.057	23.09	2.52	22.86	2.52	5.89
Roof Deck 2E	0.029	11.6	1.89	10.01	1.89	2.33
Roof Deck 2F	0.059	23.6	3.15	22.07	3.15	5.44
Landscape	0.393	64.8	10.66	59.86	10.66	14.2
Unrestricted	0.123		53.3		24.63	
TOTAL	**1.552**	**488.91**	**132.73**	**469.79**	**104.06**	**63.93**

In all instances the required storage is met with the building cistern, landscape and roof top storage, respectively.

4.6.2 Overall Release Rate

As demonstrated above, the site uses various inlet control devices to restrict the 100 year storm event to 132.73 l/s. Restricted stormwater will be contained onsite by the building cistern, landscape clear stone cells, and roof top storage. Up to and including the 100 year event, there will be no overflow off-site from restricted areas, if however an more intense storm or should an inlet become blocked, overland routing has been provided to the approved outlet per the original system design.

5 SEDIMENT AND EROSION CONTROL PLAN

During construction, existing stream and storm water conveyance systems can be exposed to significant sediment loadings. A number of construction techniques designed to reduce unnecessary construction sediment loadings may be used such as;

- Filter socks will remain on open surface structures such as manholes and catchbasins until these structures are commissioned and put into use;
- Installation of silt fence, where applicable, around the perimeter of the proposed work area.

During construction of the services, any trench dewatering using pumps will be fitted with a “filter sock.” Thus, any pumped groundwater will be filtered prior to release to the existing surface runoff. The contractor will inspect and maintain the filter sock as needed including sediment removal and disposal.

All catchbasins, and to a lesser degree manholes, convey surface water to sewers. Consequently, until the surrounding surface has been completed these structures will be protected with a sediment capture filter sock to prevent sediment from entering the minor storm sewer system. These will stay in place and be maintained during construction and build-out until it is appropriate to remove them.

The Sediment and Erosion Control Plan 127134-C-900 is included in **Appendix E**.

6 SOILS

Paterson Group was retained to prepare a geotechnical investigation for the proposed development. The objectives of the investigation were to prepare a report to:

- Determine the subsoil and groundwater conditions at the site by means of boreholes and monitoring well program.
- To provide geotechnical recommendations pertaining to design of the proposed development including construction considerations.

The geotechnical report PG5006-1 “Geotechnical Investigation 21 Huntmar Drive” dated July 7, 2020. A copy of the report has been included with the SPA application. The report contains recommendations for building construction and site services, which include but are not limited to the following for site servicing:

- Bedding and cover for service pipes: bedding min 150mm compacted (95% SPMDD) OPSS Gran. A to the springline, and covered with OPSS Gran A
- Fill for driveway to be suitable native material or OPSS Select Subgrade Material placed in thin lifts compacted to 95% SPMDD

MATERIAL		Layer Thickness
•	**Car Only Parking Areas**	
•	Asphalt Wearing Course (Superpave 12.5)	• 50 mm
•	Well Graded Granular Base Course (Granular 'A')	• 150 mm
•	Well Graded Granular Sub-Base Course (Granular 'B' Type II)	• 300 mm
•	**Access Lanes and Heavy Truck Parking**	
•	Asphalt Wearing Course (Superpave 12.5)	• 40 mm
•	Asphalt Binder Course (Superpave 19.0)	• 50 mm
•	Well Graded Granular Base Course (Granular 'A')	• 150 mm
•	Well Graded Granular Sub-Base Course (Granular 'B' Type II)	• 400 mm

Infiltration targets for the proposed site were outlined in the KWDA MSP. As indicated in Figure 5.4 of the MSS, the soil type within the proposed development area is characterized as clay with low recharge potential. The infiltration target for the area, as identified within the MSP is 50-70mm/year. The subject site consists of approximately 1.56 Ha of development, the site is comprised of impervious Building deck, roof surfaces, and landscape areas. It is proposed to take advantage of the landscape areas to install infiltration cell to meet the infiltration target for the site.

For the previous phases of the original development an infiltration strategy for the site was developed in consultation with the MVCA; see approval email from Doug Nuttall in **Appendix E**. The strategy included three sources: natural infiltration from rainfall, infiltration from irrigation system, and infiltration from a dry well supplied by roof runoff. For this phase where more landscape area is available, we propose to use infiltration cells supplied with runoff from the landscape areas.

The Infiltration cells will be a drywell constructed with clear stone, each cell will be 4m wide by 60m long, and 0.2m clear depth from bottom of perforated pipe to the bottom of the cell. Each cell has a volume of $48m^3$, with 30% voids in the clear stone there is $14.4m^3$ of storage available for each cell for a total of $43.2m^3$.

Rainfall from the 3950 m^2 of landscape areas will supply the infiltration cells, the cells are set up such that if the volume of runoff from the landscape area exceeds the storage capacity of the dry well excess runoff is discharged to the storm sewer, see the Servicing Plan C-100 in **Appendix A**, and the grading plan in **Appendix E**.

Based on previously approved rainfall data where for the months of March up to and including November, 40 days of 5mm or more rain occurred, and for the same period 22 days of 10mm or more rain occurred. Assuming 80% of rainfall is collected by the drains the following volume of rainfall is collected and discharged into the drywell:

5mm, at 80% = 4mm, for 3950 m^2 of landscape area = $15.8m^3$, for 40 events = $632m^3$

10mm, at 80%= 8mm (less 4mm from above) = 4mm for 3950 m^2 of landscape area = $15.8m^3$, for 22 events = $347.6m^3$. These events provide approximately of $979.6m^3$ of rainfall for use by the infiltration cells.

For the 1.56 Ha site this equates to approximately 62.8mm/yr of infiltration, which is within the guideline of 50 to 70 mm/yr.

7 CONCLUSIONS

Municipal water, wastewater and stormwater systems required to accommodate the proposed development are available to service the proposed development. Prior to construction, existing sewers are to be CCTV inspected to assess sewer condition.

This report has demonstrated sanitary and storm flows from and water supply to the subject site can be accommodated by the existing infrastructure. Also, the proposed servicing has been designed in accordance with MECP and City of Ottawa current level of service requirements.

The use of lot level controls, conveyance controls and end of pipe controls outlined in the report will result in effective treatment of surface stormwater runoff from the site. Adherence to the sediment and erosion control plan during construction will minimize harmful impacts on surface water.

Based on the information provided herein, the development can be serviced to meet City of Ottawa requirements.

Report prepared by:

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Director, Ottawa Office Lead

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APPENDIX A

- Site Plan
- Topographic Survey
- Preconsultation Meeting Notes

rla/architecture
roderick lahey architect inc.

SITE LOCATION

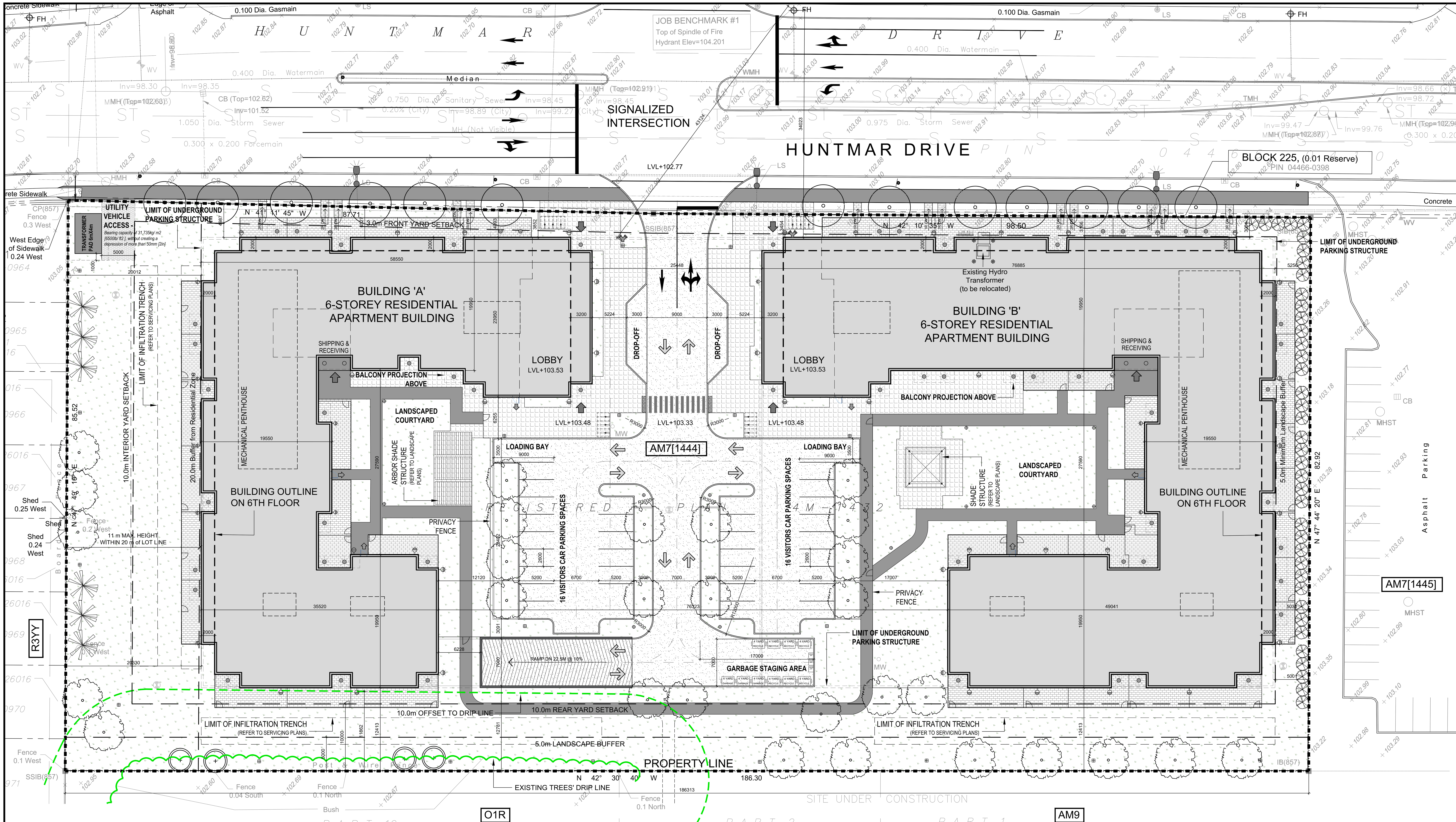
February 2020

21 HUNTMAR DRIVE

OTTAWA, ONTARIO

1A

PAPER SIZE: ANSI Full Bleed B (17.00 X 11.00 Inches) PLOT DATE: Monday, February 03, 2020 PLOT SCALE: 1:500 PEN STYLE: All Black.ctb F:\2019\1930 - 21 Huntmar-North American Group\01_Design Development\03 Concept Design\1930 MP 2020.02.03.dwg



1 SITE PLAN
SP-1
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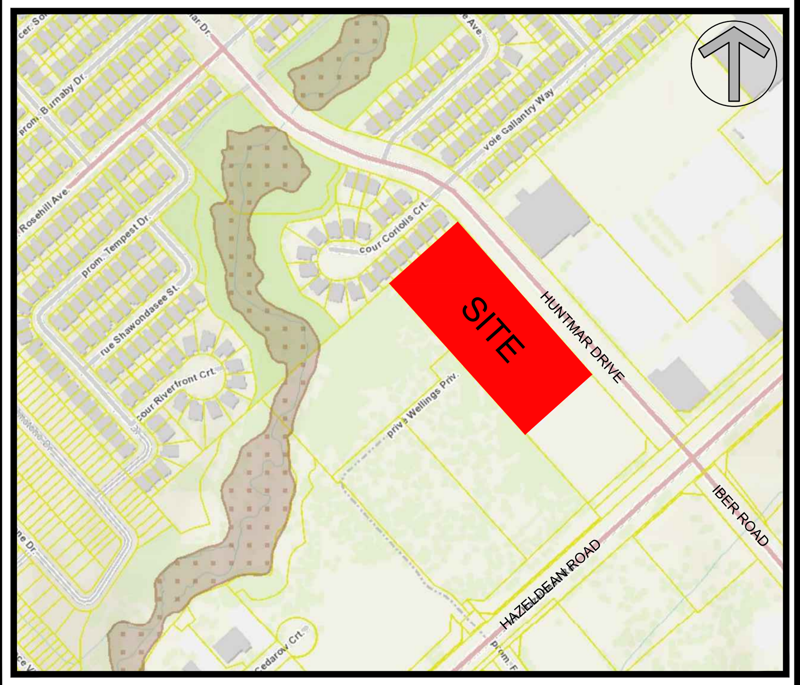


KEY MAP

SITE PLAN SYMBOLS

- DRIVEWAYS AND PARKING
- PAVED SURFACE
- LANDSCAPE PLANTING
- CONCRETE SIDEWALK
- PRIVATE TERRACE FOR GROUND FLOOR UNITS
- PROPERTY LINE
- ZONING SETBACKS
- TWO WAY VEHICLE CIRCULATION
- MAIN ENTRANCE
- UNIT BALCONY DOOR / FIRE EXIT
- BIKE RACK
- EXTERIOR WALL LIGHT
- POT LIGHT UNDER CANOPY
- LIGHT POLE
- BOLLARD WITH LIGHTING
- SIAMESE CONNECTION
- FIRE HYDRANT

NOTE:
SEE LANDSCAPE PLAN FOR PLANTATION, SURFACE MATERIALS AND PATTERNS

ZONING INFORMATION

ZONE	AM7 [1444]
SITE AREA	15,616.6 sq. m. (168,096 sq. ft.)
MAX. BUILDING HEIGHT	15.0m
MAX. BUILDING HEIGHT AS APPROVED THROUGH MINOR VARIANCE APPLICATION (FILE NO. D08-02-20/A-00195)	20.8m
FRONT YARD SETBACK	3.0m
INTERIOR YARD SETBACK ABUTTING 'R' ZONE	10.0m
REAR YARD SETBACK	10.0m
BUILDING FRONTAGE WITHIN 3.0m	30%
LANDSCAPE BUFFER @ 'R' ZONE	10.0m
LANDSCAPE BUFFER @ REAR LOT LINE	5.0m
MAXIMUM LOT COVERAGE	50%

PROJECT STATISTICS

BUILDING HEIGHT	20.8 M
FRONT YARD SETBACK	3.0 M
SIDE YARD SETBACK	20.0 M 5.0 M
REAR YARD SETBACK	12.4 M

BUILDING STATISTICS

BUILDING 'A' BUILDING AREAS
(BUILDING FOOTPRINT)

GROUND FLOOR		2,340.97 sq. m. 25,198 sq. ft.
2nd to 5th FLOOR	4 x 2,340.97 sq. m. 4 x 25,198 sq. ft.	9,363.88 sq. m. 100,792 sq. ft.
6th FLOOR		2,091.25 sq. m. 22,510 sq. ft.
TOTAL AREA		13,796.10 sq. m. 148,500 sq. ft.
GROSS BUILDING AREA (Estimated Efficiency @85%)		11,726.68 sq. m. 126,225 sq. ft.

UNIT STATISTICS

1 BEDROOM UNIT	21
1 BEDROOM + STUDY UNIT	17
2 BEDROOM UNIT	75
2 BEDROOM + STUDY UNIT	27
TOTAL	140

BUILDING 'B' BUILDING AREAS
(BUILDING FOOTPRINT)

GROUND FLOOR		2,968.62 sq. m. 31,954 sq. ft.
2nd to 5th FLOOR	4 x 2,968.62 sq. m. 4 x 31,954 sq. ft.	11,874.48 sq. m. 127,816 sq. ft.
6th FLOOR		2,682.39 sq. m. 28,873 sq. ft.
TOTAL AREA		17,525.49 sq. m. 188,643 sq. ft.
GROSS BUILDING AREA (Estimated Efficiency @85%)		14,896.66 sq. m. 160,346 sq. ft.

UNIT STATISTICS

1 BEDROOM UNIT	88
1 BEDROOM + STUDY UNIT	23
2 BEDROOM UNIT	65
2 BEDROOM + STUDY UNIT	28
TOTAL	204

TOTAL GROSS BUILDING AREA (Estimated Efficiency @85%)	26,623.34 sq. m. 286,571 sq. ft.
TOTAL DWELLING UNITS	344

CAR PARKING

REQUIRED

RESIDENCE	@ 1.2 PER UNIT (344 UNITS)	413
VISITOR	@ 0.2 PER UNIT	69
TOTAL		482

PROVIDED

SURFACE PARKING	32
PARKING LEVEL P1	298
PARKING LEVEL P2	187
TOTAL	517

BICYCLE PARKING

REQUIRED

RESIDENCE	@ 0.5 PER UNIT (344 UNITS)	172

PROVIDED

TOTAL BICYCLE PARKING	185

LOT COVERAGE

BUILDING FOOTPRINT =	34.00%	5,309.86 sq. m.
LANDSCAPE AREA =	53.50%	8,355.00 sq. m.
DRIVING+PARKING SURFACE =	12.50%	1,951.74 sq. m.
TOTAL =	100.00%	15,616.60 sq. m.

AMENITY SPACE

REQUIRED

REQUIRED - 6.0M² PER UNIT (344) =	2,064 sq. m.
REQUIRED COMMUNAL @ 50% =	1,032 sq. m.

PROVIDED

EXTERIOR AT GRADE =	2165.0 sq. m.
GROUND FLOOR COMMUNAL INTERIOR =	947.0 sq. m.
GROUND FLOOR PRIVATE TERRACES =	924.0 sq. m.
PRIVATE BALCONIES =	1429.0 sq. m.
6th FLOOR PRIVATE DECKS =	541.0 sq. m.
ROOF FLOOR COMMUNAL TERRACE =	480.0 sq. m.
TOTAL =	6,486.0 sq. m.
TOTAL COMMUNAL =	3,592.0 sq. m.

