



GANATCHIO GARDENS INC.

Official Plan and Zoning By-Law Amendments

Odour Impact Assessment

Southwest Corner of Florence Avenue & Wyandotte Street East
Windsor, Ontario



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1.0 Introduction

Dillon Consulting Limited (Dillon) was retained by Ganatchio Gardens Inc. (the Developer) to complete an assessment of odour impacts from the Little River Pollution Control Plant at the proposed residential development at Wyandotte Street East and Florence Avenue (the Proposed Development), in Windsor, Ontario. The study has been completed to evaluate the appropriateness of the separation distance between the Little River Pollution Control Plant (the LRPCP) and the Proposed Development from an odour perspective. Other impacts such as noise, dust, and air contaminants are not addressed in this study.

1.1 Subject Lands and Surrounding Area

The Proposed Development is located along the south side of Wyandotte Street East, in the southwest corner of the Wyandotte Street East and Florence Avenue intersection. Immediately surrounding the Proposed Development are lands zoned as Residential Districts (Low Density Housing) to the north and east, and areas zoned as Public Park to the south and west.

The Proposed Development's property line is approximately 230 m east of the existing LRPCP property boundary. The LRPCP serves the eastern portion of the City of Windsor (the City) and surrounding municipality of Tecumseh, with a current design capacity of 72,800 m³/day. Based on conversations with the City, there is the potential for the LRPCP to expand to double its current capacity in a time span of 10 years or greater, with operations expected to expand to the currently vacant lands on the eastern portion of the LRPCP lands.

The subject site and surrounding area is shown in Figure 1 of the Figures section.

The Proposed Development consists of a 17-storey residential towers above a 1-storey above-ground indoor parking garage in the southwest quadrant of the property and seven 3-storey townhouse blocks along the north and east portions of the property. The Proposed Development lands are currently vacant and are zoned as HRD2.1: Residential District (Medium Density Housing) with a holding zone provision, under the City of Windsor's Zoning By-law 8600. The holding provision represents a hold on the issuance of a building permit until specific development preconditions have been satisfied. The site plan and architectural drawings of the proposed development are provided in Appendix A. The Land Use Zoning Designation Plan for the Proposed Development and surrounding area is provided in Appendix B.

2.0 Applicable Guidelines and Land Use Policies

The Ministry of Environment, Conservation and Parks (MECP's) D-Series of Guidelines and the City of Windsor's Official Plan were considered in this Odour Impact Assessment and are discussed in detail below.

2.1 MECP D-Series Guidelines

The intent of the MECP's D-Series of Guidelines is to minimize or prevent, through the use of buffers and separation of uses, the encroachment of incompatible land uses.

The MECP's Guideline D-2 *Compatibility between Sewage Treatment and Sensitive Land Use* (Guideline D-2) provides minimum and recommended separation distances to mitigate the effects of odours and noise emitted from a sewage treatment plant on sensitive land uses, based on the design capacity of a plant. A separation distance less than the recommended separation distance may be permitted, which is referred to as the minimum separation distance. However, as per Guideline D-2, implementation of a minimum separation distance requires that a study be prepared by a qualified professional showing the feasibility of the distance based on:

- The application of noise reduction equipment to any potential noise source(s);
- The degree and type of odour mitigation applied to the facility, and;
- Other contaminants of concern (i.e. aerosols) which may need to be addressed.

With respect to the D-Series of Guidelines, sensitive receptors include: residences, senior-citizen homes, schools, day care facilities, hospitals, and churches or similar institutional uses, as well as recreation areas deemed by the planning authority to be sensitive.

A summary of the Guideline D-2 separation distances is provided in Table 1.

Table 1: Guideline D-2 Minimum and Recommended Separation Distances for Sewage Treatment Plants

Plant Capacity (m ³ /day)	Minimum Separation Distance (m)	Recommended Separation Distance (m)
≤500	<100 may be permitted based on noise reduction equipment and odour mitigation applied to the plant	100
>500 to < 25,000	100	150
>25,000	Plant will be dealt with on an individual basis. A separation distance of greater than 150 m may be required. The determination of the required distance will depend on the type of noise sources (for example generators, blowers, etc.) and the type of noise/odour control measures being applied.	

Guideline D-2 is intended for normal plant operations and is not appropriate for dealing with the effects of major treatment plant upsets due to overloading or equipment breakdown. Guideline D-2 also indicates that when measuring separation distances, the separation distances will be measured from the periphery of the noise/odour-producing source-structure, to the property/lot line of the sensitive land use.

The Proposed Development property line is located approximately 255m from the nearest odour source at the proposed future-expansion to the LRPCP. Based on Guideline D-2 and the current and future design capacity of the LRPCP, a site-specific assessment of predicted odour impacts is required to demonstrate compatibility between the Proposed Development and LRPCP (including future expansion).

2.2 City of Windsor Official Plan

The City of Windsor's Official Plan provides a planning framework which sets out policies and land use designations for the City and directs compatible development to appropriate locations within existing and future neighbourhoods.

Section 5.4.10.3 of the City's Official Plan states:

Council shall prohibit residential, commercial, mixed use and institutional development within 300 metres of a Pollution Control Plant. The 300 metre distance shall be measured from the property line of the Pollution Control Plant to the property line of the proposed development.

Given that there are existing residences located less than 300 m from the Little River Pollution Control Plant, an odour impact assessment is required to assess the appropriateness of the 230 m separation distance between the LRPCP property line and the Proposed Development.

3.0

Little River Pollution Control Plant

A scenario based on existing operations at the LRPCP (“Existing Scenario”) and a scenario based on a potential future LRPCP expansion (“Future Scenario”) were considered in the Odour Impact Assessment. The operations forming the basis of these scenarios are outlined below.

3.1

Existing Operations

The LRPCP is located at 9400 Little River Road in Windsor, Ontario. The LRPCP operates under the Municipal Sewage Works Amended Environmental Compliance Approval (ECA) Number 4681-BT3L39 with a rated design capacity of 72,800 m³/day. Appendix C provides the LRPCP’s most recent ECA. The LRPCP property line extends approximately 280 m east of the existing plant infrastructure. The land between the existing plant and the LRPCP’s eastern property line is currently vacant.

Based on ECA Number 4681-BT3L39, a summary of the existing processes at the LRPCP is as follows:

- Leachate Unloading Facility
- Influent Sewers
- Preliminary Treatment System including:
 - Inlet chamber and screening channels
 - Raw sewage pumping station
 - Grit removal via separators
- Flow Distribution/Aerated Chamber
- Storm Overflow Chamber
- Primary, secondary, and disinfection processes which take place in parallel processes in two on-site plants (Plant 1 and Plant 2). Plant 1 and Plant 2 each consist of the following:
 - A Primary Treatment System, including primary clarifiers, sludge collection mechanisms, and scum removal systems
 - Secondary Treatment System including aeration tanks (biological treatment), secondary sedimentation (final settling) tanks, and activated sludge pump well
 - Disinfection System
 - Effluent Water System
- Support processes including:
 - Supplementary Treatment System for Phosphorus Removal
 - Sludge Management System including sludge dewatering using solid bowl centrifuges and truck loading of sludge to be hauled off-site
 - Sludge Condition System

The Existing Scenario applied in this assessment was developed based on a selection of the operations described above and is described in further detail in Section 4.0.

The City confirmed to Dillon that the LRPCP currently receives 10-15 odour complaints per year, with a majority of complaints from the residences located west of the LRPCP.

3.2 Future Expansion Scenario

The LRPCP currently has a rated design capacity of 72,800 m³/day. Based on conversations with the City, there is the potential for the LRPCP to expand to double its current capacity in a time span of 10 years or greater. A site plan illustrating a potential future expansion layout (Future Layout), dated December 21, 1994, was provided by the City. The City confirmed to Dillon that the Future Layout is conceptual and was developed for protection of property. Therefore, treatment options other than those included at the existing LRPCP may be selected for the expansion design. As per the Future Layout, new operational buildings and equipment would be located on the east side of the LRPCP property which is currently vacant. A copy of the Future Layout is provided in Appendix D.

For the purposes of this assessment, future operations at LRPCP were assumed to include existing operations as described in the ECA as well as the processes and equipment identified in the Future Layout.

The Future Layout doubles the number of primary clarifiers and aeration tanks that are existing at the LRPCP, resulting in a total of twelve primary clarifiers and twenty aeration tanks. The Future Layout, as presented in Appendix D, shows four final settling tanks, however, based on conversations with the City, there is the potential that the expansion would include six new final settling tanks.

The Future Layout also includes a new Pumping and Grit Removal Building, Sludge Dewatering Building and Effluent Filter Building. Although not included in the Future Layout, as per conversations with the City, a Screening Building and open grit tanks would be expected in the future expansion. The future Screening Building would likely be located adjacent to the future Flow Equalization Chamber which in turn would be adjacent to the future Grit Removal Building. The future grit tanks would be in the vicinity of the future Grit Removal Building. Given that there are two "Possible Future Flow Equalization Basin" locations identified in the Future Layout, the future Screening Building was assumed to be located between the north "Possible Future Flow Equalization Basin" and the future Grit Removal Building. This location is considered worst-case with respect to the Proposed Development, due to a closer proximity when compared to a more southern location.

The location of existing and proposed sources included in the assessment are shown in Figure 2.

4.0

Assessment of Odour Impacts

Using the LRPCP's current rated capacity of 72,800 m³/day or expected future rated capacity of 145,600 m³/day, the plant is classified under the largest capacity class per Guideline D-2. Therefore a separation distance of greater than 150 m may be required between the LRPCP and sensitive land uses, which is to be defined by a site-specific study. As per the City's Official Plan, a minimum separation distance of 300 m between the LRPCP and Proposed Development property line is required, with consideration for shorter distances being given subject to technical justification. In order to assess the appropriateness of the proposed separation distance, a comparative air dispersion modelling assessment of impacts from the LRPCP at the existing sensitive receptors and Proposed Development was performed.

4.1

Odour Assessment Approach

While there are many regulated air contaminants in Ontario, odours are considered a nuisance impact and are subjective in nature. To describe the nuisance potential of an odour, five factors (commonly referred to as "FIDOL") are generally considered:

- Frequency – the number of times an odour is detected during a specific time period;
- Intensity – a person's perception of the concentration or strength of the odour;
- Duration – the length of time in which the odour remains detectable;
- Offensiveness or hedonic tone of the odour – how pleasant or unpleasant is the odour; and
- Location of the odour.