SOLID WASTE COLLECTION:

BUILDING 'A'	REQUIRED	PROVIDED
GARBAGE @ 0.110 cu yd per unit	15.40 yd	16 yd
GMP CONTAINERS @ 0.018 cu yd per unit	2.52 yd	3 yd
FIBRE CONTAINERS @ 0.038 cu yd per unit	5.32 yd	6 yd
ORGANICS CONTAINERS @ one 240L per 50 unit	2.80	3

BUILDING 'B'	REQUIRED	PROVIDED
GARBAGE @ 0.110 cu yd per unit	22.44 yd	24 yd
GMP CONTAINERS @ 0.018 cu yd per unit	3.67 yd	4 yd
FIBRE CONTAINERS @ 0.038 cu yd per unit	7.75 yd	8 yd
ORGANICS CONTAINERS @ one 240L per 50 unit	4.08	5

IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND TO REPORT ALL ERRORS AND/OR OMISSIONS TO THE ARCHITECT.

ALL CONTRACTORS MUST COMPLY WITH ALL PERTINENT CODES AND BY-LAWS.

THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION UNTIL SIGNED BY THE ARCHITECT.

DO NOT SCALE DRAWINGS.

NOTATION SYMBOLS:

- 00 — INDICATES DRAWING NOTES, LISTED ON EACH SHEET.
- 00 — INDICATES ASSEMBLIE TYPE; REFER TO TYPICAL ASSEMBLIES SCHEDUAL.
- 00 — INDICATES WINDOW TYPE; REFER TO WINDOW ELEVATIONS AND DETAILS ON A900 SERIES.
- 000 — INDICATES DOOR TYPE; REFER TO DOOR SCHEDULE AND DETAILS ON A900 SERIES.
- DETAIL NUMBER
- TITLE
- SCALE
- DETAIL REFERENCE PAGE
- DETAIL CROSS REFERENCE PAGE

LRT ALIGNMENT DISCLAIMER

APPROXIMATE LRT TUNNEL AND SHORING ALLOWANCE LOCATION TAKEN FROM CITY OF OTTAWA DRAWINGS *CONFEDERATION LINE WEST LRT EXTENSION - TUNNEY'S PASTURE STATION TO BASELINE STATION; PLAN AND PROFILE - NEW ORCHARD STATION 95+170 - 95+770 SHEET 16, DATED JUNE 2, 2016 & GENERAL ARRANGEMENT - RICHMOND ROAD TUNNEL SHEET 102, DATED FEBRUARY 10, 2016*

No.	DESCRIPTION	DATE
2	ISSUED FOR SITE PLAN CONTROL APPLICATION	Feb. 09, 21
2	ISSUED FOR MINOR VARIANCE APLICATION	Aug. 13, 20
1	ISSUED FOR DESIGN CONCEPT	Mar. 02, 18

REVISIONS:

ARCHITECT SEAL:
ONTARIO ASSOCIATION OF ARCHITECTS
RODERICK I. LAHEY
LICENCE
4375
SEAL DATE: STAMP DATE

NORTH ARROW:

CLIENT:

ARCHITECT:
rla/architecture
roderick lahey architect inc.
56 beech street, ottawa, ontario K1S 3J6
t.613.724.9932 f.613.724.1209 rlaarchitecture.ca

PROJECT TITLE:
21 HUNTMAR DRIVE
OTTAWA ONTARIO

SHEET TITLE:
SITE PLAN

DRAWN: AK	CHECKED: RV
SCALE: 1:250	SHEET No. SP-1
PROJECT No. 1930	

D07-12-__-__

PAPER SIZE: ISO Full Bleed B1 (707.00 X 1000.00 MM) PLOT DATE: Tuesday, February 16, 2021 PLOT SCALE: 1:1 PEN STYLE: 0-RLA-MASTER-100%.ctb F:\2019\1930 - 21 Huntmar-North American Group\01_Design Development\1930 - 21 Huntmar Site Plan 2021.02.16.dwg

______

METRIC
DISTANCES AND ELEVATIONS SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

TOPOGRAPHIC SURVEY OF
BLOCK 1
REGISTERED PLAN 4M–1432
CITY OF OTTAWA

SCALE 1 : 400

0 10 20 40 metres

FAIRHALL, MOFFATT & WOODLAND LIMITED
ONTARIO LAND SURVEYORS

ELEVATION NOTES

1. ELEVATIONS SHOWN HEREON ARE REFERRED TO GEODETIC DATUM.
2. ELEVATIONS FOR MANHOLE COVERS AND CATCH BASINS HAVE TO BE INDEPENDENTLY CONFIRMED BEFORE THEY CAN BE ACCEPTED FOR FINAL DESIGN OR CONSTRUCTION PURPOSES.
3. IT IS THE RESPONSIBILITY OF THE USER OF THIS INFORMATION TO VERIFY THAT THE JOB BENCHMARKS HAVE NOT BEEN ALTERED OR DISTURBED AND THAT THEIR RELATIVE ELEVATION AND DESCRIPTION AGREE WITH THE INFORMATION SHOWN ON THIS DRAWING.

UTILITY NOTES

1. THIS DRAWING CANNOT BE ACCEPTED AS ACKNOWLEDGING ALL OF THE UNDERGROUND UTILITIES AND IT WILL BE THE RESPONSIBILITY OF THE USER TO CONTACT THE RESPECTIVE UTILITY AUTHORITIES FOR CONFIRMATION OR LOCATION.
2. UNDERGROUND UTILITIES, AS REPORTED ON THIS DRAWING, ARE NOT BASED ON AN ACTUAL 'FIELD LOCATE' BY THE RESPECTIVE UTILITY AGENCIES BUT HAVE BEEN COMPILED FROM DATA OBTAINED FROM THE FOLLOWING SOURCE:
   a) CITY OF OTTAWA PUBLIC UTILITIES REGISTRY
3. BEFORE ANY WORK INVOLVING PROBING, EXCAVATING, ETC., A FIELD LOCATION OF UNDERGROUND PLANT BY THE PERTINENT UTILITY AUTHORITY IS MANDATORY.

NOTES

1. THE SURVEY REPRESENTED BY THIS PLAN WAS COMPLETED ON AUGUST 25, 2015.
2. THE SURVEY REPRESENTED BY THIS PLAN WAS UPDATED ON JULY 29, 2019.
3. BEARINGS ARE GRID REFERRED TO THE SOUTHERLY LIMIT OF HUNTMAR DRIVE SHOWN ON PLAN 4M-1432 AS HAVING A BEARING OF N41°11'45"W.

LEGEND

■	SURVEY MONUMENT FOUND
SIB	STANDARD IRON BAR
SSIB	SHORT STANDARD IRON BAR
IB	IRON BAR
CP	CONCRETE PIN
DIA.	DIAMETER
BLK	BLOCK
PIN	PROPERTY IDENTIFIER NUMBER
CB	CATCH BASIN
MH	MANHOLE
MHST	STORM MANHOLE
MHSA	SANITARY MANHOLE
WMH	WATER MANHOLE
TMH	TRAFFIC MANHOLE
HMH	HYDRO MANHOLE
FH	FIRE HYDRANT
TCB	TRAFFIC CONTROL BOX
WV	WATER VALVE
TL	TRAFFIC LIGHT
LS	LAMP STANDARD
UP	UTILITY POLE
BP	BELL PEDESTAL
MW	MONITORING WELL
	BOREHOLE
●	BOLLARD
	GUY WIRE AND ANCHOR
	SIGN
	DECIDUOUS TREE
	CURB
—G—	GASMAIN
—S—	SANITARY SEWER
—ST—	STORM SEWER
—W—	WATERMAIN
—UB—	UNDERGROUND BELL
—UH—	UNDERGROUND HYDRO
—SL—	STREET LIGHTING
—C—	ROGERS CABLE
—T—	TRAFFIC
	EDGE OF TREES

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:
1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON JULY 29, 2019.

2019/08/07
DATE

JOHN H. GUTRI
ONTARIO LAND SURVEYOR

THIS IS NOT A VALID COPY UNLESS EMBOSSED WITH SEAL

Fairhall Moffatt & Woodland LIMITED
ONTARIO LAND SURVEYORS
OTTAWA
Surveying and Land Information Services
100-600 TERRY FOX DRIVE, KANATA, ONTARIO K2L 4B6
TEL: (613) 591-2580 FAX: (613) 591-1495
www.fmw.on.ca

JOB No.	Z24700
E 350751, N 5016205	
REFERENCE No.	4(a) – 4M – 1432
S:\JOBS\Z24700\DWG 2019-07-31	z247_topo-up.dwg

21 Huntmar Drive
Pre-Consultation Meeting Minutes

Location: Room 4106E, City Hall
Date: July 31, 2019, 3pm to 4pm

<table>
<tr><th>Attendee</th><th>Role</th><th>Organization</th></tr>
<tr><td>Mark Young</td><td>Planner</td><td rowspan="6">City of Ottawa</td></tr>
<tr><td>Julie Candow</td><td>Project Manager (Infrastructure)</td></tr>
<tr><td>Mike Giampa</td><td>Project Manager (Transportation)</td></tr>
<tr><td>Matthew Ippersiel</td><td>Planner (Urban Design)</td></tr>
<tr><td>Sami Rehman</td><td>Planner (Environmental)</td></tr>
<tr><td>Samantha Gatchene</td><td>Planning Assistant</td></tr>
<tr><td>Ron Richards</td><td>Owner’s Representative</td><td rowspan="2">North American</td></tr>
<tr><td>Paul Ferarro</td><td>Owner’s Representative</td></tr>
<tr><td>Abhinav Sukumar</td><td>Architect</td><td>Roderick Lahey Architects</td></tr>
</table>

Comments from Applicant

1. The applicant is proposing the development of two (2) five-storey mid-rise buildings at 21 Huntmar Drive. The buildings would be residential apartments with 210 units total.
2. 334 underground parking spaces and 12 surface parking spaces would be provided.
3. One new access point is proposed off of Huntmar Drive. This driveway would lead to the surface parking lot on the interior of site, providing access to both buildings and the underground parking.

Planning Comments

1. This is a pre-consultation for a Site Plan Control application, Complex, subject to Public Consultation. Application form, timeline and fees can be found here.
2. With regards to maximum building height, the Zoning By-law permits a maximum of 11 metres in areas up to 20 metres from a property line abutting a residential zone.
3. Cash-in-lieu of parkland and associated appraisal fee will be required as a condition of approval as per the Parkland Dedication By-law.

Urban Design Comments

1. The general built form approach and the L-shaped building footprints framing the street are supported and it is recommended that the applicant pursue this approach.
2. The ground-oriented units and proposed individual walkways are supported.
3. As the site plan and landscape plan progress, be mindful of demonstrating how the pedestrian pathway network will be properly lit and CPTED design principles have been applied.

Engineering Comments

1. The Servicing Study Guidelines for Development Applications are available at the following address: https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans

2. Servicing and site works shall be in accordance with the following documents:
   - ⇨ Ottawa Sewer Design Guidelines (October 2012)
   - ⇨ Ottawa Design Guidelines – Water Distribution (2010)
   - ⇨ Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
   - ⇨ City of Ottawa Slope Stability Guidelines for Development Applications (revised 2012)
   - ⇨ City of Ottawa Environmental Noise Control Guidelines (January 2016)
   - ⇨ City of Ottawa Park and Pathway Development Manual (2012)
   - ⇨ City of Ottawa Accessibility Design Standards (2012)
   - ⇨ Ottawa Standard Tender Documents (latest version)
   - ⇨ Ontario Provincial Standards for Roads & Public Works (2013)

3. Record drawings and utility plans are also available for purchase from the City (Contact the City's Information Centre by email at InformationCentre@ottawa.ca or by phone at (613) 580-2424 x.44455).

4. The Stormwater Management Criteria for the subject site is to be based on the following:
   i. The allowable storm release rate for the subject site is limited to 85 L/s/ha as per the Kanata West Master Servicing Study.
   ii. Onsite storm runoff, in excess of the allowable release rate, and up to the 1:100 year storm event must be detained on site.

iii. Post development infiltration rates are to be increased by 25 percent above the pre-development infiltration rates as per the Kanata West Master Servicing Study.
iv. Quantity control to be provided by the downstream stormwater management facility and/or as determined by the Mississippi Valley Conservation Authority (MVCA). Please include correspondence from the MVCA in the stormwater management report.
v. A letter of acknowledgment will be required to be obtained from Mattamy to allow storm flows from 21 Huntmar Drive to discharge to Mattamy's temporary SWM pond, within Mattamy's Phase 5 development.

5. No sanitary sewer capacity constraints were identified on Huntmar Drive during the initial review of the concept plan. A sanitary sewer connection to the existing 750mm diameter sanitary sewer within Huntmar Drive is acceptable.

6. As per Section 4.3.1 of the Water Design Guidelines, two watermain connections will be required to provide a looped connection if the basic day demand is greater than 50 m3/day (approx. 50 homes).

7. Water Boundary condition requests must include the location of the service and the expected loads required by the proposed development. Please provide the following information:
   i. Location of service
   ii. Type of development and the amount of fire flow required (as per FUS, 1999).
   iii. Average daily demand: ___ l/s.
   iv. Maximum daily demand: ___l/s.
   v. Maximum hourly daily demand: ___ l/s.

8. An MECP Environmental Compliance Approval is not anticipated to be required for the subject site.

9. Phase 1 ESAs and Phase 2 ESAs must conform to clause 4.8.4 of the Official Plan that requires that development applications conform to Ontario Regulation 153/04.

Should you have any questions or require additional information, please contact me directly at (613) 580-2424, x13850 or by email at Julie.Candow@ottawa.ca.

Transportation Comments

1. A TIA is triggered for this site and they should proceed to Scoping (Step 2). This should be done prior to an application.

2. The signalization of the Huntmar access should be further explored.

3. The application will not be deemed complete until the submission of the draft Step 1-4, including the functional draft RMA package (if applicable).

4. A noise study is required.

Environmental Planning

1. The subject property is within the adjacency distance to the Natural Heritage Systems (See OP Section 2.4.2 and Schedule L3) and thus, triggers a requirement for an Environmental Impact Statement (EIS), as per OP Section 4.7.8. Given that butternut trees were identified in the adjacent woodlot, there is a potential for butternuts to be on the subject property. The field on the subject property may also host other endangered or threatened species.

2. The EIS should address and demonstrate no negative impacts on the NHS and to determine the presence of endangered or threatened species or their habitats on the subject property. Further details on the EIS requirements can be found in OP section 4.7.8 and the EIS guidelines. https://documents.ottawa.ca/sites/default/files/documents/eis_guidelines2015_en.pdf

Forestry

1. Any tree information can be combined into the EIS.

2. A tree permit is required if any trees need to be cut that are 10cm or larger in diameter.

Parks Planning

1. Recommend there is a pathway connection to the Poole Creek corridor (UNA 185);
2. Assumption that play area(s) are to remain as private ownership.
3. Although play area(s) are private, recommend the Owner adhere to City specifications and standards for play area(s) design, construction and maintenance.

4. The site is located within Kanata West CDP area, therefore 100% CIL direction to District Park

Mississippi Valley Conservation Authority

1. There does not appear to be any hazards or heritage features, however it appears to drain into Poole Creek so it is enhanced level of treatment and we generally recommend using LIDs.

2. The Master Serving Study for Kanata West (SWM) indicates infiltration targets 50 – 70 mm/yr., but it should be confirmed.

Requested Plans and Studies

1. A list of required plans and studies required for a complete Site Plan Control application have been attached.

Please refer to the links to "Guide to preparing studies and plans" and fees for general information. Additional information is available related to building permits, development charges, and the Accessibility Design Standards. Be aware that other fees and permits may be required, outside of the development review process. You may obtain background drawings by contacting informationcentre@ottawa.ca.

These pre-con comments are valid for one year. If you submit a development application(s) after this time, you may be required to meet for another pre-consultation meeting and/or the submission requirements may change. You are as well encouraged to contact us for a follow-up meeting if the plan/concept will be further refined.

Please contact me at Mark.Young@ottawa.ca or at 613-580-2424 extension 41396 if you have any questions.