Odour sources containing a mixture of compounds (e.g., wastewater treatment operations) are typically characterized based on odour units. An odour unit (OU) is defined as a limit where 50 percent of the population would detect, but not identify, an odourous compound.

Air dispersion modelling was used to assess the frequency and intensity of potential odour impacts from the LRPCP at identified sensitive receptors, keeping with industry best practices. Odour source types in the model include point sources (such as a stack or vent) and volume sources (such as an open tank). For odour dispersion modelling, development of emission rates in units of odour units per second (OU/s) is often completed based on source testing, manufacturer's data, emission factors, and/or engineering calculations. The emission rates are used as inputs to the dispersion model, as well as source parameters including release height and exhaust flow rate. The model predicts maximum concentrations at specified receptors, and for the purposes of an odour assessment, impacts are presented in the form of odour units per volume (OU/m³). Based on general MECP guidance, predicted odour concentrations at sensitive receptors are typically compared against a threshold of 1 OU/m³ for a 10-minute averaging period, 99.5% of the time (i.e. an exceedance of the 1 OU/m³ threshold is allowable 0.5% of the time).

Ganatchio Gardens Inc.

Official Plan and Zoning By-Law Amendments - Odour Impact Assessment

Southwest Corner of Florence Avenue & Wyandotte Street East

Windsor, Ontario

March 2023 – 21-1691



4.2 Dispersion Modelling

Version 19191 of U.S. EPA's AERMOD was used to perform the air dispersion modelling. AERMOD is a steady-state plume model which considers source parameters, emission rates, terrain, meteorology, and building effects to predict concentrations at specified receptors. Where applicable, modelling was performed in accordance with the MECP technical bulletin entitled "*Methodology for Modelling Assessments with 10 Minute Average Standards and Guidelines under O. Reg. 419/05*", dated September 2016 (Technical Bulletin) and the MECP publication "*Air Dispersion Modelling Guideline for Ontario*", dated February 2017 (ADMGO).

The modelling assessment was completed based on a threshold of 1 OU/m³ for a 10-minute averaging period, 99.5% of the time at any sensitive receptor, as per MECP guidance. As AERMOD cannot model averaging periods less than 1 hour, the MEPC conversion factor of 1.65 was used to convert the resulting 1-hour predicted concentrations to a 10-minute averaging period.

4.3 Development of Odour Emission Rates

Emissions data for odour generating sources at the LRPCP is not currently available. Therefore, odour source testing data from the Georgetown Wastewater Treatment Plant (Georgetown WWTP), a comparative facility with respect to preliminary, primary and secondary treatment systems, was applied with permission from the Georgetown WWTP. For sources where data was not available from the Georgetown WWTP, odour unit and emission rate reference data from published sources was used. Surrogate data was refined based on the existing and future design of the LRPCP.

A summary of the sources used for the development of LRPCP odour emission rates is as follows:

- Georgetown Wastewater Treatment Plant Odour Assessment Summary Report, Dillon Consulting Limited (2019);
- MECP Amended Environmental Compliance Approval (Municipal Sewage Works) Number 4681-BT3L39, dated January 29, 2021, issued to the Little River Pollution Control Plant;
- Odor Threshold Emission Factors for Common WWTP Processes, St. Croix Sensory, Inc. (2008); and
- Odour Emission Factors: Fundamental Tools for Air Quality Management, Capelli, L., Sironi, S., and Del Rosso, R. (2014).

A summary of the sources and modelling inputs used in the assessment is provided in Table E.1 of Appendix E. Assumptions used to develop the odour emission rates are also included in Table E.1. The corresponding source locations are identified in Figure 2.

4.4

Receptor Locations

Sensitive receptor or “discrete receptor” locations were placed at the existing residences along the roads listed below. Receptors were placed at 1.5 m and 4.5 m heights to represent ground level outdoor living spaces and first floor windows (1.5 m) and second floor windows (4.5 m).

- Riverdale Avenue – detached residences west of the LRPCP;
- Wyandotte Street East – detached residences north of the LRPCP; and,
- Florence Avenue – attached 1-storey residences.

Sensitive receptors were placed on the entire height of façades of the Proposed Development’s 17-storey tower as well as townhouse façades to represent balconies, operable windows and potential fresh air intakes. As per the architectural drawings shown in Appendix A, the 1-storey podium of the residential towers will consist of ground level parking, therefore sensitive receptors were not placed on the podium façade. Sensitive receptors were placed on the podium rooftop, 3rd storey rooftop, 8th storey rooftop, and penthouse rooftop to represent the terraces.

In order to understand the difference in impacts between the current Proposed Development location and the 300 m separation distance required by the City’s Official Plan, sensitive receptors were also placed at the 300 m separation distance from the LRPCP. The same receptor heights as the Proposed Development were applied at the 300 m distance.

Locations of the receptors included in the assessment are shown in Figure 3.

4.5

Meteorology and Terrain

In accordance with the Technical Bulletin, five years of site-specific meteorological data that is representative of the LRPCP site was prepared for use in the dispersion model. The MECP-recommended AERMOD-ready data set for London Airport (Station #61444) was processed using AERMET to reflect the land use characteristics of the LRPCP site and surrounding area following standard practice for dispersion modelling assessments in Ontario. The surface wind data is presented in Figure 4. The predominant wind direction is from the northwest to southwest and from the east.

Terrain data was incorporated in the model using MECP-provided digital elevation data in GeoTIFF format. The GeoTIFF file “040J” in Zone 17 was input into the dispersion model.

Summary of Potential Odour Impacts

The results of the dispersion modelling assessment are presented as a comparison between odour impacts predicted at existing residences and the Proposed Development. A summary of the modelling results is as follows:

- For the Existing Scenario and Future Expansion Scenario, impacts above the 1 OU/m³ threshold are predicted at the existing residences and the Proposed Development.
- For the Existing Scenario and Future Expansion Scenario, the magnitude (strength) and frequency of impacts predicted at Riverdale Ave are higher than the impacts predicted at Wyandotte St E, Florence Ave and the Proposed Development.
- For the Existing Scenario, the Proposed Development is predicted to experience maximum odours which are 18% of the predicted odour impacts at existing residences on Riverdale Ave.
- For the Future Expansion Scenario, the Proposed Development is predicted to experience maximum odours which are 63% of the predicted future odour impacts at existing residences on Riverdale Ave.
- A frequency analysis was performed to determine the frequency of exceedances of the 1 OU/m³ threshold at the sensitive receptor locations, where 0.5% is considered an acceptable threshold for provincial permitting. The results are as follows:
 - For the Existing Scenario, concentrations greater than 1 OU/m³ are predicted at Riverdale Ave 50% of the time, while concentrations greater than 1 OU/m³ are predicted at the Proposed Development 4% of the time.
 - For the Future Expansion Scenario, concentrations greater than 1 OU/m³ are predicted at Riverdale Ave 53% of the time, while concentrations greater than 1 OU/m³ are predicted at the Proposed Development 18% of the time.

In consideration of the City's Official Plan, a comparative assessment was also completed between odour impacts predicted at the Proposed Development sensitive receptors and at the 300 m distance from the LRPCP eastern property line, in the same direction as the Proposed Development. A summary of the modelling results is as follows:

- For the Existing Scenario and Future Expansion Scenario, impacts above the 1 OU/m³ threshold are predicted at the 300 m separation distance.
- For the Existing Scenario and Future Expansion Scenario, the Proposed Development is predicted to experience odours which are approximately 5-6% stronger than would be expected based on the City's 300 m separation distance.
- In the Existing Scenario, exceedances of the 1 OU/m³ threshold are expected to occur 4% of the time at both the Proposed Development and the 300 m separation distance.
- In the Future Expansion Scenario, exceedances of the 1 OU/m³ threshold are expected to occur 18% of the time at both the Proposed Development and the 300 m separation distance.

Discussion and Conclusions

The MECP's Guideline D-2 indicates a separation distance of greater than 150 m may be required between the LRPCP and sensitive land uses; however, site-specific assessments can be conducted to determine actual areas of influence and indicate appropriate separation distances for particular activities and sources. The City Official Plan requires a 300 m separation distance, with consideration for shorter distances being given subject to technical justification.

In consideration of the City's Official Plan and to assess the appropriateness of the separation distance between the LRPCP and the Proposed Development, an air dispersion modelling assessment was completed to compare predicted odour impacts at existing residences and the Proposed Development. In the absence of odour data available from the LRPCP, surrogate data from a similar facility as well as published emissions data was used to develop emission rates for the existing and future LRPCP scenarios to be used as model inputs. The model results were compared against the 1 OU/m³ threshold for a 10-minute averaging period, based on a 99.5% frequency, as per MECP guidance.

The dispersion modelling predicted that for the Existing Scenario and Future Expansion Scenario, impacts above the 1 OU/m³ threshold are predicted at the existing residences, the Proposed Development (230 m setback) and at a 300 m setback between the LRPCP property line and the Proposed Development. In both the Existing and Future Expansion Scenarios, the Proposed Development is predicted to experience odours which are lower in strength and less frequent than those predicted at existing residential receptors on Riverdale Ave. Receptors located 300 m from the LRPCP, which would satisfy the City's separation distance, are predicted to experience odours with a strength approximately 94-95% of those predicted at the Proposed Development, in both the Existing and Future Scenarios. For both scenarios, exceedances of the 1 OU/m³ threshold are predicted to occur at approximately the same frequency (approximately 4% of the time in the Existing Scenario and 18% in the Future Expansion Scenario) at the Proposed Development and 300 m separation distance.

The LRPCP currently receives 10-15 odours complaints per year, with a majority of complaints from the residences located west of the LRPCP. The dispersion modelling assessment completed shows that detectable odours are predicted at the proposed development, at a magnitude and frequency lower than what is predicted to currently occur at existing residential receptors. With the introduction of new receptors at the Proposed Development in the currently proposed location, an increase in overall odour complaints is expected. However, based on the comparative modelling completed, the magnitude and frequency of impacts predicted at the Proposed Development are expected to be less than those at existing residences.

In order to reduce the potential for complaints at the Proposed Development, the following mitigation measures are recommended:

- Design for centralized HVAC systems allowing the ability to positively pressurize the building to reduce the amount of ambient air leaking into individual units;
- Provision of air conditioning in all residential units and indoor amenity spaces to allow for windows to be closed to reduce odours;
- Locate fresh air intakes in areas of least impact, facing away from the LRPCP, or behind a significant intervening building or structure; and,
- While not an odour control, a vegetative buffer along the western property line of the Proposed Development is recommended to reduce the frequency of complaints by reducing the line-of-sight to the odour sources.

In summary, the Proposed Development is predicted to experience occasional odours due to the operations at the existing and expanded Little River Pollution Control Plant. Based on analysis comparing the Proposed Development to existing residential receptors on Riverdale Ave, the Proposed Development is expected to experience odours which are lower in strength and less frequent. As a result, the Proposed Development is expected to be comparable or improved than existing receptors when considering odours from the Little River Pollution Control Plant. The odour impact assessment completed based on a 300 m separation distance from the LRPCP, which would satisfy the City's Official Plan, indicates that the strength and frequency of impacts at these receptors are predicted to be approximately equivalent compared to the Proposed Development at a 230 m separation distance from the LRPCP property line.

Figures



Figure 1

Proposed Development and Little River Pollution Control Plant

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Wyandotte St and Florence Ave Proposed Development
Windsor, Ontario

March 2022





Figure 3

Sensitive Receptor Locations

Project # 21-1691

Wyandotte St and Florence Ave Proposed Development
Windsor, Ontario

March 2022



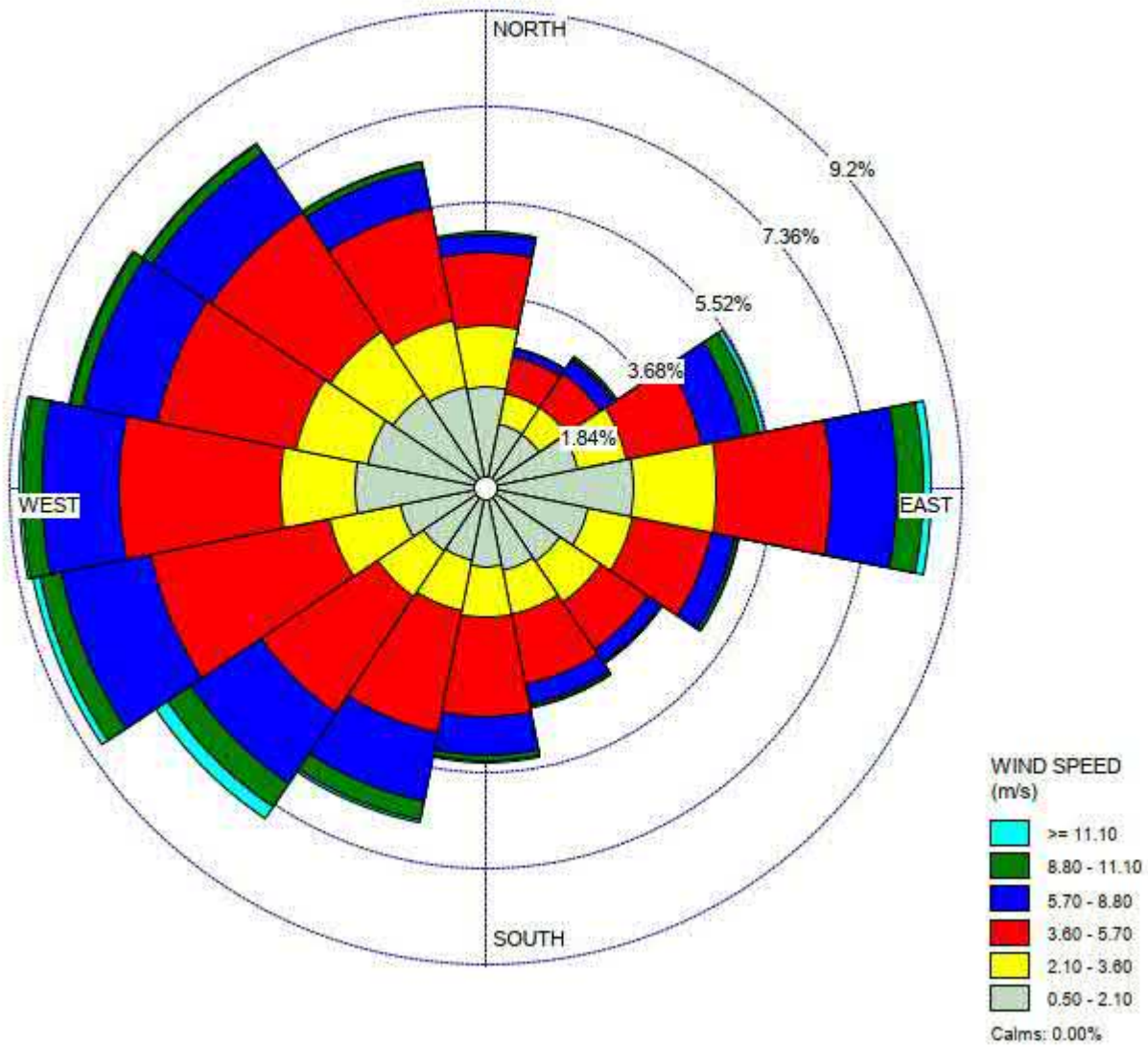


Figure 4

Wind Rose Plot

Wyandotte St and Florence Ave Proposed Development
Windsor, Ontario

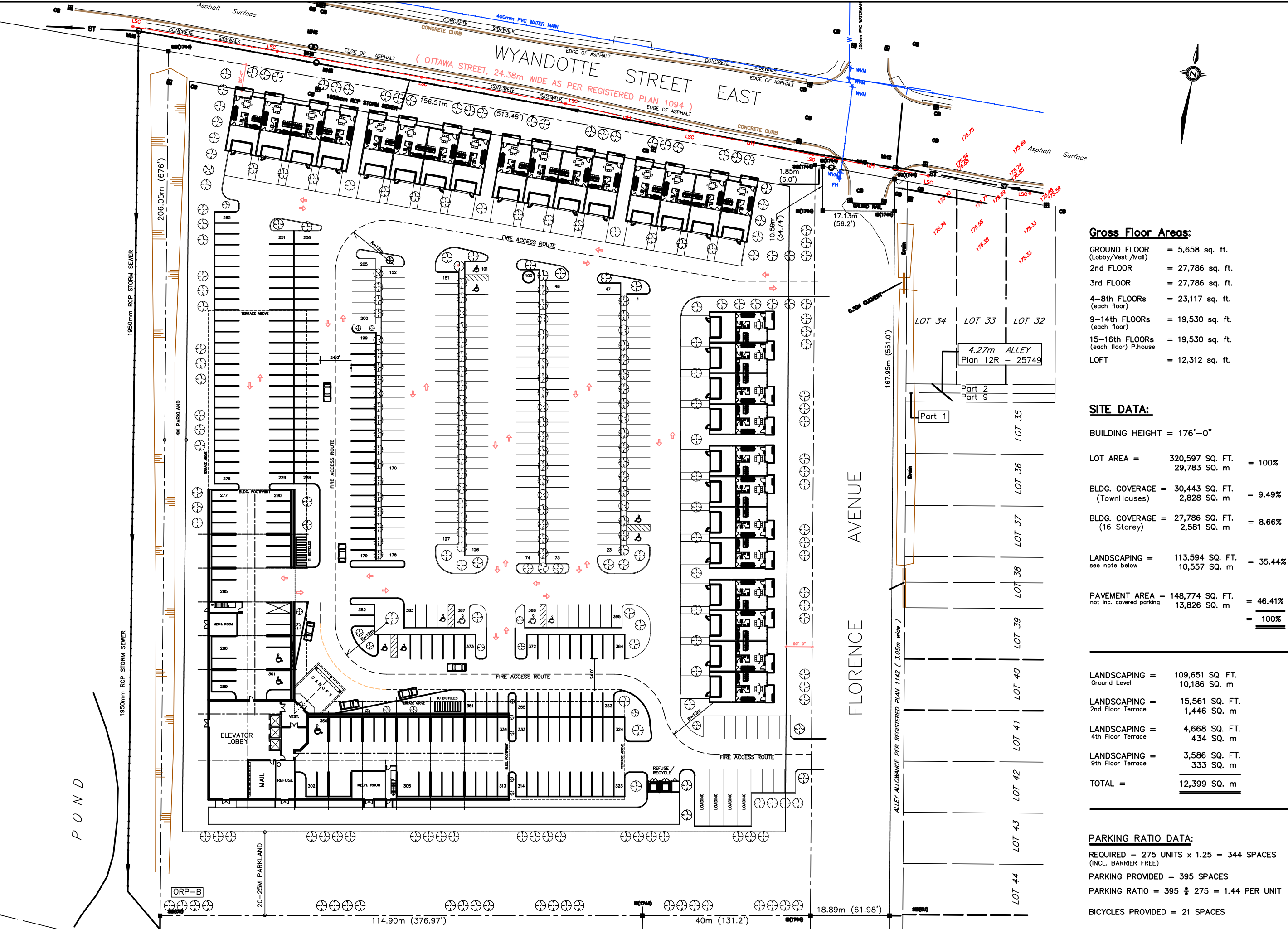


Project # 21-1691

January 2022

Appendix A

Site Plan and Architectural Drawings



Gross Floor Areas:

GROUND FLOOR (Lobby/Vest./Mail)	= 5,658 sq. ft.
2nd FLOOR	= 27,786 sq. ft.
3rd FLOOR	= 27,786 sq. ft.
4-8th FLOORs (each floor)	= 23,117 sq. ft.
9-14th FLOORs (each floor)	= 19,530 sq. ft.
15-16th FLOORs (each floor) P.house	= 19,530 sq. ft.
LOFT	= 12,312 sq. ft.