Sincerely,

Mark Young, MCIP RPP
Planner III
Development Review - West

APPENDIX B

- Watermain Demand Calculation Sheet
- FUS Fire Flow Calculation
- Watermain Boundary Condition
- C-001 General Plan
- C-010 Details Plan

WATERMAIN DEMAND CALCULATION SHEET

IBI GROUP
333 PRESTON STREET
OTTAWA, ON
K1S 5N4

PROJECT : 21 HUNTMAR DR
LOCATION : City of Ottawa
DEVELOPER : NORTH AMERICAN DEVELOPMENT GROUP

FILE: 127134-6.4.4
DATE PRINTED: 2021-02-08
DESIGN: 2021-01-19

NODE	RESIDENTIAL UNITS 1bd	2bd	3bd	POP'N	NON-RESIDENTIAL INDTRL (ha.)	COMM. (ha.)	RETAIL (m^2)	AVERAGE DAILY DEMAND (l/s) Res.	Non-res.	Total	MAXIMUM DAILY DEMAND (l/s) Res.	Non-res.	Total	MAXIMUM HOURLY DEMAND (l/s) Res.	Non-res.	Total	FIRE DEMAND (l/min)
BUILDING A	38	102		267				0.87	0.00	0.87	2.17	0.00	2.17	4.77	0.00	4.77	
BUILDING B	111	93	0	351				1.14	0.00	1.14	2.84	0.00	2.84	6.25	0.00	6.25	
Total	149	195	0	**618**				2.00	0.00	**2.00**	5.01	0.00	**5.01**	11.02	0.00	**11.02**	**11,000**

ASSUMPTIONS

RESIDENTIAL DENSITIES

One-bedroom/Studio (1bd)	1.4	p / p / u
Two-bedroom (2bd)	2.1	p / p / u
Three-bedroom (3bd)	2.8	p / p / u

** Residential Daily Demand reduced to coincide with current waste water guidelines

AVG. DAILY DEMAND

Residential:**	280	l / cap / day
Industrial:		l / ha / day
Commercial:		l / ha / day
Retail:		l / 1000m^2 / day

MAX. DAILY DEMAND

Residential:	700	l / cap / day
Industrial:		l / ha / day
Commercial:		l / ha / day
Retail:		l / 1000m^2 / day

MAX. HOURLY DEMAND

Residential:	1,540	l / cap / day
Industrial:		l / ha / day
Commercial:		l / ha / day
Retail:		l / 1000m^2 / day

FIRE FLOW

From FUS Calculation 11,000 l / min

Fire Flow Requirement from Fire Underwriters Survey - 21 Huntmar Drive

Building A

Floor	Area (m^2)	Two Largerst	Floors Above at
1	2341	2341	
2	2341	2341	
3	2341		1170.5
4	2341		1170.5
5	2341		1170.5
6	2091		1045.5
Total	13796	4682	**4557**

(**Note**: For fire-resistive buildings, consider two largest adjoining floors plus 50% of each of any floors immediately above them

Floor Area (1 & 2)	4,682	m^2
50% Floor Area (3 to 8)	4,557	
Total Floor Area	9,239	m^2

$F = 220C\sqrt{A}$

C	0.6		C =	1.5	wood frame
A	9,239	m^2		1.0	ordinary
				0.8	non-combustible
F	12,688	l/min		0.6	fire-resistive
use	13,000	l/min			

Occupancy Adjustment

			-25%	non-combustible
			-15%	limited combustible
Use	-15%		0%	combustible
			+15%	free burning
Adjustment	-1950	l/min	+25%	rapid burning
Fire flow	11,050	l/min		

Sprinkler Adjustment

			-30%	system conforming to NFPA 13
			-50%	complete automatic system
Use	-30%			
Adjustment	-3315	l/min		

Exposure Adjustment

Building Face	Separation (m)	Adjacent Exposed Wall Length	Stories	L*H Factor	Exposure Charge *
north	40.0				5%
east	25.5	20.0	6	120	9%
south	> 45				0%
west	28.0	100.0	2	200	15%
Total					29%

Adjustment	3,205	l/min
Total adjustments	(111)	l/min
Fire flow	10,940	l/min
Use	**11,000**	**l/min**
	183	**l/s**

* Exposure charges from Techinical Bulletin ISTB 2018-02 Appendix H (ISO Method)

Fire Flow Requirement from Fire Underwriters Survey - 21 Huntmar Drive

Building B

Floor Area (1 & 2)	5,936	m^2
50% Floor Area (3 to 8)	5,793	
Total Floor Area	11,729	m^2

Floor	Area (m^2)	Two Largerst Floor	Floors Above at 50%
1	2968	2968	
2	2968	2968	
3	2968		1484
4	2968		1484
5	2968		1484
6	2682		1341
Total	17522	5936	**5793**

(**Note**: For fire-resistive buildings, consider two largest adjoining floors plus 50% of each of any floors immediately above them up to eight.)

$F = 220C\sqrt{A}$

C	0.6	C =	1.5	wood frame
A	11,729 m^2		1.0	ordinary
			0.8	non-combustible
F	14,296 l/min		0.6	fire-resistive
use	14,000 l/min			

Occupancy Adjustment

		-25%	non-combustible
		-15%	limited combustible
Use	-15%	0%	combustible
		+15%	free burning
Adjustment	-2100 l/min	+25%	rapid burning
Fire flow	11,900 l/min		

Sprinkler Adjustment

		-30%	system conforming to NFPA 13
		-50%	complete automatic system
Use	-30%		
Adjustment	-3570 l/min		

Exposure Adjustment

Building Face	Separation (m)	Adjacent Exposed Wall Length	Stories	L*H Factor	Exposure Charge *
north	> 45				0%
east	> 45				0%
south	> 45				0%
west	25.5	20.0	6	120	9%
Total					9%

Adjustment	1,071	l/min
Total adjustments	(2,499)	l/min
Fire flow	9,401	l/min
Use	**9,000**	**l/min**
	150	**l/s**

* Exposure charges from Techinical Bulletin ISTB 2018-02 Appendix H (ISO Method)

Lance Erion

From: Fraser, Mark <Mark.Fraser@ottawa.ca>
Sent: Monday, August 29, 2016 8:19 AM
To: Lance Erion
Cc: Demetrius Yannoulopoulos
Subject: RE: North American Hazeldean & Huntmar Commercial Site
Attachments: CCS_FUSfireflow_2016-08-15.pdf; CCSwater_demand2016-08-12.pdf; Node ID's.pdf; Boundary condition.pdf; BC at 5705 Hazeldean Road.docx

Hi Lance,

Please find attached/below water distribution network boundary conditions for hydraulic analysis as requested based on the provided anticipated water demands and fire flow requirement.

Proposed Water Demands and Fire Flow Requirement:

Proposed Development Location: 5705 Hazeldean Road
Average Daily Demand = 0.73L/s
Max Daily Demand = 1.08 L/s
Peak Hour Demand = 1.95 L/s
Fire Flow = 250 L/s

City of Ottawa Boundary Conditions:

Specified Service Connection Point: Huntmar Drive [Connection 1]
Max HGL = 161.6m
PKHR = 156.5m
MXDY+Fire = 155.0m

Please refer to City of Ottawa, *Ottawa Design Guidelines – Water Distribution*, First Edition, July 2010, WDG001 Clause 4.2.2 for watermain pressure and demand objectives.

Please note that hydraulic modelling software is anticipated. Please include an electronic version of the modelling file with the Site Servicing Report resubmission for review.

These boundary conditions are for current conditions and are based on computer model simulation.

Disclaimer: *The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.*

If you have any questions please let me know.

Regards,

Mark Fraser
Junior Infrastructure Engineer, Suburban Services

PLANNING AND GROWTH MANAGEMENT
URBANISME ET GESTION DE LA CROISSANCE

City of Ottawa | Ville d'Ottawa
Planning, Infrastructure and Economic Development Department
110 Laurier Avenue West. 4th Floor, Ottawa ON, K1P 1J1
Tel:613.580.2424 ext. 27791
Fax: 613-580-2576
Mail: Code 01-14
Email: Mark.Fraser@ottawa.ca

From: Lance Erion [mailto:lerion@IBIGroup.com]
Sent: August 12, 2016 11:56 AM
To: Fraser, Mark
Cc: Demetrius Yannoulopoulos
Subject: North American Hazeldean & Huntmar Commercial Site

We are requesting an update to the attached watermain boundary condition for the commercial site at Hazeldean and Huntmar roads, the calculated water demands are as follows:

Average Day	0.73 l/s
Max Day	1.08
Peak Hour	1.95

A fire flow rate of 250 l/s was used in the analysis.

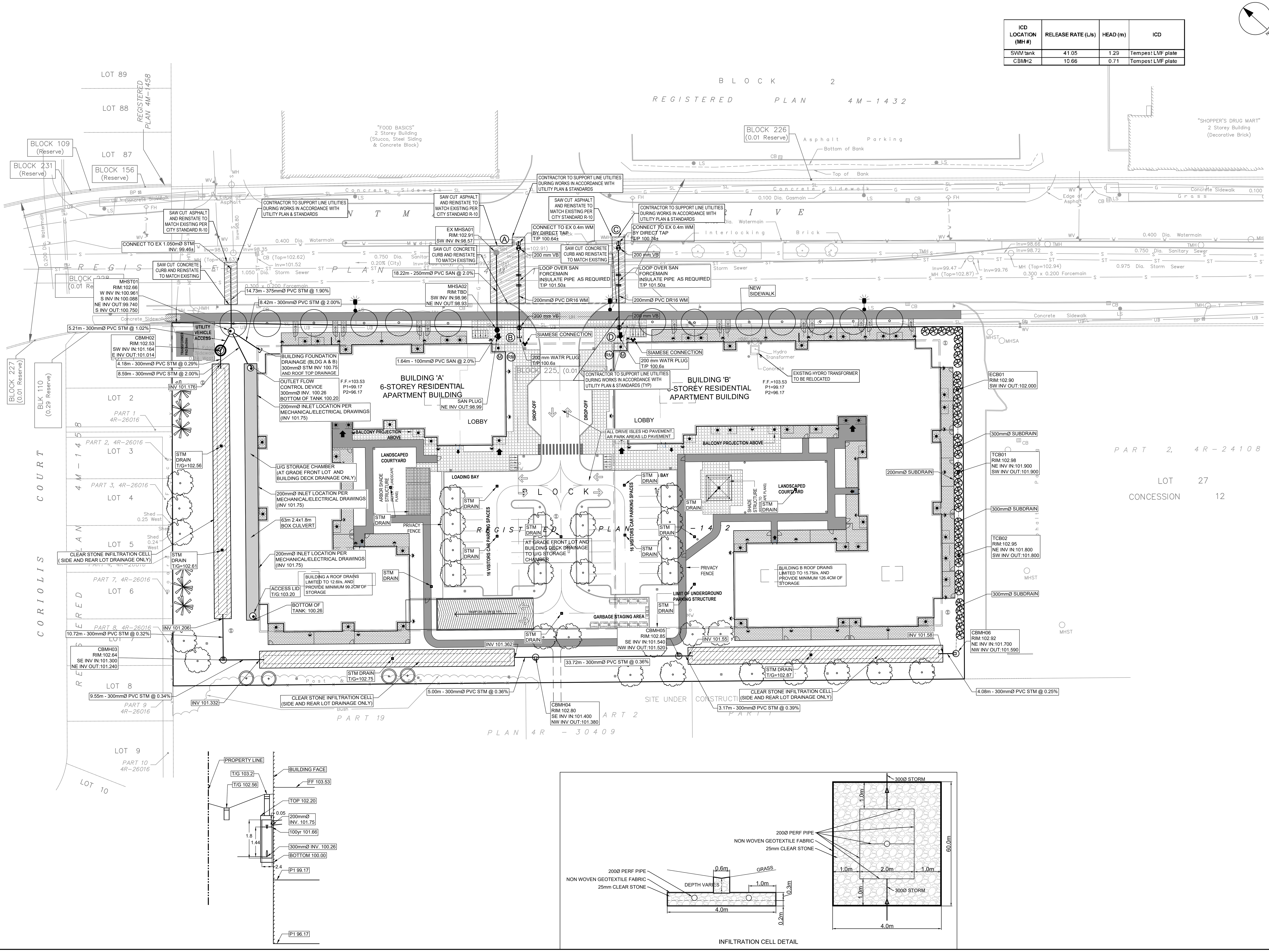
Regards

Lance Erion P.Eng

Associate
email lerion@IBIGroup.com web www.ibigroup.com

IBI GROUP

ICD LOCATION (MH #)	RELEASE RATE (L/s)	HEAD (m)	ICD
SWM tank	41.05	1.29	Tempest LMF plate
CBMH2	10.66	0.71	Tempest LMF plate



CLIENT

NorthAMERICAN® DEVELOPMENT GROUP

2851 John Street, Suite One, Markham, Ontario L3R 5R7 T:905-968-3185

ISSUES

No.	DESCRIPTION	DATE
1	ISSUED FOR SPA	2021-02-16

NOT FOR CONSTRUCTION

SEE C-010 FOR NOTES, LEGEND

KEY PLAN

SITE

CONSULTANTS

Project Coordinator:
North American Development Group
Architect:
RLA Architecture
Surveyor:
Fairhall, Moffatt and Woodland ltd.
Geotechnical:
Paterson Group
Traffic:
JD Halpenny & Assoc.
Electrical:
Hammerschlag & Joffe Inc.
Landscape:
NAK Design Strategies

1:400

SEAL

LICENSED PROFESSIONAL ENGINEER
D. G. Yannoulopoulos
2021-02-16
PROVINCE OF ONTARIO

IBI GROUP
Suite 400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 / 613 241 3300 fax 613 225 9868
ibigroup.com

PROJECT

21 HUNTMAR

PROJECT NO: 127134	
DRAWN BY: EH	CHECKED BY: DGY
PROJECT MGR: DGY	APPROVED BY: DGY

SHEET TITLE

GENERAL PLAN OF SERVICES

SHEET NUMBER C-001

ISSUE 1

CITY FILE No. D07-xx-xx-xxxx

CITY PLAN No. xxxxx

File Location: J:\127134_21_Huntmar\7.0_Production\7.03_Design\04_Civil\Sheets\C-001 GENERAL PLAN OF SERVICES.dwg Last Saved: February 17, 2021 by ddore Plotted: Wednesday, February 17, 2021 9:29:03 AM by Denis Dore

PAVEMENT STRUCTURE **

CAR ONLY PARKING AREAS:

50mm WEAR COURSE - HL-3 OR SUPERPAVE 12.5 ASPHALTIC CONCRETE
150mm BASE - OPSS GRANULAR "A" CRUSHED STONE
300mm SUBBASE - OPSS GRANULAR "B" TYPE II
SUBGRADE - EITHER FILL, IN SITU SOIL, OR OPSS GRANULAR "B" TYPE I OR II MATERIAL PLACED OVER IN SITU SOIL OR FILL

ACCESS LANES AND HEAVY TRUCK PARKING AREAS

40mm WEAR COURSE - HL-3 OR SUPERPAVE 12.5 ASPHALTIC CONCRETE
50mm BINDER COURSE - HL-8 OR SUPERPAVE 19.0 ASPHALTIC CONCRETE
150mm BASE - OPSS GRANULAR "A" CRUSHED STONE
400mm SUBBASE - OPSS GRANULAR "B" TYPE II
SUBGRADE - EITHER FILL, IN SITU SOIL, OR OPSS GRANULAR "B" TYPE I OR II MATERIAL PLACED OVER IN SITU SOIL OR FILL

** REFER TO GEOTECHNICAL REPORT BY PATERSON GROUP.

DRAWING NOTES

1.0 GENERAL

1.1 CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.

1.2 DO NOT SCALE DRAWINGS.

1.3 CONTRACTOR TO REPORT ALL DISCOVERIES OF ERRORS, OMISSIONS OR DISCREPANCIES TO THE ARCHITECT OR DESIGN ENGINEER AS APPLICABLE.

1.4 USE ONLY THE LATEST REVISED DRAWINGS OR THOSE THAT ARE MARKED “ISSUED FOR CONSTRUCTION”.

1.5 ALL CONSTRUCTION SHALL COMPLY WITH CURRENT CITY OF OTTAWA STANDARDS AND SPECIFICATIONS.

1.6 THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL RELEVANT DRAWINGS AND SPECIFICATIONS.

1.7 FOR LEGAL SURVEY INFORMATION REFER TO REGISTERED PLAN FROM FAIRHALL, MOFFATT AND WOODLAND LTD.

1.8 REFER TO SITE PLAN BY RLA ARCHITECTURE.

1.9 CONTRACTOR TO IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES AS IDENTIFIED IN THE EROSION AND SEDIMENT CONTROL PLAN TO THE SATISFACTION OF THE CITY OF OTTAWA, PRIOR TO UNDERTAKING ANY SITE ALTERATIONS (FILLING, GRADING, REMOVAL OF VEGETATION, ETC.). DURING ALL PHASES OF THE SITE PREPARATION AND CONSTRUCTION THE MEASURES ARE TO BE MAINTAINED TO THE SATISFACTION OF THE ENGINEER AND CITY OF OTTAWA IN ACCORDANCE WITH THE BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL. SHOULD ANY ADDITIONAL MEASURES BE REQUIRED TO ADDRESS FIELD CONDITIONS THEY SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER OR THE CITY OF OTTAWA. SUCH ADDITIONAL MEASURES MAY INCLUDE BUT NOT BE LIMITED TO INSTALLATION OF SEDIMENT CAPTURE FILTER SOCKS WITHIN MANHOLES AND CATCHBASINS TO PREVENT SEDIMENT FROM ENTERING THE STRUCTURE AND INSTALLATION AND MAINTENANCE OF A LIGHT DUTY SILT FENCE BARRIER AS REQUIRED.

1.10 ALL IRON WORK ELEVATIONS SHOWN ARE APPROXIMATE AND ARE SUBJECT TO MINOR ADJUSTMENTS AS DETERMINED BY THE ENGINEER.

1.11 ALL CONCRETE CURBS AND SIDEWALKS TO CONFORM TO O.P.S. AND CONSTRUCTED TO CITY STANDARDS. ALL ONSITE CURBS TO BE BARRIER TYPE, WITH DEPRESSIONS AS NOTED.

1.12 ALL CONCRETE SHALL BE “NORMAL PORTLAND CEMENT” IN ACCORDANCE WITH O.P.S.S. 1350 AND SHALL ACHIEVE A MINIMUM STRENGTH OF 30MPa AT 28 DAYS.

1.13 ALL CONSTRUCTION TRAFFIC TO ACCESS SITE FROM HUNTMAR DRIVE.

1.14 FOR GEOTECHNICAL REPORT SEE GEOTECHNICAL INVESTIGATION BY PATERSON GROUP.

1.15 CONTRACTOR TO PROTECT EXISTING INFRASTRUCTURE AND PROPERTY SUCH AS TREES, PARKING METERS, SIDEWALKS, CURBS, ASPHALT, AND STREET SIGNS FROM DAMAGE DURING CONSTRUCTION. CONTRACTOR TO PAY THE COST TO REINSTATE OR REPLACE ANY DAMAGED INFRASTRUCTURE OR PROPERTY TO THE SATISFACTION OF THE CITY.

1.16 THE POSITION OF POLE LINES, CONDUITS, WATERMAIN, SEWERS, AND OTHER UNDERGROUND AND ABOVEGROUND UTILITIES AND STRUCTURES ARE NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK THE CONTRACTOR SHALL INFORM ITSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, SHALL PROTECT ALL UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

1.17 CONTRACTOR TO SUPPLY SUITABLE FILL MATERIAL WHERE REQUIRED TO ROUGH GRADE THE SITE. ALL IMPORTED FILL MATERIAL TO BE CERTIFIED AS ACCEPTABLE BY THE GEOTECHNICAL ENGINEER.

1.18 CONTRACTOR TO HAUL EXCESS MATERIAL OFFSITE AS NECESSARY TO GRADE SITE TO MEET THE PROPOSED GRADES. ALL EXCESS MATERIAL TO BE HAULED OFFSITE AND DISPOSED OF AT AN APPROVED DUMP SITE. SHOULD THE CONTRACTOR DISCOVER ANY HAZARDOUS MATERIAL, CONTRACTOR IS TO NOTIFY ENGINEER. ENGINEER TO DETERMINE APPROPRIATE DISPOSAL METHOD/LOCATION.

1.19 FILL MATERIAL WITHIN THE PARKING LOT AND BUILDING PAD AREAS, AND SUPPORTING BUILDING FOUNDATIONS SHALL BE COMPACTED TO 98% STANDARD MODIFIED PROCTOR DENSITY AND TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER.

1.20 ALL COMPACTION METHODS TO BE PERFORMED TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER TO INCLUDE BUT NOT BE LIMITED TO THE THICKNESS OF LIFTS, AND COMPACTION EQUIPMENT USED.

1.21 ALL DISTURBED BOULEVARDS TO BE REINSTATED WITH SOD ON 100mm TOPSOIL.

1.22 UTILITY DUCTS TO BE INSTALLED PRIOR TO ROAD BASE CONSTRUCTION.

1.23 CLAY DIKES TO BE INSTALLED WHERE INDICATED ON THE DRAWINGS OR AS APPROVED AND DIRECTED BY THE GEOTECHNICAL ENGINEER ALL IN ACCORDANCE WITH CITY OF OTTAWA STANDARDS AND SPECIFICATIONS.

1.24 BACKWATER VALES, PER CITY STANDARDS S14, S14.1 AND S14.2 RE TO BE INSTALLED FOR ALL STORM AND SANITARY SERVICE CONNECTIONS.

2.0 SANITARY

2.1 ALL SANITARY SEWER MAINS TO BE CSA CERTIFIED, BELL AND SPIGOT TYPE. ONLY FACTORY FITTINGS TO BE USED. SEWER TO BE INSTALLED AS PER OSPD 1005.01. SANITARY SEWER MATERIALS TO BE: 250mmØ AND SMALLER - PVC DR 35

2.2 ALL SANITARY MAINTENANCE HOLES TO BE 1.2m DIAMETER AS PER CITY OF OTTAWA STANDARDS COMPLETE WITH BENCHING, RUNGS, FRAME AND COVER, DROP PIPES AND LANDINGS WHERE NEEDED.

2.3 SANITARY MANHOLE COVERS TO BE CITY OF OTTAWA STD. S25 (MOD. OPSD. 401.020). SANITARY MANHOLE COVER TO BE CLOSED COVER TYPE, AS PER CITY STANDARD S24.

2.4 SANITARY SEWER LEAKAGE TEST AND CCTV INSPECTION SHALL BE COMPLETED AS PER CITY SPECIFICATIONS PRIOR TO INSTALLATION OF BASE COURSE ASPHALT.

2.5 ANY SANITARY SEWER WITH LESS THAN 2.0m COVER REQUIRES THERMAL INSULATION AS PER CITY OF OTTAWA STANDARD W22, OR AS APPROVED BY THE ENGINEER.

2.6 CONNECTION TO THE EXISTING SANITARY SEWER TO BE INCLUDED IN THE COST FOR SANITARY SEWER INSTALLATION. THIS INCLUDES REINSTATEMENT OF ROAD CUTS TO CITY STANDARDS.

2.7 ALL SANITARY CONNECTION TO INCLUDE BACKWATER VALVE TYPE 1 PER CITY STANDARD S14.1

3.0 STORM

3.1 ALL STORM SEWERS TO BE CSA CERTIFIED, BELL AND SPIGOT TYPE. ALL STORM SEWERS TO BE INSTALLED PER MANUFACTURER’S INSTRUCTIONS. ONLY FACTORY FITTINGS TO BE USED. STORM SEWER MATERIALS TO BE : 375mmØ AND SMALLER - PVC DR 35 - 450mmØ AND LARGER - 100-D REINFORCED CONCRETE. UNLESS NOTED OTHERWISE

3.2 ALL STORM MAINTENANCE HOLES TO BE SIZED IN ACCORDANCE WITH THE PLANS AND AS PER CITY OF OTTAWA STANDARDS COMPLETE WITH BENCHING, RUNGS, AND FRAME AND COVER.

3.3 STORM MH COVERS TO BE OPEN TYPE, AS PER CITY STANDARD S24, FRAMES TO BE PER CITY OF OTTAWA STD. S25. CONTRACTOR TO INSTALL FILTER FABRIC UNDER STORM MH COVER UNTIL SODDING IS COMPLETE.

3.4 STORM MAINTENANCE HOLES TO BE OPSD, SIZE AS SPECIFIED, TAPER TOP.

3.5 ALL CATCH BASINS TO BE AS PER OPSD 705.010, FRAME & FISH TYPE GRATE AS PER CITY OF OTTAWA STD. S19.1.

3.6 ANY STORM SEWER WITH LESS THAN 2.0m COVER REQUIRES THERMAL INSULATION AS PER CITY OF OTTAWA STANDARD W22, OR AS APPROVED BY THE ENGINEER.

3.7 CONNECTION TO THE EXISTING STORM SEWER TO BE INCLUDED IN THE COST FOR STORM SEWER INSTALLATION. THIS INCLUDES REINSTATEMENT OF ROAD CUT TO CITY STANDARDS.

3.8 CONTRACTOR TO PROVIDE IPEX-TEMPEST MHF ICD'S SHOP DRAWINGS, OR EQUIVALENT, FOR ENGINEERS REVIEW PRIOR TO ORDERING ICD'S.

3.9 ALL STORM CONNECTION TO INCLUDE FOUNDATION BACKWATER VALVE TYPE 1 PER CITY STANDARD S14.1

3.10 LANDSCAPE SUBDRAIN AND APPURTENANCES TO BE INSTALLED PER CITY OF OTTAWA STANDARDS INCLUDING BUT NOT LIMITED TO S29, S30, S31

4.0 WATER

4.1 ALL WATERMAINS 100mmØ OR GREATER TO BE PVC DR 18, LESS THAN 100mm Ø TO BE COPPER OR APPROVED EQUAL WITH MINIMUM COVER OF 2.4m AND INSTALLED PER CITY OF OTTAWA STANDARDS. ALL DOMESTIC WATER SERVICES ARE TO BE 25mmØ.

4.2 THRUST BLOCKS TO BE INSTALLED AT ALL BENDS, TEES, AND CAPS ALL AS PER OPSD 1103.01 AND 1103.02.

4.3 CONTRACTOR TO CONDUCT PRESSURE AND LEAKAGE TESTING OF ALL WATERMAINS AND DISINFECT AND CHLORINATE ALL WATERMAINS TO THE SATISFACTION OF M.O.E. AND THE CITY OF OTTAWA.

4.4 TRACER WIRE TO BE INSTALLED ALONG THE FULL LENGTH OF WATERMAIN AND ATTACHED TO EACH MAIN STOP AS PER CITY OF OTTAWA STANDARDS.

4.5 ALL COMPONENTS OF THE WATER DISTRIBUTION SYSTEM SHALL BE CATHODICALLY PROTECTED AS PER CITY OF OTTAWA STANDARDS.

4.6 ALL VALVES & VALVE BOXES AND CHAMBERS, HYDRANTS, AND HYDRANT VALVES AND ASSEMBLIES SHALL BE INSTALLED AS PER CITY OF OTTAWA STANDARDS.

4.7 ANY WATERMAIN WITH LESS THAN 2.4m COVER REQUIRES THERMAL INSULATION AS PER CITY OF OTTAWA STANDARD W22, OR AS APPROVED BY THE ENGINEER.

4.8 CONTRACTOR IS RESPONSIBLE FOR ACQUIRING THE WATER PERMIT FROM THE CITY OF OTTAWA AND PAYMENT OF ANY FEES ASSOCIATED WITH SECURING THE WATER PERMIT. OWNER IS RESPONSIBLE FOR REIMBURSING THE CONTRACTOR FOR THE ACTUAL COST OF ACQUIRING THE WATER PERMIT.

4.9 CONNECTION TO EXISTING WATERMAIN TO BE INCLUDED IN THE COST FOR THE WATERMAIN INSTALLATION. THIS COST INCLUDES REINSTATEMENT OF ROAD CUTS TO CITY STANDARDS.

4.10 ALL WATERMAIN CROSSINGS TO BE COMPLETED AS PER CITY OF OTTAWA STANDARDS W25 AND W25.2

5.0 PARKING LOT AND WORK IN PUBLIC RIGHTS OF WAY

5.1 CONTRACTOR TO REINSTATE ROAD CUTS PER CITY OF OTTAWA STANDARD R-10.

5.2 THE CONTRACTOR SHALL PREPARE A TRAFFIC MANAGEMENT PLAN FOR REVIEW AND APPROVAL BY THE CITY OF OTTAWA. CONTRACTOR TO MAINTAIN TRAFFIC FLOW DURING THE ENTIRE CONSTRUCTION PERIOD. MAINTENANCE OF ROAD CUTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. PROVISION OF FLAGMEN, DETOURS AS NECESSARY, BARRICADES AND SIGNS TO THE FULL SATISFACTION OF THE ENGINEER AND ROAD AUTHORITY SHALL BE THE CONTRACTOR’S RESPONSIBILITY.

5.3 CONTRACTOR TO PREPARE SUBGRADE, INCLUDING PROOFROLLING, TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER PRIOR TO THE COMMENCEMENT OF PLACEMENT OF GRANULAR B MATERIAL.

5.4 FILL TO BE PLACED AND COMPACTED PER THE GEOTECHNICAL REPORT REQUIREMENTS.

5.5 CONTRACTOR TO SUPPLY, PLACE AND COMPACT GRANULAR B MATERIAL IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOETCHNICAL ENGINEER. CONTRACTOR TO PROVIDE ENGINEER WITH SAMPLES OF GRANULAR B MATERIAL FOR TESTING AND CERTIFICATION FROM THE GEOTECHNICAL ENGINEER THAT THE MATERIAL MEETS THE GRADATION REQUIREMENTS SPECIFIED IN THE GEOTECHNICAL REPORT.

5.6 GRANULAR A MATERIAL TO BE PLACED ONLY UPON APPROVAL BY THE GEOTECHNICAL ENGINEER OF GRANULAR B PLACEMENT.

5.7 ASPHALT MATERIAL TO BE PLACED ONLY UPON APPROVAL BY THE GEOTECHNICAL ENGINEER OF GRANULAR A PLACEMENT.

5.8 CONTRACTOR TO SUPPLY, PLACE AND COMPACT ASPHALT MATERIAL IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER. CONTRACTOR TO PROVIDE ENGINEER WITH SAMPLES OF ASPHALT MATERIAL FOR TESTING AND CERTIFICATION FROM THE GEOTECHNICAL ENGINEER THAT THE MATERIAL MEETS THE REQUIREMENTS SPECIFIED IN THE GEOTECHNICAL REPORT.

5.9 CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING LINE AND GRADE IN ACCORDANCE WITH THE PLANS, AND FOR PROVIDING THE ENGINEER WITH VERIFICATION PRIOR TO PLACEMENT.

5.10 PAVEMENT STRUCTURE (MATERIAL TYPES AND THICKNESSES) FOR HEAVY DUTY AND LIGHT DUTY AREAS TO BE AS SPECIFIED IN THE GEOTECHNICAL REPORT AND SHOWN ON THE PLANS.

LEGEND:

MHSA3A	SANITARY MANHOLE STORM
MHST01	MANHOLE
CB01	CATCHBASIN
CBMH01	CATCHBASIN MANHOLE
CBMH02	CATCHBASIN MANHOLE C/W ICD
ECB01	REAR YARD "END" CATCHBASIN
	SUBDRAIN
200mmØ SAN	SANITARY SEWER
300mmØ STM	STORM SEWER
VB	VALVE AND VALVE BOX
200Ø WATERMAIN	WATERMAIN
	VERTICAL BEND LOCATION
M	METER
RM	REMOTE METER
2R	NUMBER OF RISERS

FAIRHALL, MOFFATT AND WOODLAND LTD.
TOPOGRAPHIC LEGEND

	- SURVEY MONUMENT FOUND
SIB	- STANDARD IRON BAR
SSIB	- SHORT STANDARD IRON BAR
IB	- IRON BAR
CP	- CONCRETE PIN
DIA.	- DIAMETER
BLK	- BLOCK
PIN	- PROPERTY IDENTIFIER NUMBER
CB	- CATCH BASIN
MH	- MANHOLE
MHST	- STORM MANHOLE
MHSA	- SANITARY MANHOLE
WMH	- WATER MANHOLE
TMH	- TRAFFIC MANHOLE
HMH	- HYDRO MANHOLE
FH	- FIRE HYDRANT
TCB	- TRAFFIC CONTROL BOX
WV	- WATER VALVE
TL	- TRAFFIC LIGHT
LS	- LAMP STANDARD
UP	- UTILITY POLE
BP	- BELL PEDESTAL
MW	- MONITORING WELL
	- BOREHOLE
	- BOLLARD
	- GUY WIRE AND ANCHOR
	- SIGN
	- DECIDUOUS TREE
	- CURB
G G G	- GASMAIN
S S S	- SANITARY SEWER
ST ST	- STORM SEWER
W W W W	- WATERMAIN
UB UB	- UNDERGROUND BELL
UH UH	- UNDERGROUND HYDRO
SL SL	- STREET LIGHTING
C C C	- ROGERS CABLE
V V V V	- TRAFFIC
	- EDGE OF TREES

STORM STRUCTURE TABLE

NAME	RIM ELEV.	INVERT IN	INVERT IN ASBUILT	INVERT OUT	INVERT OUT ASBUILT	DESCRIPTION
MHST01	102.66	W100.961		99.974		1200ø OPSD 701.010
		W100.540				
		SW 100.088				
CBMH02	102.53	101.164		101.014		1200ø OPSD 701.010
CBMH03	102.64	101.300		101.240		1200ø OPSD 701.010
CBMH04	102.80	101.400		101.380		1200ø OPSD 701.010
CBMH05	102.85	101.540		101.520		1200ø OPSD 701.010
CBMH06	102.92	101.700		101.590		1200ø OPSD 701.010

WATERMAIN SCHEDULE

	STATION	DESCRIPTION	FINISHED GRADE	TOP OF WATERMAIN	ASBUILT WATERMAIN
A	0+000.00	TEE 400mmX200mm	102.91	100.51	
	0+001.10	VB 200mm	102.90	100.50	
	0+007.32	V-BEND 200mm	102.84	100.44	
	0+007.62	V-BEND 200mm	102.83	101.50	
	0+009.71	V-BEND 200mm	102.81	101.50	
	0+010.01	V-BEND 200mm	102.81	100.41	
	0+019.83	VB 200mm	103.04	100.64	
B	0+022.17	CAP 200mm	103.05	100.65	
C	0+000.00	TEE 400mmX200mm	103.08	100.68	
	0+001.10	VB 200mm	103.13	100.73	
	0+007.32	V-BEND 200mm	103.09	100.69	
	0+007.62	V-BEND 200mm	103.07	101.50	
	0+009.71	V-BEND 200mm	102.96	101.50	
	0+010.01	V-BEND 200mm	102.96	100.56	
	0+019.83	VB 200mm	103.13	100.73	
D	0+022.17	CAP 200mm	103.01	100.61	

CLIENT

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ISSUES

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1	ISSUED FOR SPA	2021-02-16

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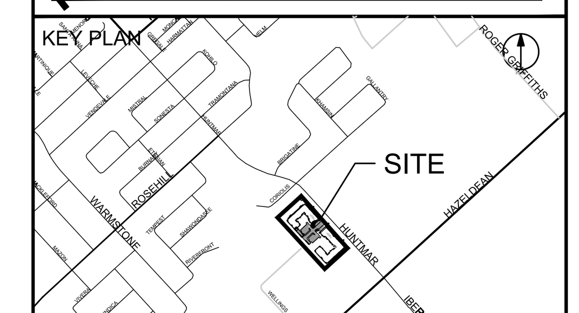
SEE C010 FOR NOTES, LEGEND

KEY PLAN



CONSULTANTS

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Surveyor:
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Geotechnical:
Paterson Group
Traffic:
JD Halpenny & Assoc.
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Landscape:
NAK Design Strategies

SEAL

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PROJECT

21 HUNTMAR

PROJECT NO:
127134

DRAWN BY:	CHECKED BY:
EH	DGY
PROJECT MGR:	APPROVED BY:
DGY	DGY

SHEET TITLE

GENERAL NOTES, LEGEND AND TABLES

SHEET NUMBER
C-010

ISSUE
1

CITY FILE No. D07-xx-xx-xxxx

CITY PLAN No. xxxxx

File Location: J:\127134_21_Huntmar\7.0_Production\7.03_Design\04_Civil\Sheets\C-010 NOTES-LEGEND-CB DATA.dwg Last Saved: February 8, 2021, by ddone Plotted: Wednesday, February 17, 2021 9:29:41 AM by Denis Done