SITE DATA:

BUILDING HEIGHT	= 176'-0"
LOT AREA	= 320,597 SQ. FT. = 100%
BLDG. COVERAGE (TownHouses)	= 30,443 SQ. FT. = 9.49%
BLDG. COVERAGE (16 Storey)	= 27,786 SQ. FT. = 8.66%
LANDSCAPING	= 113,594 SQ. FT. = 35.44%
PAVEMENT AREA (not inc. covered parking)	= 148,774 SQ. FT. = 46.41%
	= 100%

LANDSCAPING = Ground Level	= 109,651 SQ. FT. = 10,186 SQ. m
LANDSCAPING = 2nd Floor Terrace	= 15,561 SQ. FT. = 1,446 SQ. m
LANDSCAPING = 4th Floor Terrace	= 4,668 SQ. FT. = 434 SQ. m
LANDSCAPING = 9th Floor Terrace	= 3,586 SQ. FT. = 333 SQ. m
TOTAL	= 12,399 SQ. m

PARKING RATIO DATA:

REQUIRED - 275 UNITS x 1.25	= 344 SPACES (INCL. BARRIER FREE)
PARKING PROVIDED	= 395 SPACES
PARKING RATIO	= 395 ÷ 275 = 1.44 PER UNIT
BICYCLES PROVIDED	= 21 SPACES

5.		
4.	OWNERS REVIEW	MAR. 17/23
3.	REVISED	FEB. 1/23
2.	REVISED PARKING / DATA	JAN. 30/23
1.	FOR REVIEW	DEC. /22
No.	ISSUED FOR	DATE

	A. DETAIL NO.
	B. LOCATION SHEET
	C. DETAILED ON

- ALL DIMENSIONS TO BE CHECKED AND VERIFIED ON THE JOB SITE.
 - ANY AND ALL DISCREPANCIES TO BE REPORTED TO THE ARCH. / ENGINEER.
 - ALL DRAWINGS REMAIN THE PROPERTY OF THE ARCHITECT.
 - DO NOT SCALE DRAWINGS.

PROJECT NAME AND LOCATION:
GANATCHIO GARDENS
 WYANDOTTE STREET EAST & FLORENCE AVENUE WINDSOR, ONTARIO.

DRAWING:
SITE PLAN / PARKING DATA

PROJECT NUMBER	2152
SCALE:	1"=30'-0"
DATE:	NOV. 2022
DRAWN BY:	JR
CHECKED BY:	V. V.
DRAWING NO.	

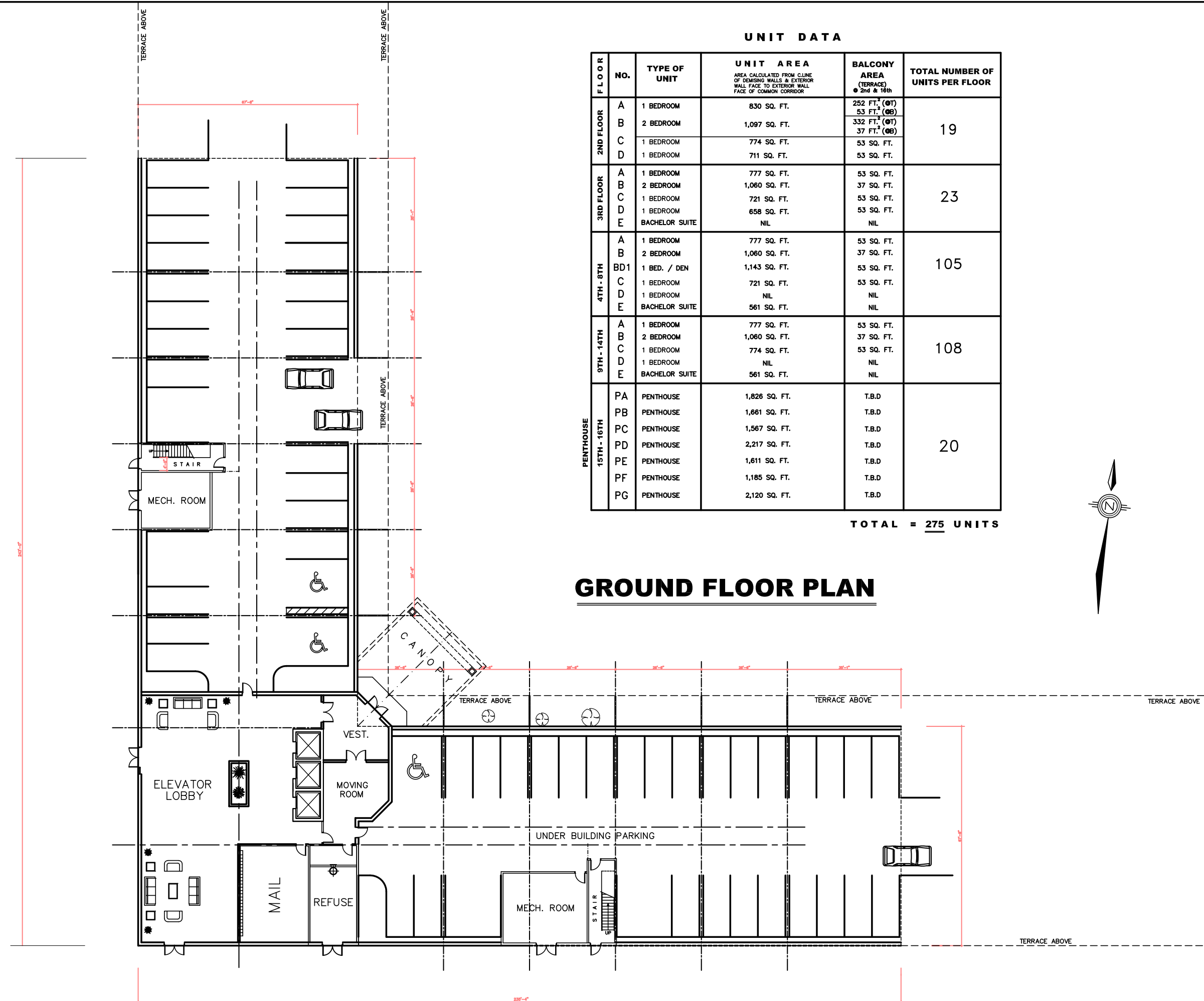
SP-1

UNIT DATA

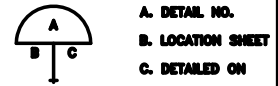
FLOOR	NO.	TYPE OF UNIT	UNIT AREA <small>AREA CALCULATED FROM CLINE OF DEMISING WALLS & EXTERIOR WALL FACE TO EXTERIOR WALL FACE OF COMMON CORRIDOR</small>	BALCONY AREA (TERRACE) <small>© 2nd & 16th</small>	TOTAL NUMBER OF UNITS PER FLOOR
2ND FLOOR	A	1 BEDROOM	830 SQ. FT.	252 FT. ² (ØT) 53 FT. ² (ØB)	19
	B	2 BEDROOM	1,097 SQ. FT.	332 FT. ² (ØT) 37 FT. ² (ØB)	
	C	1 BEDROOM	774 SQ. FT.	53 SQ. FT.	
	D	1 BEDROOM	711 SQ. FT.	53 SQ. FT.	
3RD FLOOR	A	1 BEDROOM	777 SQ. FT.	53 SQ. FT.	23
	B	2 BEDROOM	1,060 SQ. FT.	37 SQ. FT.	
	C	1 BEDROOM	721 SQ. FT.	53 SQ. FT.	
	D	1 BEDROOM	658 SQ. FT.	53 SQ. FT.	
	E	BACHELOR SUITE	NIL	NIL	
4TH - 8TH	A	1 BEDROOM	777 SQ. FT.	53 SQ. FT.	105
	B	2 BEDROOM	1,060 SQ. FT.	37 SQ. FT.	
	BD1	1 BED. / DEN	1,143 SQ. FT.	53 SQ. FT.	
	C	1 BEDROOM	721 SQ. FT.	53 SQ. FT.	
	D	1 BEDROOM	NIL	NIL	
9TH - 14TH	A	1 BEDROOM	777 SQ. FT.	53 SQ. FT.	108
	B	2 BEDROOM	1,060 SQ. FT.	37 SQ. FT.	
	C	1 BEDROOM	774 SQ. FT.	53 SQ. FT.	
	D	1 BEDROOM	NIL	NIL	
	E	BACHELOR SUITE	561 SQ. FT.	NIL	
PENTHOUSE 15TH - 16TH	PA	PENTHOUSE	1,826 SQ. FT.	T.B.D	20
	PB	PENTHOUSE	1,661 SQ. FT.	T.B.D	
	PC	PENTHOUSE	1,567 SQ. FT.	T.B.D	
	PD	PENTHOUSE	2,217 SQ. FT.	T.B.D	
	PE	PENTHOUSE	1,611 SQ. FT.	T.B.D	
	PF	PENTHOUSE	1,185 SQ. FT.	T.B.D	
	PG	PENTHOUSE	2,120 SQ. FT.	T.B.D	

TOTAL = 275 UNITS

GROUND FLOOR PLAN



5.		
4.		
3.	OWNERS REVIEW	MAR. 17/23
2.	REVISED	JAN. 27/23
1.	FOR REVIEW	DEC. /22
No.	ISSUED FOR	DATE



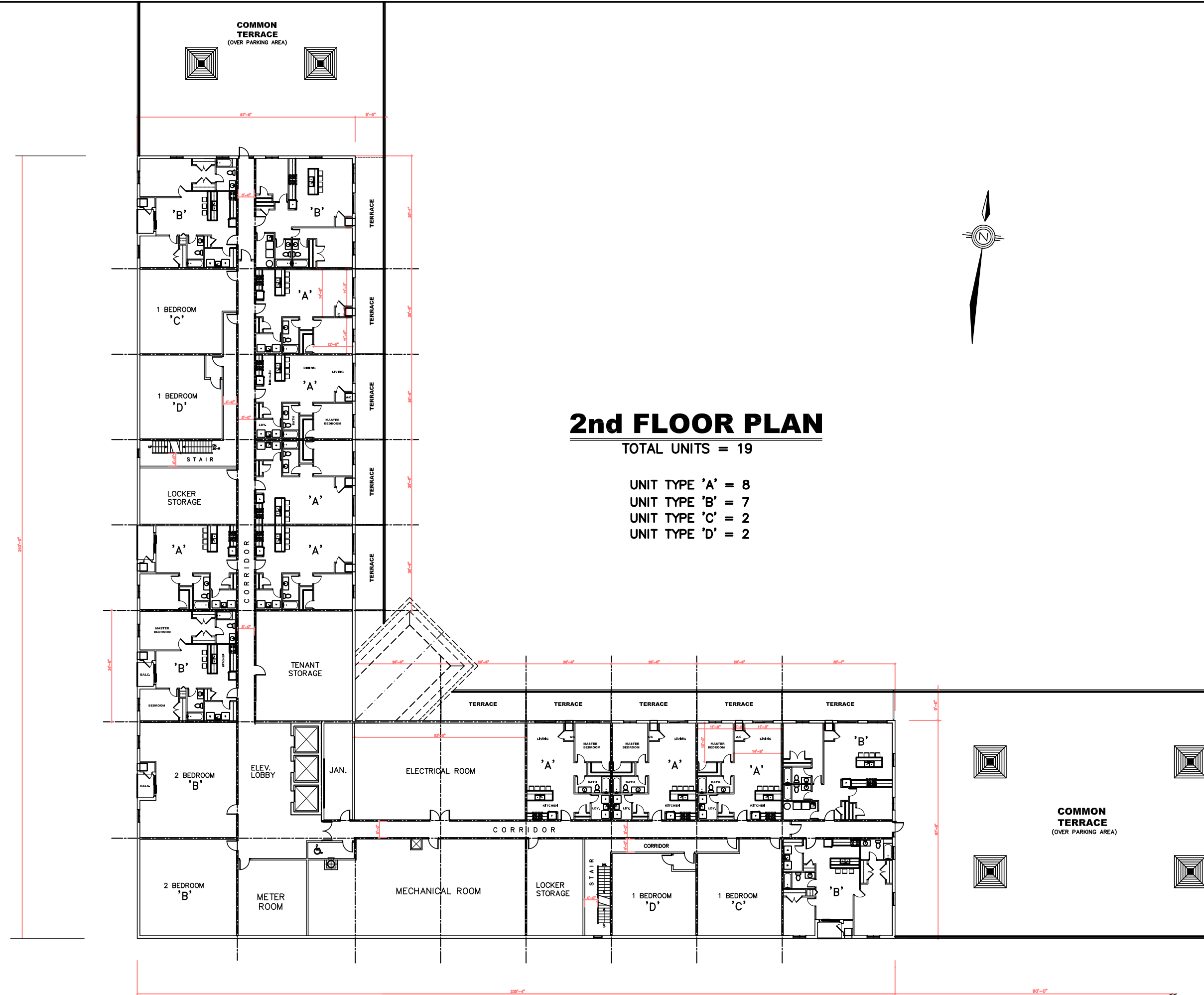
- ALL DIMENSIONS TO BE CHECKED AND VERIFIED ON THE JOB SITE.
 - ANY AND ALL DISCREPANCIES TO BE REPORTED TO THE ARCH. / ENGINEER.
 - ALL DRAWINGS REMAIN THE PROPERTY OF THE ARCHITECT.
 - DO NOT SCALE DRAWINGS.

PROJECT NAME AND LOCATION:
GANATCHIO GARDENS
 WYANDOTTE STREET EAST & FLORENCE AVENUE
 WINDSOR, ONTARIO.

DRAWING:
PROPOSED GROUND FLOOR PLAN

PROJECT NUMBER	2152
SCALE:	AS SHOWN
DATE:	NOV. 2022
DRAWN BY	JR
CHECKED BY	V. V.

DRAWING NO.
A-1

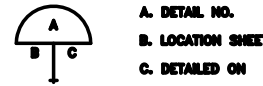


2nd FLOOR PLAN

TOTAL UNITS = 19

- UNIT TYPE 'A' = 8
- UNIT TYPE 'B' = 7
- UNIT TYPE 'C' = 2
- UNIT TYPE 'D' = 2

5.		
4.		
3.	OWNERS REVIEW	MAR. 17/23
2.	REVISED	JUN24/23
1.	FOR REVIEW	DEC. /22
No.	ISSUED FOR	DATE



- ALL DIMENSIONS TO BE CHECKED AND VERIFIED ON THE JOB SITE.
- ANY AND ALL DISCREPANCIES TO BE REPORTED TO THE ARCH. / ENGINEER.
- ALL DRAWINGS REMAIN THE PROPERTY OF THE ARCHITECT.
- DO NOT SCALE DRAWINGS.

PROJECT NAME AND LOCATION:
GANATCHIO GARDENS
WYANDOTTE STREET EAST &
FLORENCE AVENUE
WINDSOR, ONTARIO.

DRAWING:
PROPOSED 2ND FLOOR PLAN

PROJECT NUMBER	2152
SCALE:	AS SHOWN
DATE:	NOV. 2022
DRAWN BY	JR
CHECKED BY	V. V.

DRAWING NO.
A-2

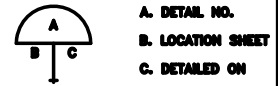


3rd FLOOR PLAN

TOTAL UNITS = 23

- UNIT TYPE 'A' = 12
- UNIT TYPE 'B' = 7
- UNIT TYPE 'C' = 2
- UNIT TYPE 'D' = 2
- 23

5.		
4.		
3.	OWNERS REVIEW	MAR. 17/23
2.	REVISED	JUN 24/23
1.	FOR REVIEW	DEC. /22
No.	ISSUED FOR	DATE



- ALL DIMENSIONS TO BE CHECKED AND VERIFIED ON THE JOB SITE.
- ANY AND ALL DISCREPANCIES TO BE REPORTED TO THE ARCH. / ENGINEER.
- ALL DRAWINGS REMAIN THE PROPERTY OF THE ARCHITECT.
- DO NOT SCALE DRAWINGS.

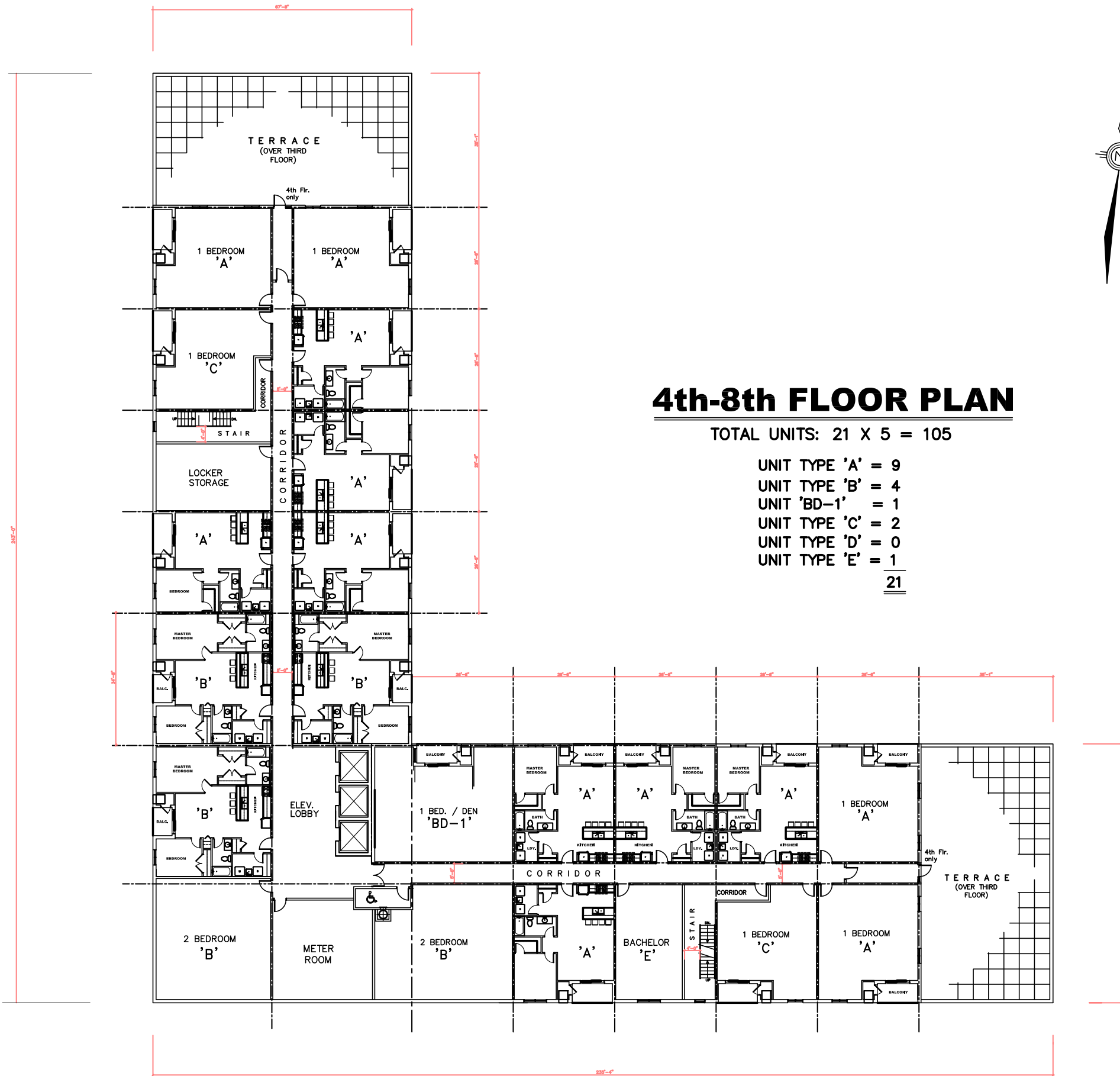
PROJECT NAME AND LOCATION:
GANATCHIO GARDENS

WYANDOTTE STREET EAST &
FLORENCE AVENUE
WINDSOR, ONTARIO.

DRAWING:
PROPOSED 3RD FLOOR PLAN

PROJECT NUMBER	2152
SCALE:	AS SHOWN
DATE:	NOV. 2022
DRAWN BY	JR
CHECKED BY	V. V.