APPENDIX C

- C-400 Sanitary Tributary Area Plan
- Sanitary sewer design sheet

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SANITARY SEWER DESIGN SHEET

21 Huntmar Rd
CITY OF OTTAWA
North American Group

LOCATION: STREET	AREA ID	FROM MH	TO MH	RESIDENTIAL: AREA w/ Units (Ha)	UNIT TYPES: 1B	2B	3B	APT	AREA w/o Units (Ha)	POPULATION: IND	CUM	RES PEAK FACTOR	PEAK FLOW (L/s)	ICI AREAS: AREA (Ha) INSTITUTIONAL IND	INSTITUTIONAL CUM	COMMERCIAL IND	COMMERCIAL CUM	INDUSTRIAL IND	INDUSTRIAL CUM	ICI PEAK FACTOR	PEAK FLOW (L/s)	INFILTRATION ALLOWANCE: AREA (Ha) IND	AREA (Ha) CUM	FLOW (L/s)	FIXED FLOW (L/s): IND	CUM	TOTAL FLOW (L/s)	PROPOSED SEWER DESIGN: CAPACITY (L/s)	LENGTH (m)	DIA (mm)	SLOPE (%)	VELOCITY (full) (m/s)	AVAILABLE CAPACITY L/s	AVAILABLE CAPACITY (%)
OUTLET TO HUNTMAR RD																																		
	1	BLDG A& B	2	1.56	149	195				618.1	618.1	3.34	6.69	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.56	1.6	0.51	0.00	0.00	7.21	87.74	1.64	250	2.00	1.731	80.53	91.79%
		2	1							0.0	618.1	3.34	6.69	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.6	0.51	0.00	0.00	7.21	87.74	18.22	250	2.00	1.731	80.53	91.79%
				1.56	149		0			618.1																								

Design Parameters:

Residential			ICI Areas			
3B	2.8	p/p/u				
2B	2.1	p/p/u	INST	28,000	L/Ha/day	
1B	1.4	p/p/u	COM	28,000	L/Ha/day	
APT	1.8	p/p/u	IND	35,000	L/Ha/day	MOE Chart
Other	60	p/p/Ha		17000	L/Ha/day	

Notes:
1. Mannings coefficient (n) = 0.013
2. Demand (per capita): 280 L/day
3. Infiltration allowance: 0.33 L/s/Ha
4. Residential Peaking Factor:
   Harmon Formula = 1+(14/(4+(P/1000)^0.5))0.8
   where K = 0.8 Correction Factor
5. Commercial and Institutional Peak Factors based on total area,
   1.5 if greater than 20%, otherwise 1.0

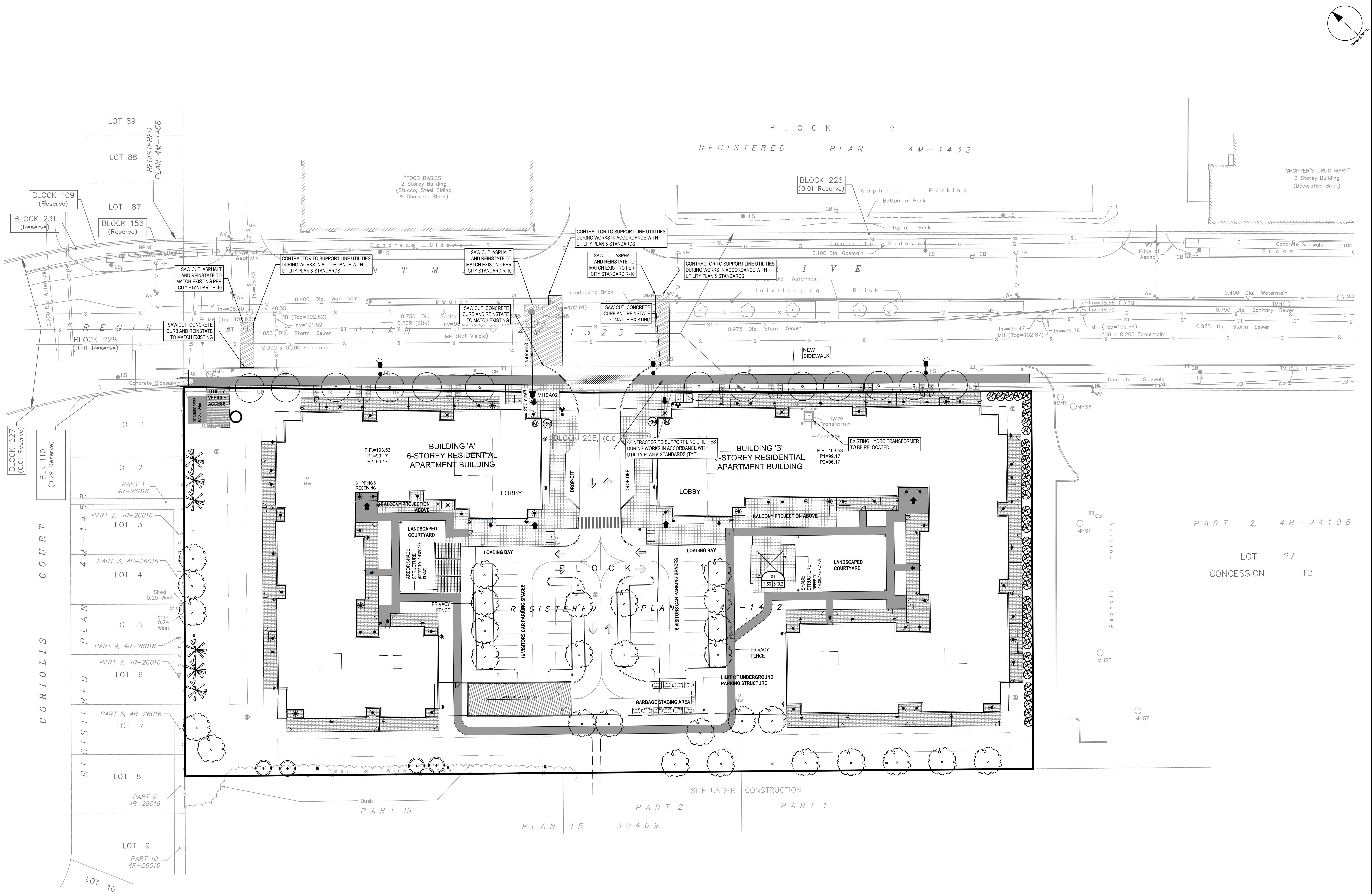
Designed: R.M,

Checked: D.G.Y.

Dwg. Reference: 127134-400

No.	Revision	Date
1.	Servicing Brief - Submission No. 1	2021-02-04

File Reference:	Date:	Sheet No:
127134.6.4.4.	2021-02-04	1 of 1



LEGEND :

- 01 — AREA NUMBER
- 1.56 | 619.2 — POPULATION
- AREA IN HECTARES

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ISSUES

No.	DESCRIPTION	DATE
1	ISSUED FOR SPA	2021-02-16

NOT FOR CONSTRUCTION

C-010 FOR NOTES, LEGEND

KEY PLAN

SITE

CONSULTANTS

Project Coordinator:
North American Development Group
Architect:
RLA Architecture
Surveyor:
Fairhall, Moffatt and Woodland ltd.
Geotechnical:
Paterson Group
Traffic:
JD Halpenny & Assoc.
Electrical:
Hammerschlag & Joffe Inc.
Landscape:
NAK Design Strategies

1:400 0 4 12 20m

SEAL

LICENSED PROFESSIONAL ENGINEER
D. G. Yannoulopoulos
2021-02-16
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PROJECT

21 HUNTMAR

PROJECT NO:
127134

DRAWN BY: EH	CHECKED BY: DGY
PROJECT MGR: DGY	APPROVED BY: DGY

SHEET TITLE

SANITARY DRAINAGE PLAN

SHEET NUMBER C-400

ISSUE 1

CITY FILE No. D07-xx-xx-xxxx

CITY PLAN No. xxxxx

File Location: J:\127134_21_Huntmar\7.0_Production\7.03_Design\04_Civil\Sheets\C-400.dwg Last Saved: December 24, 2020, by ddore Plotted: Wednesday, February 17, 2021 9:30:19 AM by Denis Dore

APPENDIX D

- C-500 Storm Tributary Area Plan
- Storm sewer design sheets
- Modified Rational Method design sheets

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STORM SEWER DESIGN SHEET

21 Huntmar Rd
City of Ottawa
North American Group

LOCATION				AREA (Ha)							RATIONAL DESIGN FLOW															SEWER DATA								
STREET	AREA ID	FROM	TO	C= 0.20	C= 0.30	C= 0.80	C= 0.83	C= 0.85	C= 0.87	C= 0.90	IND 2.78AC	CUM 2.78AC	INLET (min)	TIME IN PIPE	TOTAL (min)	i (2) (mm/hr)	i (5) (mm/hr)	i (10) (mm/hr)	i (100) (mm/hr)	2yr PEAK FLOW (L/s)	5yr PEAK FLOW (L/s)	10yr PEAK FLOW (L/s)	100yr PEAK FLOW (L/s)	FIXED FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	PIPE SIZE (mm) DIA	W	H	SLOPE (%)	VELOCITY (m/s)	AVAIL CAP (2yr) (L/s)	(%)
OUTLET TO HUNTMAR RD																																		
	Landscape 6a, 6b,4b	CBMH6	cell		0.058						0.05	0.05	10.00	0.10	10.10	76.81	104.19	122.14	178.56	3.72	5.04	5.91	8.64		3.72	50.44	4.08	300			0.25	0.691	46.73	92.63%
	Landscape 4a	Cell	CBMH5		0.043						0.04	0.08	10.10	0.06	10.16	76.43	103.68	121.53	177.66	6.44	8.73	10.24	14.97		6.44	63.00	3.17	300			0.39	0.863	56.56	89.78%
	Landscape 2c	CBMH5	CBMH4		0.041						0.03	0.12	10.16	0.68	10.84	76.20	103.36	121.16	177.11	9.02	12.24	14.35	20.98		9.02	60.53	33.72	300			0.36	0.830	51.51	85.09%
	Landscape 2b	CBMH4	Cell		0.038						0.03	0.15	10.84	0.10	10.94	73.73	99.97	117.17	171.25	11.07	15.01	17.59	25.71		11.07	60.53	5.00	300			0.36	0.830	49.46	81.71%
	Landscape 2a	Cell	CBMH3		0.032						0.03	0.18	10.94	0.20	11.13	73.38	99.49	116.60	170.42	12.97	17.59	20.62	30.13		12.97	58.82	9.55	300			0.34	0.806	45.85	77.94%
	Landscape 1d	CBMH3	Cell		0.050						0.04	0.22	11.13	0.23	11.36	72.71	98.56	115.50	168.81	15.89	21.54	25.24	36.89		15.89	57.07	10.72	300			0.32	0.782	41.18	72.16%
	Landscape 1c, 1b	Cell	CBMH2		0.098						0.08	0.30	11.36	0.09	11.46	71.94	97.50	114.26	166.99	21.60	29.27	34.31	50.14		21.60	54.33	4.18	300			0.29	0.745	32.73	60.24%
	Landscape 1a	CBMH2	MH1		0.036						0.03	0.33	11.46	0.06	11.52	71.63	97.08	113.76	166.25	23.66	32.06	37.57	54.91		23.66	101.89	5.21	300			1.02	1.396	78.23	76.78%
	roofs 1 and 2	BLDG	MH1							0.529	1.32	1.32	10.00	0.07	10.07	76.81	104.19	122.14	178.56	101.66	137.91	161.66	236.33		101.66	142.67	8.42	300			2.00	1.955	41.01	28.75%
	deck	cistern	MH1							0.507	1.27	1.27	10.00	0.07	10.07	76.81	104.19	122.14	178.56	97.43	132.17	154.94	226.50		97.43	142.67	8.59	300			2.00	1.955	45.24	31.71%
		MH1	EX								0.00	2.92	11.46	0.44	11.90	71.63	97.08	113.76	166.25	209.33	283.70	332.46	485.85		209.33	252.13	59.01	375			1.90	2.211	42.80	16.98%
				0.000	0.396	0.000	0.000	0.000	0.000	1.036	2.92																							
											1.43	Total A																						
											0.73	Avg. C																						

Definitions:
Q = 2.78CiA, where:
Q = Peak Flow in Litres per Second (L/s)
A = Area in Hectares (Ha)
i = Rainfall intensity in millimeters per hour (mm/hr)
[i = 732.951 / (TC+6.199)^0.810] 2 YEAR
[i = 998.071 / (TC+6.053)^0.814] 5 YEAR
[i = 1174.184 / (TC+6.014)^0.816] 10 YEAR
[i = 1735.688 / (TC+6.014)^0.820] 100 YEAR

Notes:
1. Mannings coefficient (n) =

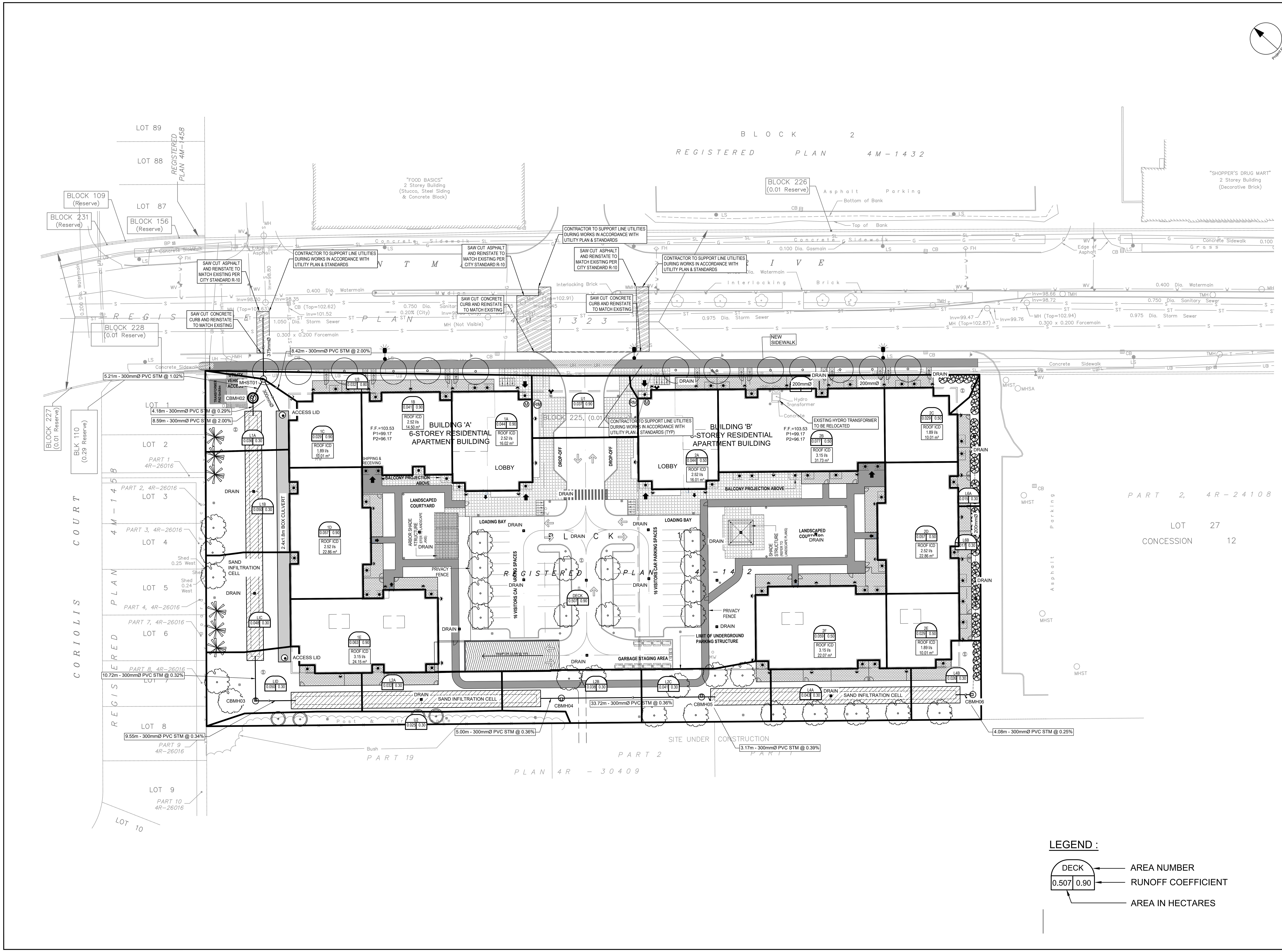
Designed: RM

Checked: DY

Dwg. Reference: 125600-500

No.	Revision	Date
1.	Servicing Brief - Submission No. 1	2021-02-04

File Reference:	Date:	Sheet No:
127134.6.4.4	2021-02-04	1 of 1



CLIENT

NorthAMERICAN
DEVELOPMENT GROUP

2851 John Street, Suite One, Markham, Ontario L3R 5R7 T:905-968-3185

ISSUES

No.	DESCRIPTION	DATE
1	ISSUED FOR SPA	2021-02-16

NOT FOR CONSTRUCTION

SEE C-010 FOR NOTES, LEGEND

KEY PLAN

SITE

CONSULTANTS

Project Coordinator:
North American Development Group
Architect:
RLA Architecture
Surveyor:
Fairhall, Moffatt and Woodland ltd.
Geotechnical:
Paterson Group
Traffic:
JD Halpenny & Assoc.
Electrical:
Hammerschlag & Joffe Inc.
Landscape:
NAK Design Strategies

1:400 0 4 12 20m

SEAL

LICENSED PROFESSIONAL ENGINEER
D. G. Yannoulopoulos
2021-02-16
PROVINCE OF ONTARIO

IBI GROUP
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PROJECT

21 HUNTMAR

PROJECT NO:
127134

DRAWN BY:	CHECKED BY:
EH	DGY
PROJECT MGR:	APPROVED BY:
DGY	DGY

SHEET TITLE

STORM DRAINAGE PLAN

SHEET NUMBER: C-500

ISSUE: 1

CITY FILE No. D07-xx-xx-xxxx

CITY PLAN No. xxxxx

IBI GROUP
400-333 Preston Street
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PROJECT: 21 HUNTMAR RD
DATE: 2021-02-04
FILE: 127134-6.4
REV #: -
DESIGNED BY: R.M.
CHECKED BY: D.G.Y.