DRAWING NO.
A-3

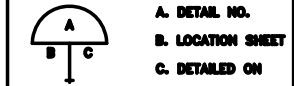


4th-8th FLOOR PLAN

TOTAL UNITS: 21 X 5 = 105

- UNIT TYPE 'A' = 9
- UNIT TYPE 'B' = 4
- UNIT 'BD-1' = 1
- UNIT TYPE 'C' = 2
- UNIT TYPE 'D' = 0
- UNIT TYPE 'E' = 1
- 21

5.		
4.		
3.	OWNERS REVIEW	MAR. 17/23
2.	REVISED	JUN24/23
1.	FOR REVIEW	DEC. /22
No.	ISSUED FOR	DATE



- ALL DIMENSIONS TO BE CHECKED AND VERIFIED ON THE JOB SITE.
- ANY AND ALL DISCREPANCIES TO BE REPORTED TO THE ARCH. / ENGINEER.
- ALL DRAWINGS REMAIN THE PROPERTY OF THE ARCHITECT.
- DO NOT SCALE DRAWINGS.

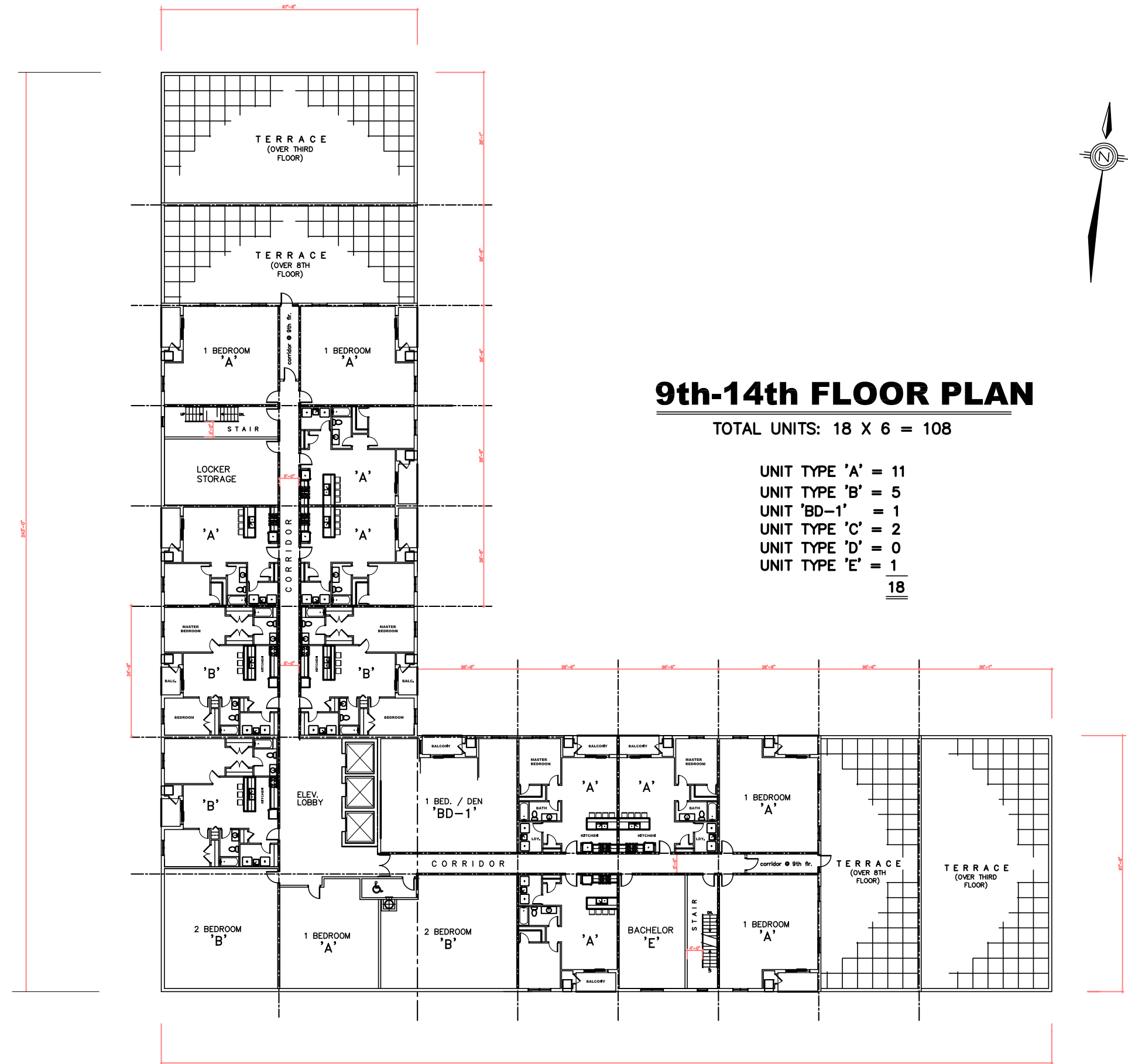
PROJECT NAME AND LOCATION:
GANATCHIO GARDENS

WYANDOTTE STREET EAST &
FLORENCE AVENUE
WINDSOR, ONTARIO.

DRAWING:
**4TH - 8TH
FLOOR PLAN**

PROJECT NUMBER	2152
SCALE:	AS SHOWN
DATE:	NOV. 2022
DRAWN BY	JR
CHECKED BY	V. V.

DRAWING NO.
A-4

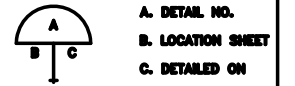


9th-14th FLOOR PLAN

TOTAL UNITS: 18 X 6 = 108

- UNIT TYPE 'A' = 11
- UNIT TYPE 'B' = 5
- UNIT 'BD-1' = 1
- UNIT TYPE 'C' = 2
- UNIT TYPE 'D' = 0
- UNIT TYPE 'E' = 1
- 18

5.		
4.		
3.	OWNERS REVIEW	MAR. 17/23
2.	REVISED	JUN 24/23
1.	FOR REVIEW	DEC. /22
No.	ISSUED FOR	DATE



- ALL DIMENSIONS TO BE CHECKED AND VERIFIED ON THE JOB SITE.
- ANY AND ALL DISCREPANCIES TO BE REPORTED TO THE ARCH. / ENGINEER.
- ALL DRAWINGS REMAIN THE PROPERTY OF THE ARCHITECT.
- DO NOT SCALE DRAWINGS.

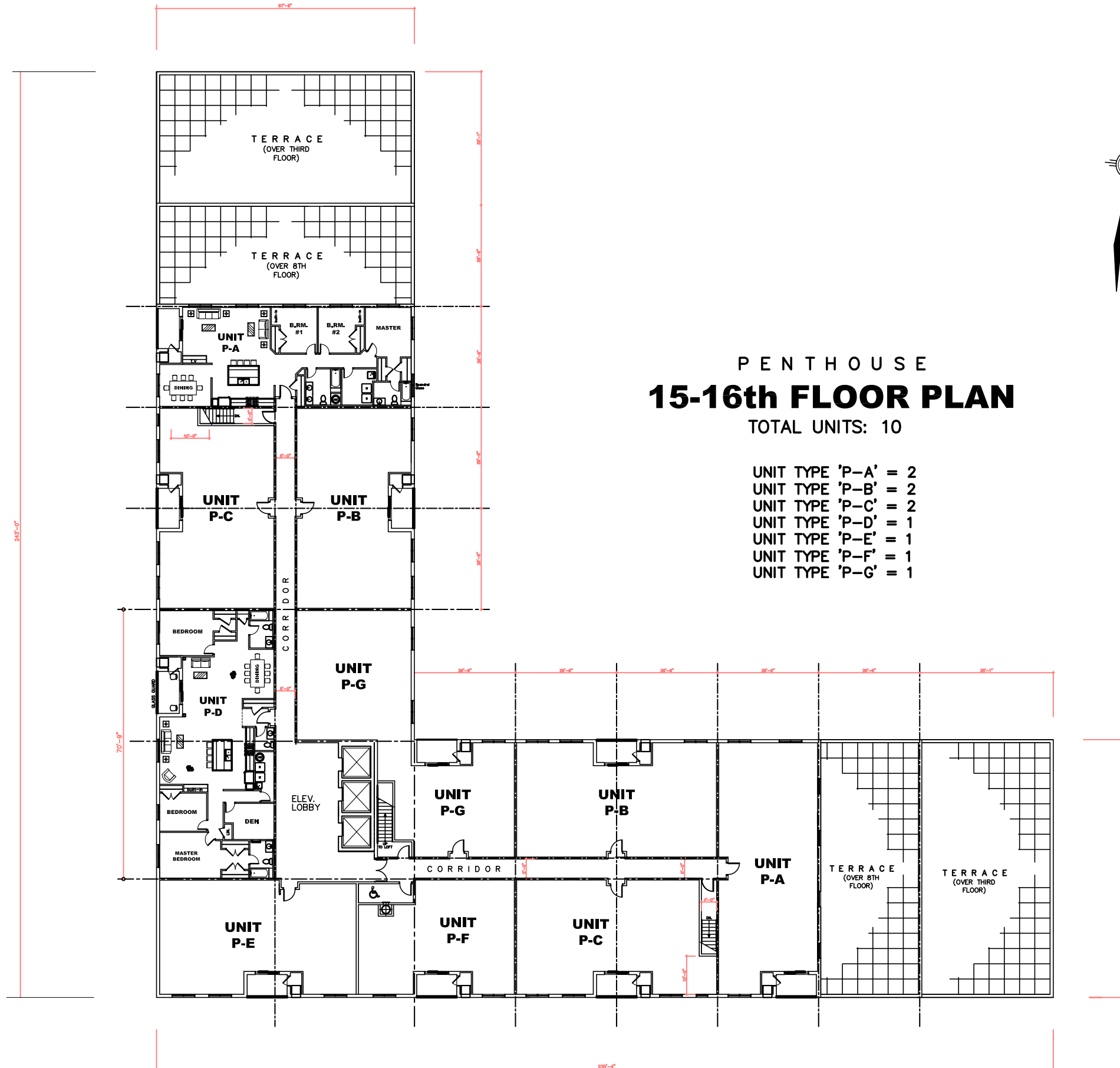
PROJECT NAME AND LOCATION:
GANATCHIO GARDENS

WYANDOTTE STREET EAST &
FLORENCE AVENUE
WINDSOR, ONTARIO.

DRAWING:
9TH - 14TH FLOOR PLAN

PROJECT NUMBER	2152
SCALE:	AS SHOWN
DATE:	NOV. 2022
DRAWN BY	JR
CHECKED BY	V. V.

DRAWING NO.
A-5

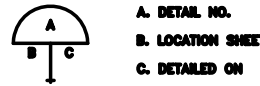


PENTHOUSE 15-16th FLOOR PLAN

TOTAL UNITS: 10

- UNIT TYPE 'P-A' = 2
- UNIT TYPE 'P-B' = 2
- UNIT TYPE 'P-C' = 2
- UNIT TYPE 'P-D' = 1
- UNIT TYPE 'P-E' = 1
- UNIT TYPE 'P-F' = 1
- UNIT TYPE 'P-G' = 1

5.		
4.		
3.	REVISED REVIEW	MMR. 11/22
2.	REVISED	JML/24/22
1.	FOR REVIEW	DEC. /22
No.	ISSUED FOR	DATE



- ALL DIMENSIONS TO BE CHECKED AND VERIFIED ON THE JOB SITE.
- ANY AND ALL DISCREPANCIES TO BE REPORTED TO THE ARCH. / ENGINEER.
- ALL DRAWINGS REMAIN THE PROPERTY OF THE ARCHITECT.
- DO NOT SCALE DRAWINGS.

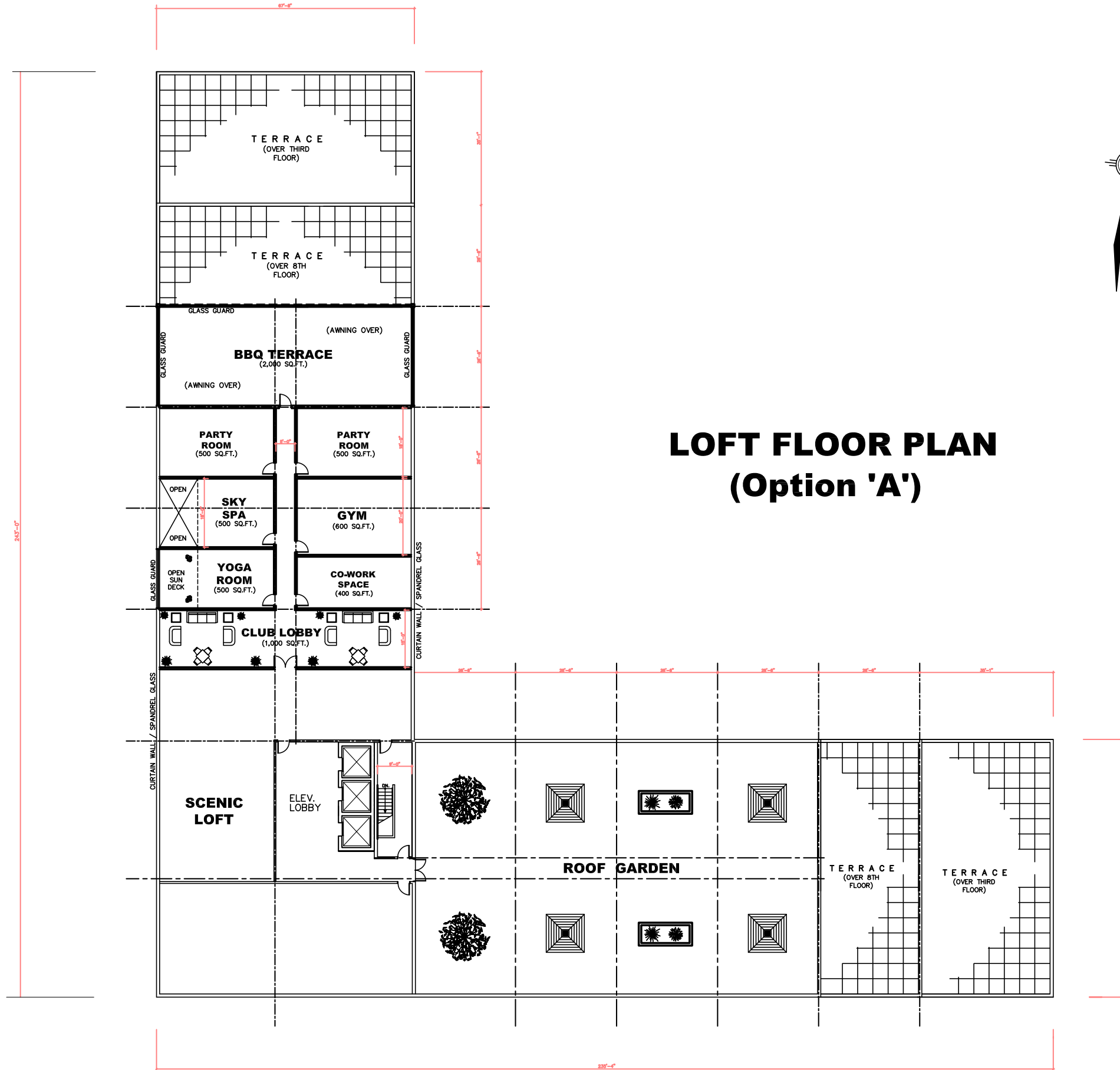
PROJECT NAME AND LOCATION:
GANATCHIO GARDENS

WYANDOTTE STREET EAST &
FLORENCE AVENUE
WINDSOR, ONTARIO.

DRAWING:
**PENTHOUSE
FLOOR PLANS**

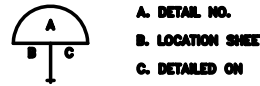
PROJECT NUMBER	2152
SCALE:	AS SHOWN
DATE:	NOV. 2022
DRAWN BY	JR
CHECKED BY	V. V.

DRAWING NO.
A-6



LOFT FLOOR PLAN (Option 'A')

5.		
4.		
3.	REVISED REVIEW	UNREVIEWED
2.	REVISED	UNREVIEWED
1.	FOR REVIEW	DEC. /22
No.	ISSUED FOR	DATE



- ALL DIMENSIONS TO BE CHECKED AND VERIFIED ON THE JOB SITE.
- ANY AND ALL DISCREPANCIES TO BE REPORTED TO THE ARCH. / ENGINEER.
- ALL DRAWINGS REMAIN THE PROPERTY OF THE ARCHITECT.
- DO NOT SCALE DRAWINGS.

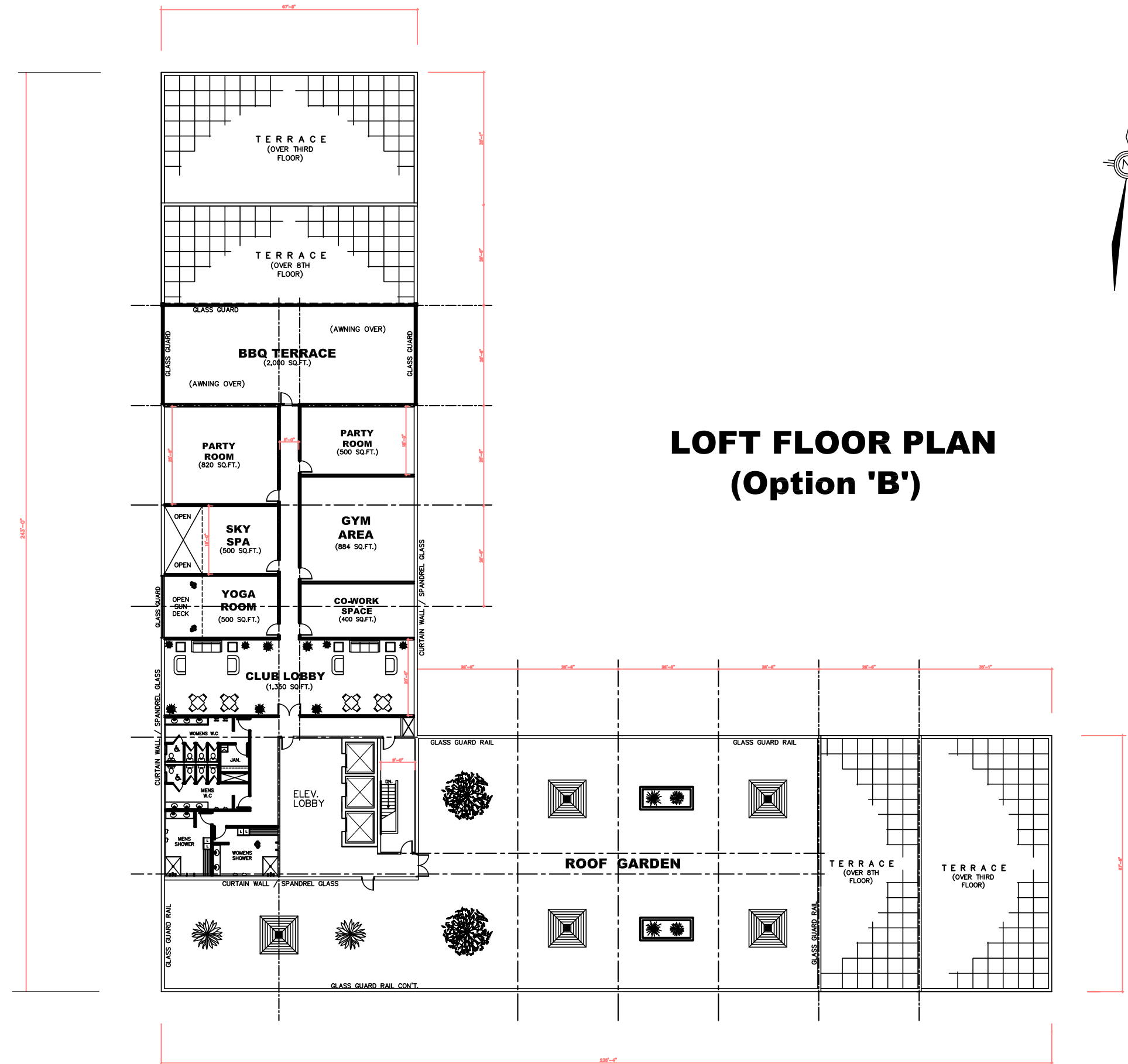
PROJECT NAME AND LOCATION:
GANATCHIO GARDENS

WYANDOTTE STREET EAST &
FLORENCE AVENUE
WINDSOR, ONTARIO.