STORMWATER MANAGEMENT

Maximum Allowable Release Rate

Restricted Flowrate (based on 85l/s/Ha)

A_{site} = 1.562 Ha

$Q_{restricted}$ = 132.74 L/s

unrestricted flow to boulevards	Area (Ha)	C (C*1.25)	100yr Q (l/s)	5yr
area 1	0.0370	1	18.37	8.49
area 2	0.0250	0.375	4.65	2.15
Area 3	0.0610	1	30.28	13.99
	0.1230		53.30	24.63

i_{100yr} = 1:100 year Intensity = 1735.688 / $(T_c+6.014)^{0.820}$ tc=10

Maximum Allowable Release Rate ($Q_{max\ allowable} = Q_{restricted} - Q_{uncontrolled}$)

$Q_{max\ allowable}$ = 79.44 L/s

Formulas and Descriptions

i_{2yr} = 1:2 year Intensity = 732.951 / $(T_c+6.199)^{0.810}$
i_{5yr} = 1:5 year Intensity = 998.071 / $(T_c+6.053)^{0.814}$
i_{100yr} = 1:100 year Intensity = 1735.688 / $(T_c+6.014)^{0.820}$
T_c = Time of Concentration (min)
C = Average Runoff Coefficient
A = Area (Ha)
Q = Flow = 2.78CiA (L/s)

MODIFIED RATIONAL METHOD (100-Year, 5-Year & 2-Year Ponding)

Drainage Area: Roof Area 1A — Area (Ha) 0.044 — C = 1.00 — Restricted Flow Q_r (L/s)= 2.520

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p=2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 100yr (m^3)
33	86.03	10.52	2.52	8.00	15.85
38	77.93	9.53	2.52	7.01	15.99
43	71.35	8.73	2.52	6.21	**16.02**
48	65.89	8.06	2.52	5.54	15.95
58	57.32	7.01	2.52	4.49	15.63

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	16.02	17.60	0	0.00

Overflows to: Parking Lot

Drainage Area: Roof Area 1A — Area (Ha) 0.044 — C = 0.90 — Restricted Flow Q_r (L/s)= 2.520

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p=2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 5yr (m^3)
11	99.19	10.92	2.52	8.40	5.54
16	80.46	8.86	2.52	6.34	6.08
21	68.13	7.50	2.52	4.98	**6.28**
26	59.35	6.53	2.52	4.01	6.26
31	52.74	5.81	2.52	3.29	6.11

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	6.28	17.60	0	0.00

Overflows to: Parking Lot

Drainage Area: Roof Area 1A — Area (Ha) 0.044 — C = 0.90 — Restricted Flow Q_r (L/s)= 2.520

2-Year Ponding

T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow $Q_p=2.78xCi_{2yr}A$ (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 2yr (m^3)
8	85.46	9.41	2.52	6.89	3.31
13	66.93	7.37	2.52	4.85	3.78
18	55.49	6.11	2.52	3.59	**3.88**
23	47.66	5.25	2.52	2.73	3.76
33	37.54	4.13	2.52	1.61	3.19

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	3.88	17.60	0	0.00

Overflows to: Parking Lot

Drainage Area	Roof Area 1B		
Area (Ha)	0.041		
C =	1.00	Restricted Flow Q_r (L/s)=	2.520

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p=2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 100yr (m^3)
31	89.83	10.24	2.52	7.72	14.36
36	80.96	9.23	2.52	6.71	14.49
41	73.83	8.42	2.52	5.90	**14.50**
46	67.96	7.75	2.52	5.23	14.42
56	58.83	6.71	2.52	4.19	14.06

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	14.50	16.40	0	0.00

Overflows to: Parking Lot

Drainage Area	Roof Area 1B		
Area (Ha)	0.041		
C =	0.90	Restricted Flow Q_r (L/s)=	2.520

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p=2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 5yr (m^3)
14	86.93	8.92	2.52	6.40	5.37
19	72.53	7.44	2.52	4.92	5.61
24	62.54	6.42	2.52	3.90	**5.61**
29	55.18	5.66	2.52	3.14	5.46
34	49.50	5.08	2.52	2.56	5.22

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	5.61	16.40	0	0.00

Overflows to: Parking Lot

Drainage Area	Roof Area 1B		
Area (Ha)	0.041		
C =	0.90	Restricted Flow Q_r (L/s)=	2.520

2-Year Ponding

T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow $Q_p=2.78xCi_{2yr}A$ (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 2yr (m^3)
8	85.46	8.77	2.52	6.25	3.00
13	66.93	6.87	2.52	4.35	3.39
18	55.49	5.69	2.52	3.17	**3.43**
23	47.66	4.89	2.52	2.37	3.27
33	37.54	3.85	2.52	1.33	2.64

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	3.43	16.40	0	0.00

Overflows to: Parking Lot

Drainage Area	Roof Area 1C		
Area (Ha)	0.029		
C =	1.00	Restricted Flow Q_r (L/s)=	1.890

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p=2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 100yr (m^3)
25	103.85	8.37	1.89	6.48	9.72
30	91.87	7.41	1.89	5.52	9.93
35	82.58	6.66	1.89	4.77	**10.01**
40	75.15	6.06	1.89	4.17	10.00
50	63.95	5.16	1.89	3.27	9.80

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	10.01	11.60	0	0.00

Overflows to: Parking Lot

Drainage Area	Roof Area 1C		
Area (Ha)	0.029		
C =	0.90	Restricted Flow Q_r (L/s)=	1.890

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p=2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 5yr (m^3)
10	104.19	7.56	1.89	5.67	3.40
15	83.56	6.06	1.89	4.17	3.76
20	70.25	5.10	1.89	3.21	**3.85**
25	60.90	4.42	1.89	2.53	3.79
30	53.93	3.91	1.89	2.02	3.64

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	3.85	11.60	0	0.00

Overflows to: Parking Lot

Drainage Area	Roof Area 1C		
Area (Ha)	0.029		
C =	0.90	Restricted Flow Q_r (L/s)=	1.890

2-Year Ponding

T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow $Q_p=2.78xCi_{2yr}A$ (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 2yr (m^3)
6	96.64	7.01	1.89	5.12	1.84
11	73.17	5.31	1.89	3.42	2.26
16	59.50	4.32	1.89	2.43	**2.33**
21	50.48	3.66	1.89	1.77	2.23
31	39.17	2.84	1.89	0.95	1.77

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	2.33	11.60	0	0.00

Overflows to: Parking Lot

Drainage Area	1D		
Area (Ha)	0.057		
C =	1.00	Restricted Flow Q_r (L/s)=	2.520

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p=2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 100yr (m^3)
43	71.35	11.31	2.52	8.79	22.67
48	65.89	10.44	2.52	7.92	22.81
53	61.28	9.71	2.52	7.19	**22.86**
58	57.32	9.08	2.52	6.56	22.84
68	50.89	8.06	2.52	5.54	22.62

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	22.86	23.09	0	0.00

Overflows to: Parking Lot

Drainage Area	1D		
Area (Ha)	0.057		
C =	0.90	Restricted Flow Q_r (L/s)=	2.520

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p=2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 5yr (m^3)
19	72.53	10.34	2.52	7.82	8.92
24	62.54	8.92	2.52	6.40	9.21
29	55.18	7.87	2.52	5.35	**9.31**
34	49.50	7.06	2.52	4.54	9.26
39	44.98	6.41	2.52	3.89	9.11

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	9.31	23.09	0	0.00

Overflows to: Parking Lot

Drainage Area	1D		
Area (Ha)	0.057		
C =	0.90	Restricted Flow Q_r (L/s)=	2.520

2-Year Ponding

T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow $Q_p=2.78xCi_{2yr}A$ (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 2yr (m^3)
14	64.23	9.16	2.52	6.64	5.58
19	53.70	7.66	2.52	5.14	5.86
24	46.37	6.61	2.52	4.09	**5.89**
29	40.96	5.84	2.52	3.32	5.78
39	33.45	4.77	2.52	2.25	5.27

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	5.89	23.09	0	0.00

Overflows to: Parking Lot

Drainage Area	Roof Area 1E		
Area (Ha)	0.063		
C =	1.00	Restricted Flow Q_r (L/s)=	3.150

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{100yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 100yr (m^3)
40	75.15	13.16	3.15	10.01	24.03
45	69.05	12.09	3.15	8.94	24.15
50	63.95	11.20	3.15	8.05	**24.15**
55	59.62	10.44	3.15	7.29	24.07
65	52.65	9.22	3.15	6.07	23.67

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	24.15	25.20	0	0.00

Overflows to: Parking Lot

Drainage Area	Roof Area 1E		
Area (Ha)	0.063		
C =	0.90	Restricted Flow Q_r (L/s)=	3.150

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{5yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 5yr (m^3)
15	83.56	13.17	3.15	10.02	9.02
20	70.25	11.07	3.15	7.92	9.51
25	60.90	9.60	3.15	6.45	**9.67**
30	53.93	8.50	3.15	5.35	9.63
35	48.52	7.65	3.15	4.50	9.45

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	9.67	25.20	0	0.00

Overflows to: Parking Lot

Drainage Area	Roof Area 1E		
Area (Ha)	0.063		
C =	0.90	Restricted Flow Q_r (L/s)=	3.150

2-Year Ponding

T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{2yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 2yr (m^3)
9	80.87	12.75	3.15	9.60	5.18
14	64.23	10.12	3.15	6.97	5.86
19	53.70	8.46	3.15	5.31	**6.06**
24	46.37	7.31	3.15	4.16	5.99
34	36.78	5.80	3.15	2.65	5.40

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	6.06	25.20	0	0.00

Overflows to: Parking Lot

Drainage Area	Roof Area 2A		
Area (Ha)	0.044		
C =	1.00	Restricted Flow Q_r (L/s)=	2.520

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{100yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 100yr (m^3)
30	91.87	11.24	2.52	8.72	15.69
35	82.58	10.10	2.52	7.58	15.92
40	75.15	9.19	2.52	6.67	**16.01**
45	69.05	8.45	2.52	5.93	16.00
55	59.62	7.29	2.52	4.77	15.75

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	16.01	17.60	0	0.00

Overflows to: Parking Lot

Drainage Area	Roof Area 2A		
Area (Ha)	0.044		
C =	0.90	Restricted Flow Q_r (L/s)=	2.520

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{5yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 5yr (m^3)
14	86.93	9.57	2.52	7.05	5.92
19	72.53	7.98	2.52	5.46	6.23
24	62.54	6.88	2.52	4.36	**6.29**
29	55.18	6.07	2.52	3.55	6.18
34	49.50	5.45	2.52	2.93	5.98

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	6.29	17.60	0	0.00

Overflows to: Parking Lot

Drainage Area	Roof Area 2A		
Area (Ha)	0.044		
C =	0.90	Restricted Flow Q_r (L/s)=	2.520

2-Year Ponding

T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{2yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 2yr (m^3)
9	80.87	8.90	2.52	6.38	3.45
14	64.23	7.07	2.52	4.55	3.82
19	53.70	5.91	2.52	3.39	**3.87**
24	46.37	5.11	2.52	2.59	3.72
34	36.78	4.05	2.52	1.53	3.12

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	3.87	17.60	0	0.00

Overflows to: Parking Lot

Drainage Area	Roof Area 2B		
Area (Ha)	0.077		
C =	1.00	Restricted Flow Q_r (L/s)=	3.150

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{100yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 100yr (m^3)
50	63.95	13.69	3.15	10.54	31.62
55	59.62	12.76	3.15	9.61	31.72
60	55.89	11.96	3.15	8.81	**31.73**
65	52.65	11.27	3.15	8.12	31.67
75	47.26	10.12	3.15	6.97	31.34

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	31.73	32.73	0	0.00

Overflows to: Parking Lot

Drainage Area	oof Area 2B		
Area (Ha)	0.077		
C =	0.90	Restricted Flow Q_r (L/s)=	3.150

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{5yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 5yr (m^3)
24	62.54	12.05	3.15	8.90	12.81
29	55.18	10.63	3.15	7.48	13.02
34	49.50	9.54	3.15	6.39	**13.03**
39	44.98	8.67	3.15	5.52	12.91
44	41.29	7.95	3.15	4.80	12.68

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	13.03	32.73	0	0.00

Overflows to: Parking Lot

Drainage Area	oof Area 2B		
Area (Ha)	0.077		
C =	0.90	Restricted Flow Q_r (L/s)=	3.150

2-Year Ponding

T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{2yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 2yr (m^3)
14	64.23	12.37	3.15	9.22	7.75
19	53.70	10.35	3.15	7.20	8.20
24	46.37	8.93	3.15	5.78	**8.33**
29	40.96	7.89	3.15	4.74	8.25
39	33.45	6.44	3.15	3.29	7.71

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	8.33	32.73	0	0.00

Overflows to: Parking Lot

Drainage Area	Roof Area 2C		
Area (Ha)	0.029		
C =	1.00	Restricted Flow Q_r (L/s)=	1.890

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{100yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 100yr (m^3)
25	103.85	8.37	1.89	6.48	9.72
30	91.87	7.41	1.89	5.52	9.93
35	82.58	6.66	1.89	4.77	**10.01**
40	75.15	6.06	1.89	4.17	10.00
50	63.95	5.16	1.89	3.27	9.80

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	10.01	11.60	0	0.00

Overflows to: Parking Lot

Drainage Area	oof Area 2C		
Area (Ha)	0.029		
C =	0.90	Restricted Flow Q_r (L/s)=	1.890

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{5yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 5yr (m^3)
9	109.79	7.97	1.89	6.08	3.28
14	86.93	6.31	1.89	4.42	3.71
19	72.53	5.26	1.89	3.37	**3.84**
24	62.54	4.54	1.89	2.65	3.81
29	55.18	4.00	1.89	2.11	3.68

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	3.84	11.60	0	0.00

Overflows to: Parking Lot

Drainage Area	oof Area 2C		
Area (Ha)	0.029		
C =	0.90	Restricted Flow Q_r (L/s)=	1.890

2-Year Ponding

T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{2yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 2yr (m^3)
5	103.57	7.51	1.89	5.62	1.69
10	76.81	5.57	1.89	3.68	2.21
15	61.77	4.48	1.89	2.59	**2.33**
20	52.03	3.78	1.89	1.89	2.26
30	40.04	2.91	1.89	1.02	1.83

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	2.33	11.60	0	0.00

Overflows to: Parking Lot

Drainage Area	Roof Area 2D		
Area (Ha)	0.057		
C =	1.00	Restricted Flow Q_r (L/s)=	2.520

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{100yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 100yr (m^3)
45	69.05	10.94	2.52	8.42	22.74
50	63.95	10.13	2.52	7.61	22.84
55	59.62	9.45	2.52	6.93	**22.86**
60	55.89	8.86	2.52	6.34	22.81
70	49.79	7.89	2.52	5.37	22.55

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	22.86	23.09	0	0.00

Overflows to: Parking Lot

Drainage Area	Roof Area 2D		
Area (Ha)	0.057		
C =	0.90	Restricted Flow Q_r (L/s)=	2.520

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{5yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 5yr (m^3)
19	72.53	10.34	2.52	7.82	8.92
24	62.54	8.92	2.52	6.40	9.21
29	55.18	7.87	2.52	5.35	**9.31**
34	49.50	7.06	2.52	4.54	9.26
39	44.98	6.41	2.52	3.89	9.11

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	9.31	23.09	0	0.00

Overflows to: Parking Lot

Drainage Area	Roof Area 2D		
Area (Ha)	0.057		
C =	0.90	Restricted Flow Q_r (L/s)=	2.520

2-Year Ponding

T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{2yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 2yr (m^3)
14	64.23	9.16	2.52	6.64	5.58
19	53.70	7.66	2.52	5.14	5.86
24	46.37	6.61	2.52	4.09	**5.89**
29	40.96	5.84	2.52	3.32	5.78
39	33.45	4.77	2.52	2.25	5.27

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	5.89	23.09	0	0.00

Overflows to: Parking Lot

Drainage Area	Roof Area 2E		
Area (Ha)	0.029		
C =	1.00	Restricted Flow Q_r (L/s)=	1.890

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{100yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 100yr (m^3)
25	103.85	8.37	1.89	6.48	9.72
30	91.87	7.41	1.89	5.52	9.93
35	82.58	6.66	1.89	4.77	**10.01**
40	75.15	6.06	1.89	4.17	10.00
50	63.95	5.16	1.89	3.27	9.80

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	10.01	11.60	0	0.00

Overflows to: Parking Lot

Drainage Area	Roof Area 2E		
Area (Ha)	0.029		
C =	0.90	Restricted Flow Q_r (L/s)=	1.890

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{5yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 5yr (m^3)
9	109.79	7.97	1.89	6.08	3.28
14	86.93	6.31	1.89	4.42	3.71
19	72.53	5.26	1.89	3.37	**3.84**
24	62.54	4.54	1.89	2.65	3.81
29	55.18	4.00	1.89	2.11	3.68

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	3.84	11.60	0	0.00

Overflows to: Parking Lot

Drainage Area	Roof Area 2E		
Area (Ha)	0.029		
C =	0.90	Restricted Flow Q_r (L/s)=	1.890

2-Year Ponding

T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{2yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 2yr (m^3)
5	103.57	7.51	1.89	5.62	1.69
10	76.81	5.57	1.89	3.68	2.21
15	61.77	4.48	1.89	2.59	**2.33**
20	52.03	3.78	1.89	1.89	2.26
30	40.04	2.91	1.89	1.02	1.83

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	2.33	11.60	0	0.00

Overflows to: Parking Lot

Drainage Area	Roof Area 2F				
Area (Ha)	0.059				
C =	1.00	Restricted Flow Q_r (L/s)=		3.150	
100-Year Ponding					
T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{100yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 100yr (m^3)
35	82.58	13.54	3.15	10.39	21.83
40	75.15	12.33	3.15	9.18	22.02
45	69.05	11.33	3.15	8.18	**22.07**
50	63.95	10.49	3.15	7.34	22.02
60	55.89	9.17	3.15	6.02	21.66

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	22.07	23.60	0	0.00

Overflows to: Parking Lot

Drainage Area	Roof Area 2F				
Area (Ha)	0.059				
C =	0.90	Restricted Flow Q_r (L/s)=		3.150	
5-Year Ponding					
T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{5yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 5yr (m^3)
16	80.46	11.88	3.15	8.73	8.38
21	68.13	10.06	3.15	6.91	8.70
26	59.35	8.76	3.15	5.61	**8.75**
31	52.74	7.79	3.15	4.64	8.62
36	47.58	7.02	3.15	3.87	8.37

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	8.75	23.60	0	0.00

Overflows to: Parking Lot

Drainage Area	Roof Area 2F				
Area (Ha)	0.059				
C =	0.90	Restricted Flow Q_r (L/s)=		3.150	
2-Year Ponding					
T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{2yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 2yr (m^3)
8	85.46	12.61	3.15	9.46	4.54
13	66.93	9.88	3.15	6.73	5.25
18	55.49	8.19	3.15	5.04	**5.44**
23	47.66	7.04	3.15	3.89	5.36
33	37.54	5.54	3.15	2.39	4.74

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	5.44	23.60	0	0.00

Overflows to: Parking Lot

Drainage Area	deck				
Area (Ha)	0.507	ICD Size (L/s)=		41.05	
C =	1.00	Reduced Restricted Flow Q_r (L/s)=		20.527	
100-Year Ponding					
T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{100yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 100yr (m^3)
49	64.91	91.48	20.53	70.96	208.61
54	60.44	85.18	20.53	64.66	209.49
57	58.07	81.84	20.53	61.32	**209.70**
60	55.89	78.78	20.53	58.25	209.72
65	52.65	74.20	20.53	53.68	209.34

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	209.70		210	0.00

Drainage Area	deck				
Area (Ha)	0.507	ICD Size (L/s)=		41.05	
C =	0.90	Reduced Restricted Flow Q_r (L/s)=		20.527	
5-Year Ponding					
T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{5yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 5yr (m^3)
28	56.49	71.66	20.53	51.13	85.90
30	53.93	68.41	20.53	47.88	86.19
32	51.61	65.47	20.53	44.94	**86.28**
34	49.50	62.79	20.53	42.27	86.22
36	47.58	60.35	20.53	39.82	86.02

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	86.28	0.00	210	0.00

Drainage Area	deck				
Area (Ha)	0.507	ICD Size (L/s)=		41.05	
C =	0.90	Reduced Restricted Flow Q_r (L/s)=		20.527	
2-Year Ponding					
T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{2yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 2yr (m^3)
22	49.02	62.18	20.53	41.66	54.99
23	47.66	60.45	20.53	39.93	55.10
24	46.37	58.83	20.53	38.30	**55.15**
25	45.17	57.29	20.53	36.77	55.15
26	44.03	55.85	20.53	35.32	55.10

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	55.15	0.00	210	0.00

Drainage Area	LANDSCAPE				
Area (Ha)	0.393	ICD Size (L/s)=		10.66	
C =	0.36	Reduced Restricted Flow Q_r (L/s)=		5.331	
100-Year Ponding					
T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{100yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 100yr (m^3)
62	54.54	21.45	5.33	16.12	59.97
67	51.46	20.24	5.33	14.91	59.94
70	49.79	19.58	5.33	14.25	**59.86**
73	48.23	18.97	5.33	13.64	59.74
78	45.87	18.04	5.33	12.71	59.48

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	59.86		64.8	0.00

Drainage Area	LANDSCAPE				
Area (Ha)	0.393	ICD Size (L/s)=		10.66	
C =	0.30	Reduced Restricted Flow Q_r (L/s)=		5.331	
5-Year Ponding					
T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{5yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 5yr (m^3)
31	52.74	17.29	5.33	11.96	22.24
33	50.53	16.56	5.33	11.23	22.24
35	48.52	15.90	5.33	10.57	**22.20**
37	46.67	15.30	5.33	9.97	22.13
39	44.98	14.74	5.33	9.41	22.02

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	22.20	0.00	64.8	0.00

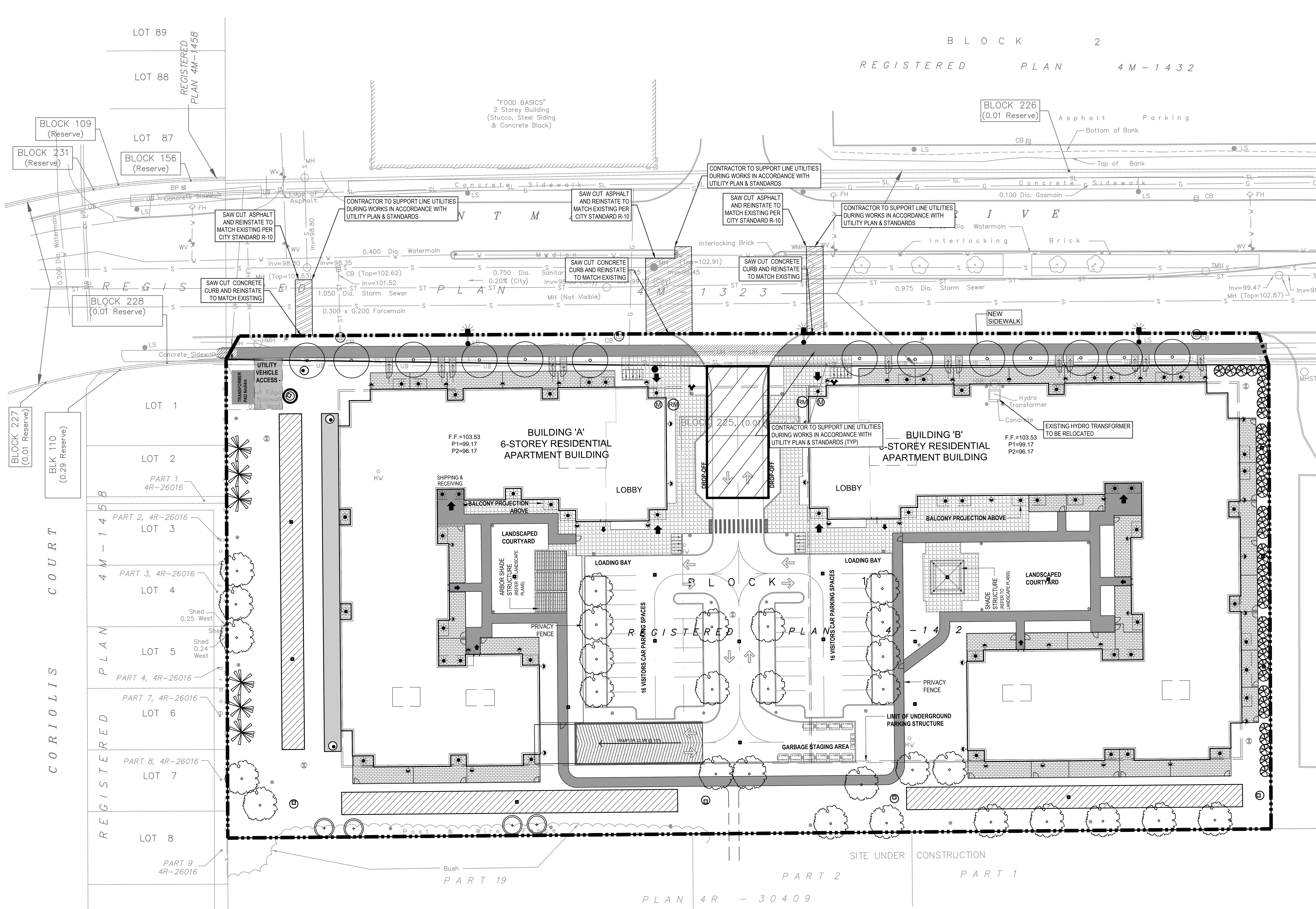
Drainage Area	LANDSCAPE				
Area (Ha)	0.393	ICD Size (L/s)=		10.66	
C =	0.30	Reduced Restricted Flow Q_r (L/s)=		5.331	
2-Year Ponding					
T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow Q_p=2.78xCi_{2yr}A (L/s)	Q_r (L/s)	Q_p-Q_r (L/s)	Volume 2yr (m^3)
24	46.37	15.20	5.33	9.87	14.21
25	45.17	14.80	5.33	9.47	14.21
26	44.03	14.43	5.33	9.10	**14.20**
27	42.95	14.08	5.33	8.75	14.17
28	41.93	13.74	5.33	8.41	14.13

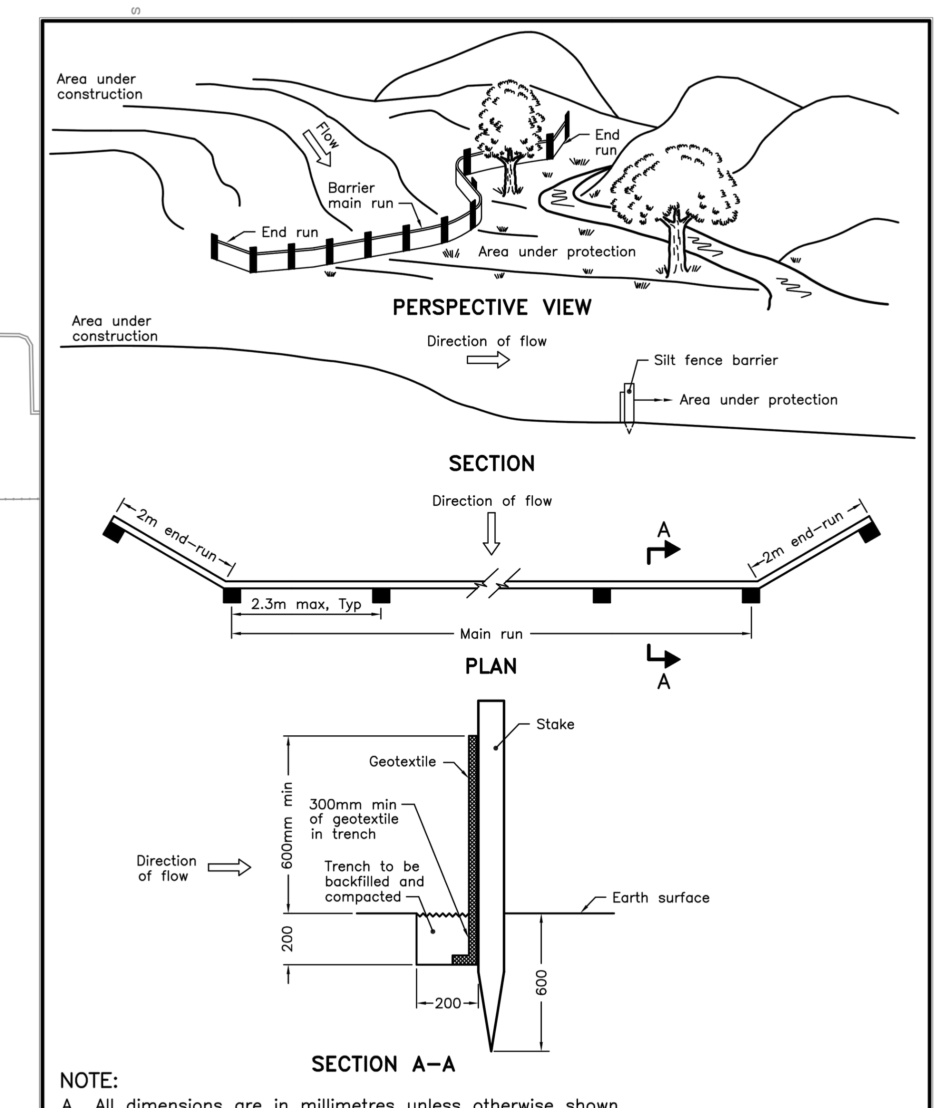
Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	14.20	0.00	64.8	0.00

APPENDIX E

- C-900 Sediment & Erosion Plan
- MVCA email
- C-200 Grading Plan





NOTE:
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING | Nov 2006 | Rev 1

LIGHT–DUTY SILT FENCE BARRIER

OPSD 219.110

NOTES:

1. SILT FENCE TO BE ERECTED PRIOR TO EARTH WORKS BEING COMMENCED. SILT FENCE TO BE MAINTAINED UNTIL VEGETATION IS ESTABLISHED OR UNTIL START OF SUBSEQUENT PHASE.

2. STRAW BALE SEDIMENT TRAPS TO BE CONSTRUCTED IN EXISTING ROAD SIDE DITCHES. TRAPS TO REMAIN AND BE MAINTAINED UNTIL VEGETATION IS ESTABLISHED.

3. SILT SACK TO BE PLACED AND MAINTAINED UNDER COVER OF ALL CATCHBASINS. GEOTEXTILE SILT SACK IN STREET CBs TO REMAIN UNTIL ALL CURBS ARE CONSTRUCTED. GEOTEXTILE FABRIC IN RYCBs TO REMAIN UNTIL VEGETATION IS ESTABLISHED. ALL CATCHBASINS TO BE REGULARLY INSPECTED AND CLEANED, AS NECESSARY, UNTIL SOD AND CURBS ARE CONSTRUCTED.

4. CONTRACTOR TO PROVIDE DETAILS ON LOCATION(S) AND DESIGN OF DEWATERING TRAP(S) PRIOR TO COMMENCING WORK. CONTRACTOR ALSO RESPONSIBLE FOR MAINTAINING TRAP(S) AND ADJUSTING SIZE(S) IF DEEMED REQUIRED BY THE ENGINEER DURING CONSTRUCTION.

5. CONTRACTOR TO PROTECT EXISTING CATCHBASINS WITH FILTER CLOTH UNDER THE COVERS TO TRAP SEDIMENTATION. REFER TO IDENTIFIED STRUCTURES.

- LIGHT DUTY SILT FENCE AS PER OPSD-219.110
- SNOW FENCE
- STRAW BALE CHECK DAM AS PER OPSD-219.180
- ROCK CHECK DAM AS PER OPSD-219.210
- SILT SACK PLACED UNDER EXISTING CB COVER
- TEMPORARY MUD MAT 0.15m THICK 50mm CLEAR STONE ON NON WOVEN FILTER CLOTH

CLIENT

NorthAMERICAN DEVELOPMENT GROUP

2851 John Street, Suite One, Markham, Ontario L3R 5R7 T:905-968-3185

ISSUES

No.	DESCRIPTION	DATE
1	ISSUED FOR SPA	2021-02-16

NOT FOR CONSTRUCTION

SEE C-010 FOR NOTES, LEGEND

KEY PLAN

CONSULTANTS

Project Coordinator:
North American Development Group
Architect:
RLA Architecture
Surveyor:
Fairhall, Moffatt and Woodland ltd.
Geotechnical:
Paterson Group
Traffic:
JD Halpenny & Assoc.
Electrical:
Hammerschlag & Joffe Inc.
Landscape:
NAK Design Strategies

1:400

SEAL

LICENSED PROFESSIONAL ENGINEER
D. G. Yannoulopoulos
2021-02-16
PROVINCE OF ONTARIO

IBI GROUP
Suite 400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
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PROJECT

21 HUNTMAR

PROJECT NO: 127134	
DRAWN BY: EH	CHECKED BY: DGY
PROJECT MGR: DGY	APPROVED BY: DGY

SHEET TITLE

EROSION AND SEDIMENTATION CONTROL PLAN

SHEET NUMBER: C-900

ISSUE: 1

CITY FILE No. D07-XX-XX-XXXX

CITY PLAN No. xxxxx

Demetrius Yannoulopoulos

From: Doug Nuttall <dnuttall@mvc.on.ca>
Sent: Friday, June 22, 2012 9:10 AM
To: Demetrius Yannoulopoulos
Cc: sean.moore@ottawa.ca
Subject: RE: Infiltration augmentation

Sorry about the delay;

MVC is satisfied with this approach. It is reasonable to expect that there will be sufficient infiltration from this facility to supplement the infiltration that will come from the sand beds and irrigation. It would be very interesting to monitor the water flowing into and out of such a facility, and I would ask the consultant, on behalf of the client, if MVC would be able to install monitoring in MH 35? Ideally, we should be monitoring flows in and out of the facility – thus it would be easier for us if the outlet was directed to CBMH 29, rather than directly to the pipe. There should be lots of grade to make that work.

Douglas Nuttall, P.Eng.
Water Resources Engineer
Mississippi Valley Conservation

From: Demetrius Yannoulopoulos
Sent: Tuesday, June 19, 2012 10:03 AM
To: 'Doug Nuttall'
Subject:

Hi Doug
As discussed yesterday, we propose to add a drywell in front of Box C, within in the parking lot area.
The drywell will be a clear stone facility 4m wide by 40m long, and 0.73m clear depth from bottom of perforated pipe. The drywell has a total volume of 116.6m3, with 30% voids in the clear stone there is 35m3 of storage available.
Rainfall from the 5992 m2 roof of Box C will supply the drywell, the roof of Box C has flow restrictors limiting the outflow to 25l/s. The dry well is set up such that if the volume of runoff from the roof exceeds the storage capacity of the dry well excess runoff is discharged to the storm sewer, see attached PDF illustrating the proposed drywell.

Rainfall data (see attached) indicates for the months of March up to and including November, 40 days of 5mm or more rain occurred, and for the same period 22 days of 10mm or more rain occurred. Assuming 80% of rainfall is collected by the roof drains the following volume of rainfall is collected and discharged into the drywell:
5mm, at 80% = 4mm, for 5992m2 roof = 23.96m3, for 40 events = 958.72m3
10mm, at 80%= 8mm (less 4mm from above) = 4mm for 5992m2 roof = 23.96m3, for 22 events = 527.29m3
These events provide a approximately of 1486m3 of rainfall for use by the drywell.
For the 84,600m2 site, this will add approximately 17.56mm/yr of infiltration.

As we had previously discussed the sand well will provide approximately 20mm/yr of infiltration with natural rainfall, and the irrigation system will also supplement with an additional 20mm/yr.
Combining these three the site will have approximately 57mm/yr of infiltration which falls within the 50 to 70mm/yr target for this area.

As you are aware the City is asking us to provide CA acceptance of the infiltration approach. If you are in agreement with the above, it would be greatly appreciated if you could forward me an email indicating MVCA acceptance of the infiltration approach.
If you have any questions, please call or email.
Thx
Demetrius

Demetrius Yannoulopoulos P.Eng.
Associate Director

IBI Group
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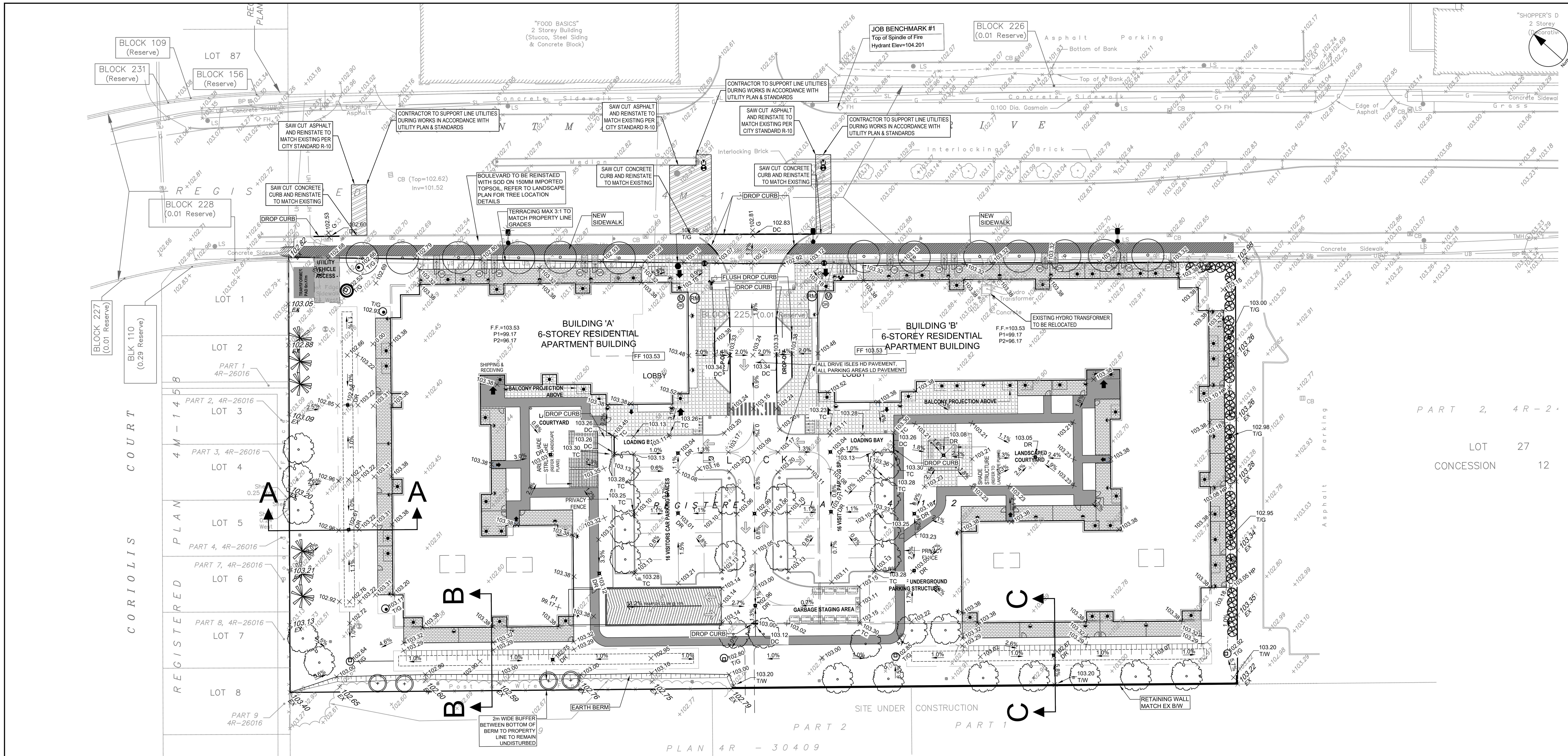
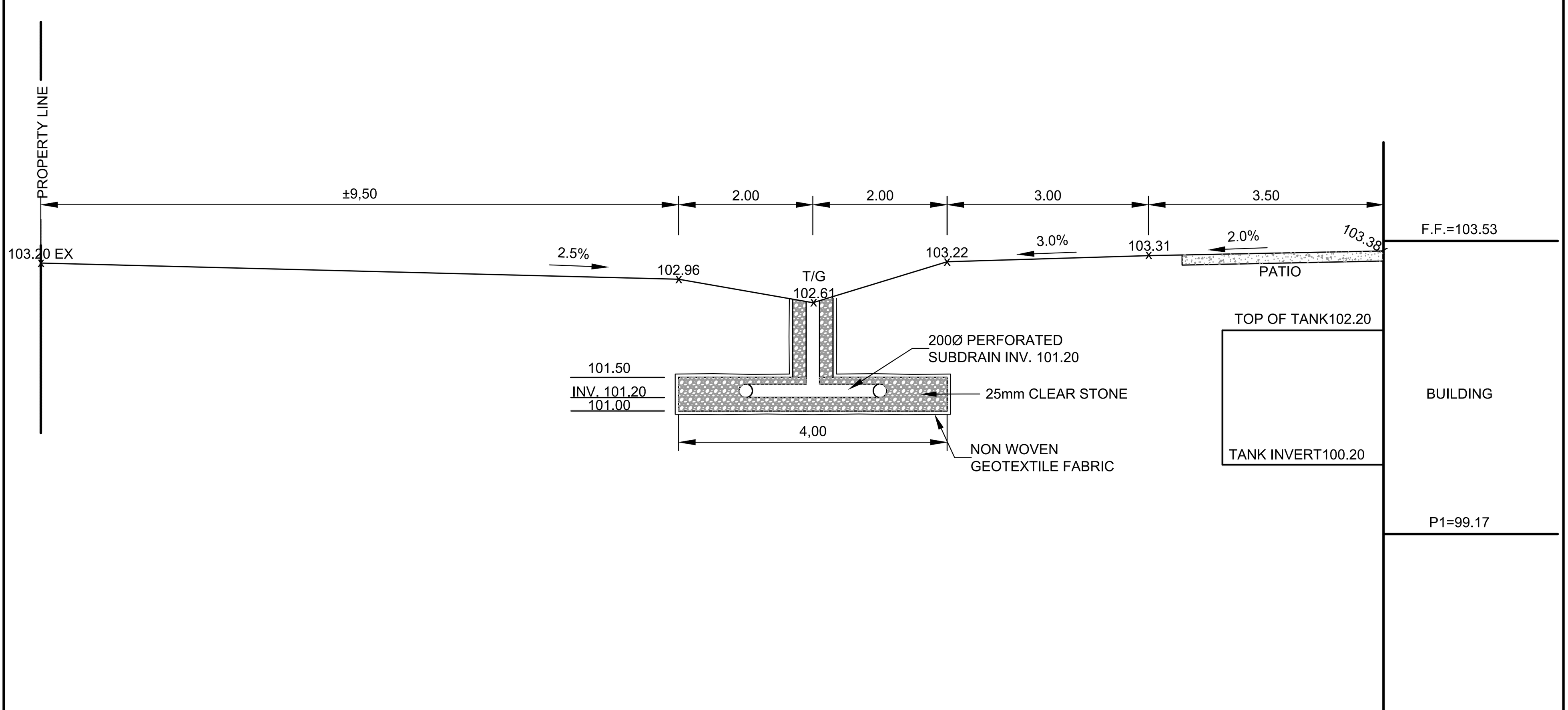
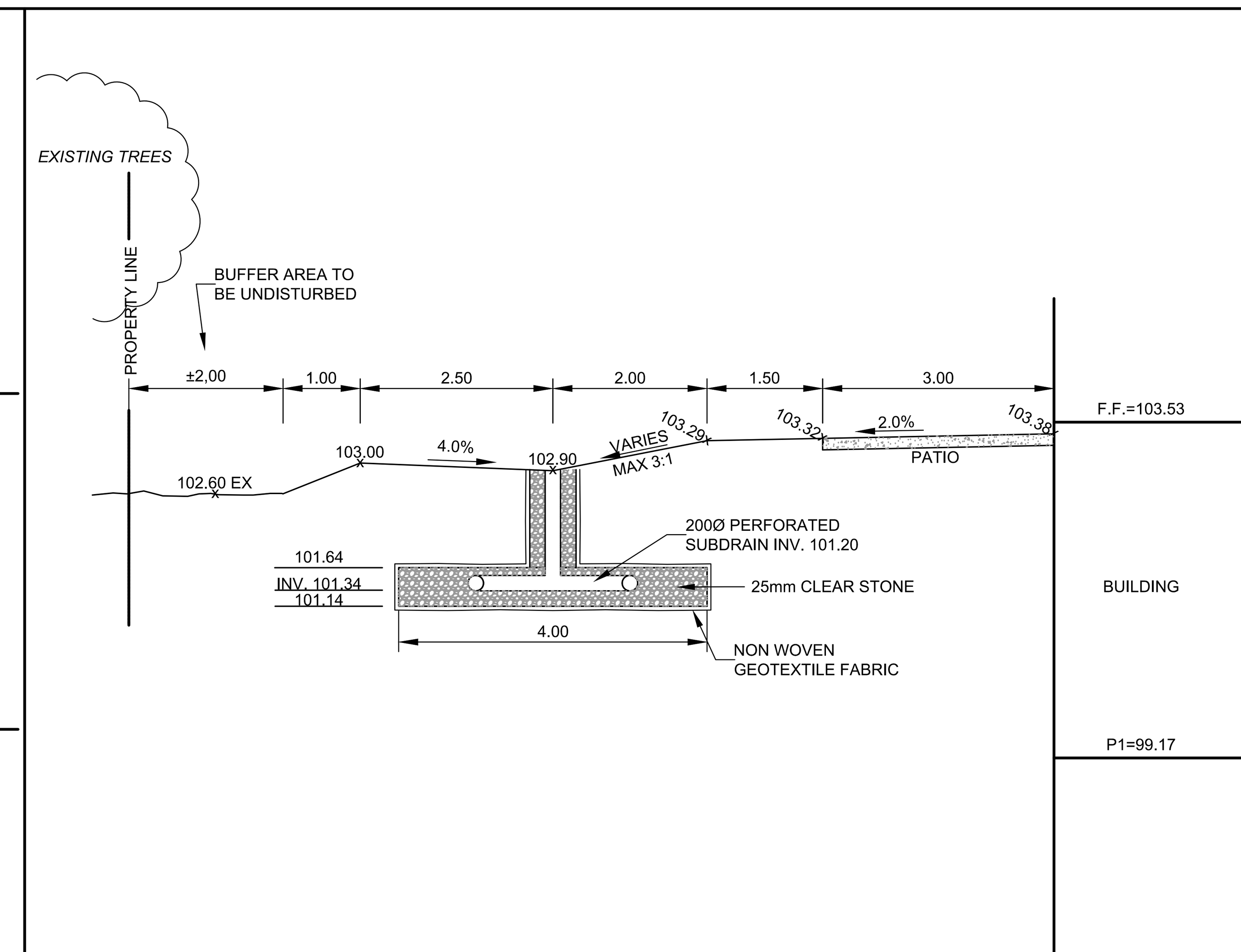




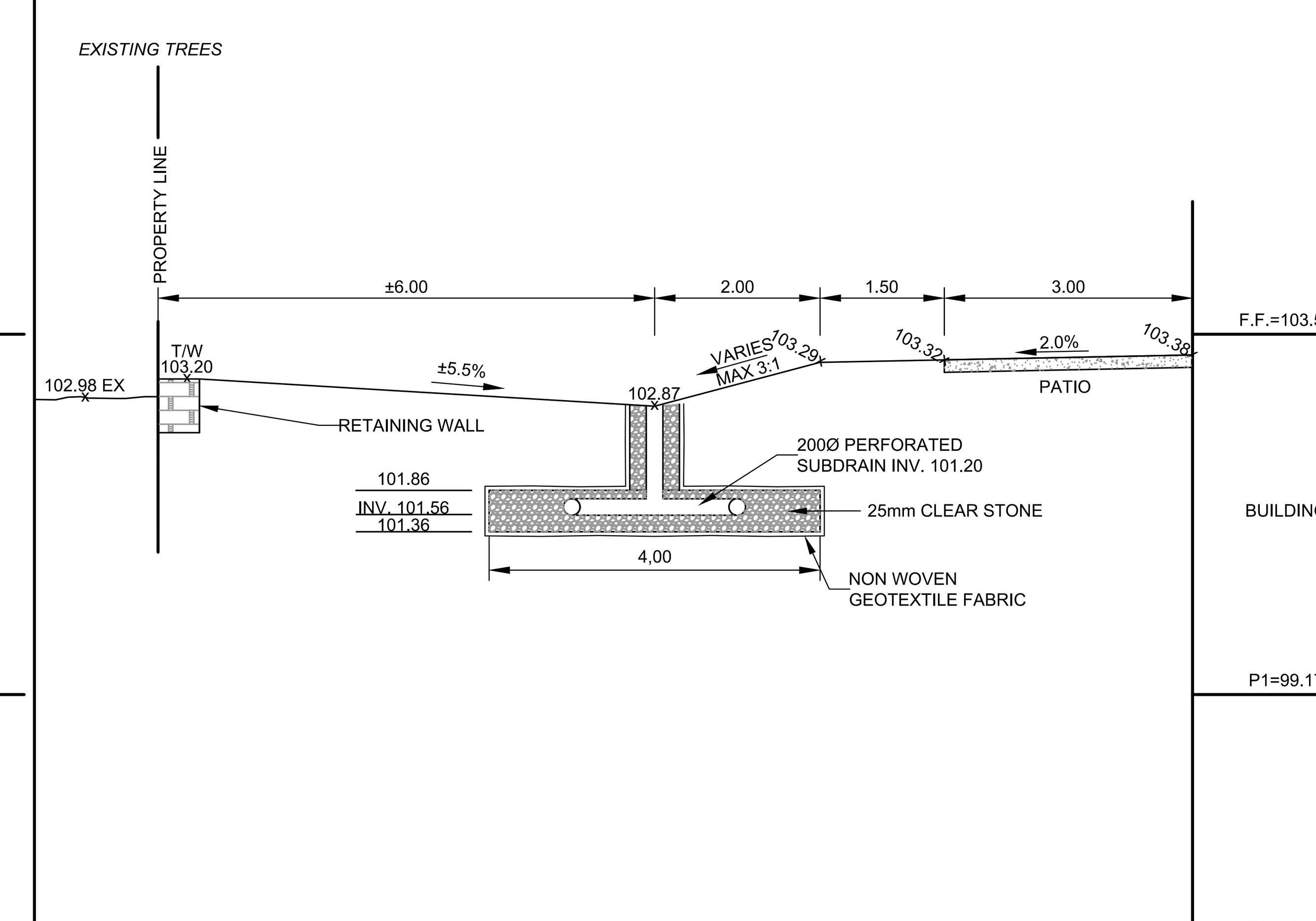
SECTION A-A

N.T.S.



SECTION B-B

N.T.S.



SECTION C-C

N.T.S.

CLIENT

NorthAMERICAN DEVELOPMENT GROUP

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ISSUES

No.	DESCRIPTION	DATE
1	ISSUED FOR SPA	2021-02-16

NOT FOR CONSTRUCTION

KEY PLAN

SITE

CONSULTANTS

Project Coordinator:
North American Development Group
Architect:
RLA Architecture
Surveyor:
Fairhall, Moffatt and Woodland ltd.
Geotechnical:
Paterson Group
Traffic:
JD Halpenny & Assoc.
Electrical:
Hammerschlag & Joffe Inc.
Landscape:
NAK Design Strategies

1:400

SEAL

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D. G. Yannoulopoulos
2021-02-16
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PROJECT

21 HUNTMAR

PROJECT NO: 127134	
DRAWN BY: EH	CHECKED BY: DGY
PROJECT MGR: DGY	APPROVED BY: DGY

SHEET TITLE

GRADING PLAN

SHEET NUMBER: C-200

ISSUE: 1

CITY FILE No. D07-xx-xx-xxxx

CITY PLAN No. xxxxx

File Location: J:\127134_21_Huntmar\7.0_Production\7.03_Design\04_Civil\Sheets\C-200 GRADING PLAN.dwg Last Saved: February 8, 2021, by ddore Plotted: Wednesday, February 17, 2021 9:30:01 AM by Denis Dore