DRAWING:
LOFT FLOOR PLAN

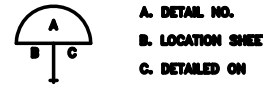
PROJECT NUMBER	2152
SCALE:	AS SHOWN
DATE:	NOV. 2022
DRAWN BY	JR
CHECKED BY	V. V.

DRAWING NO.
A-7



LOFT FLOOR PLAN (Option 'B')

5.		
4.		
3.	REVISED REVIEW	UNAPPROVED
2.	REVISED	UNAPPROVED
1.	FOR REVIEW	DEC. /22
No.	ISSUED FOR	DATE



- ALL DIMENSIONS TO BE CHECKED AND VERIFIED ON THE JOB SITE.
- ANY AND ALL DISCREPANCIES TO BE REPORTED TO THE ARCH. / ENGINEER.
- ALL DRAWINGS REMAIN THE PROPERTY OF THE ARCHITECT.
- DO NOT SCALE DRAWINGS.

PROJECT NAME AND LOCATION:
GANATCHIO GARDENS

WYANDOTTE STREET EAST &
FLORENCE AVENUE
WINDSOR, ONTARIO.

DRAWING:
LOFT FLOOR PLAN

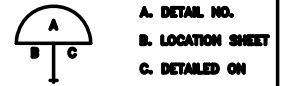
PROJECT NUMBER	2152
SCALE:	AS SHOWN
DATE:	NOV. 2022
DRAWN BY	JR
CHECKED BY	V. V.

DRAWING NO.
A-7a



PROPOSED NORTH ELEVATION

5.		
4.	REVISED TERRACE	MAR. 28/22
3.	OWNERS REVIEW	MAR. 17/22
2.	REVISED	FEB. 4/22
1.	FOR REVIEW	DEC. /22
No.	ISSUED FOR	DATE



- ALL DIMENSIONS TO BE CHECKED AND VERIFIED ON THE JOB SITE.
- ANY AND ALL DISCREPANCIES TO BE REPORTED TO THE ARCH. / ENGINEER.
- ALL DRAWINGS REMAIN THE PROPERTY OF THE ARCHITECT.
- DO NOT SCALE DRAWINGS.

PROJECT NAME AND LOCATION:
GANATCHIO GARDENS

WYANDOTTE STREET EAST &
FLORENCE AVENUE
WINDSOR, ONTARIO.

DRAWING:
NORTH ELEVATION

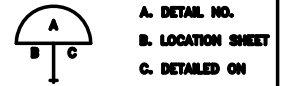
PROJECT NUMBER	2152
SCALE:	AS SHOWN
DATE:	NOV. 2022
DRAWN BY	JR
CHECKED BY	V. V.

DRAWING NO.
A-8



PROPOSED EAST ELEVATION

5.		
4.	REVISED TERRACE	MAR. 28/23
3.	OWNERS REVIEW	MAR. 17/23
2.	REVISED	FEB. 12/23
1.	FOR REVIEW	DEC. /22
No.	ISSUED FOR	DATE



- ALL DIMENSIONS TO BE CHECKED AND VERIFIED ON THE JOB SITE.
- ANY AND ALL DISCREPANCIES TO BE REPORTED TO THE ARCH. / ENGINEER.
- ALL DRAWINGS REMAIN THE PROPERTY OF THE ARCHITECT.
- DO NOT SCALE DRAWINGS.

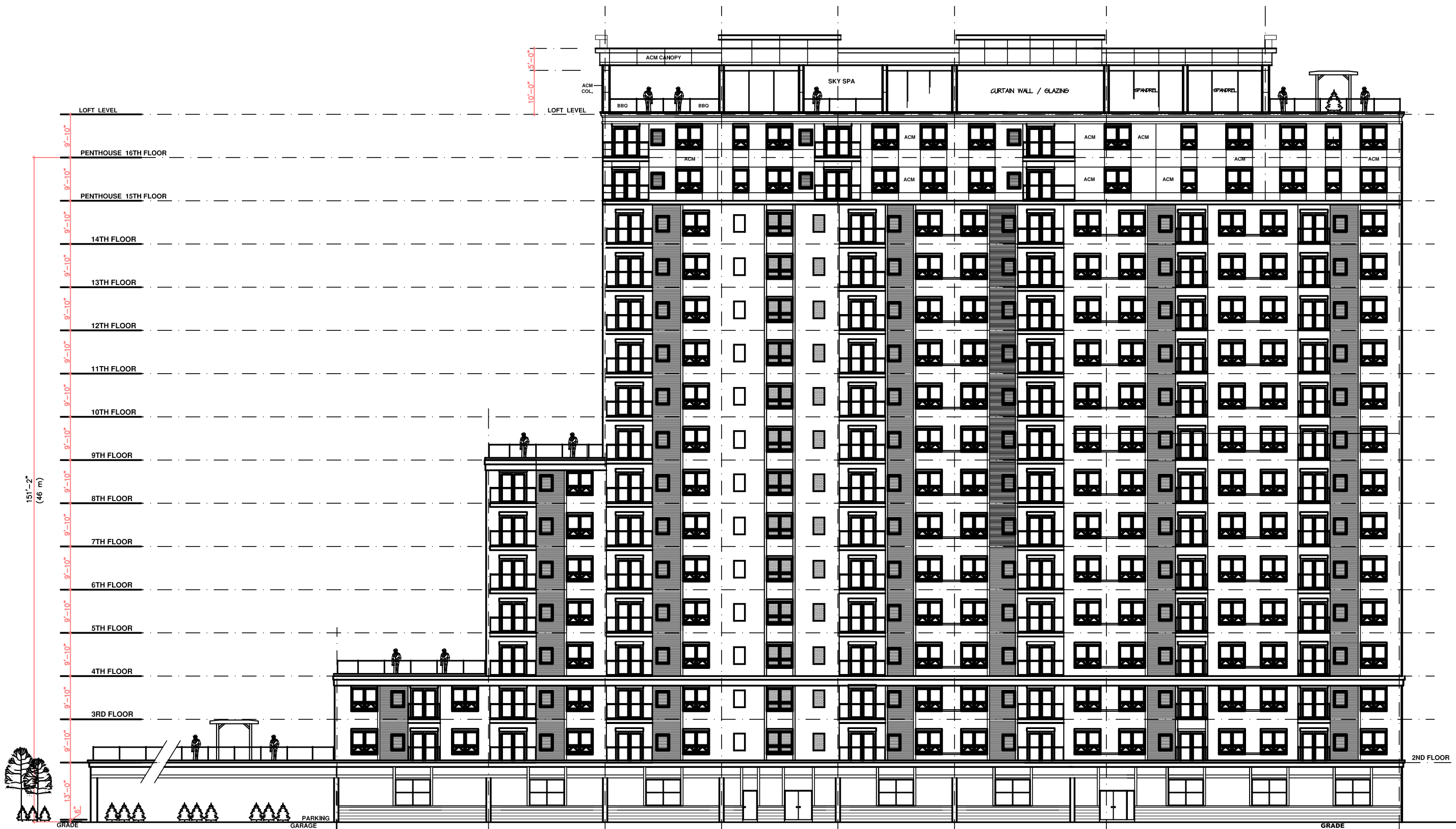
PROJECT NAME AND LOCATION:
GANATCHIO GARDENS

WYANDOTTE STREET EAST &
FLORENCE AVENUE
WINDSOR, ONTARIO.

DRAWING:
EAST ELEVATION

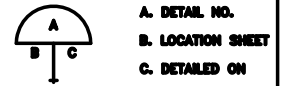
PROJECT NUMBER	2152
SCALE:	AS SHOWN
DATE:	NOV. 2022
DRAWN BY	JR
CHECKED BY	V. V.
DRAWING NO.	

A-9



PROPOSED WEST ELEVATION

No.	ISSUED FOR	DATE
5.	REVISED TERRACE	MAR. 28/23
4.	OWNERS REVIEW	MAR. 17/23
3.	REVISED LOFT	FEB. 19/23
2.	REVISED	FEB. 10/23
1.	FOR REVIEW	DEC. /22



- ALL DIMENSIONS TO BE CHECKED AND VERIFIED ON THE JOB SITE.
- ANY AND ALL DISCREPANCIES TO BE REPORTED TO THE ARCH. / ENGINEER.
- ALL DRAWINGS REMAIN THE PROPERTY OF THE ARCHITECT.
- DO NOT SCALE DRAWINGS.

PROJECT NAME AND LOCATION:
GANATCHIO GARDENS

WYANDOTTE STREET EAST &
FLORENCE AVENUE
WINDSOR, ONTARIO.

DRAWING:
WEST ELEVATION

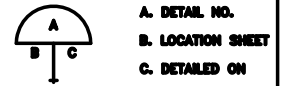
PROJECT NUMBER	2152
SCALE:	AS SHOWN
DATE:	NOV. 2022
DRAWN BY	JR
CHECKED BY	V. V.

DRAWING NO.
A-10



PROPOSED SOUTH ELEVATION

5.		
4.	REVISED TERRACE	MAR. 28/23
3.	OWNERS REVIEW	MAR. 17/23
2.	REVISED	FEB. 9/23
1.	FOR REVIEW	DEC. /22
No.	ISSUED FOR	DATE



- ALL DIMENSIONS TO BE CHECKED AND VERIFIED ON THE JOB SITE.
- ANY AND ALL DISCREPANCIES TO BE REPORTED TO THE ARCH. / ENGINEER.
- ALL DRAWINGS REMAIN THE PROPERTY OF THE ARCHITECT.
- DO NOT SCALE DRAWINGS.

PROJECT NAME AND LOCATION:
GANATCHIO GARDENS

WYANDOTTE STREET EAST &
FLORENCE AVENUE
WINDSOR, ONTARIO.

DRAWING:
SOUTH ELEVATION

PROJECT NUMBER	2152
SCALE:	AS SHOWN
DATE:	NOV. 2022
DRAWN BY	JR
CHECKED BY	V. V.

DRAWING NO.
A-11

Appendix B

Land Use Zoning Designation Plan

Zoning District Map 14

LEGEND:

- Zone Boundary¹
- Specific Zoning Exemptions²
- Specific Temporary Zoning Exemptions³
- Registered Plan Parcel Limits
- Ownership Parcel Limits
- Municipal Boundary Line
- Inland Watercourse Flood Prone Area⁴
- Detroit River/Lake St.Clair Flood Prone Area⁴

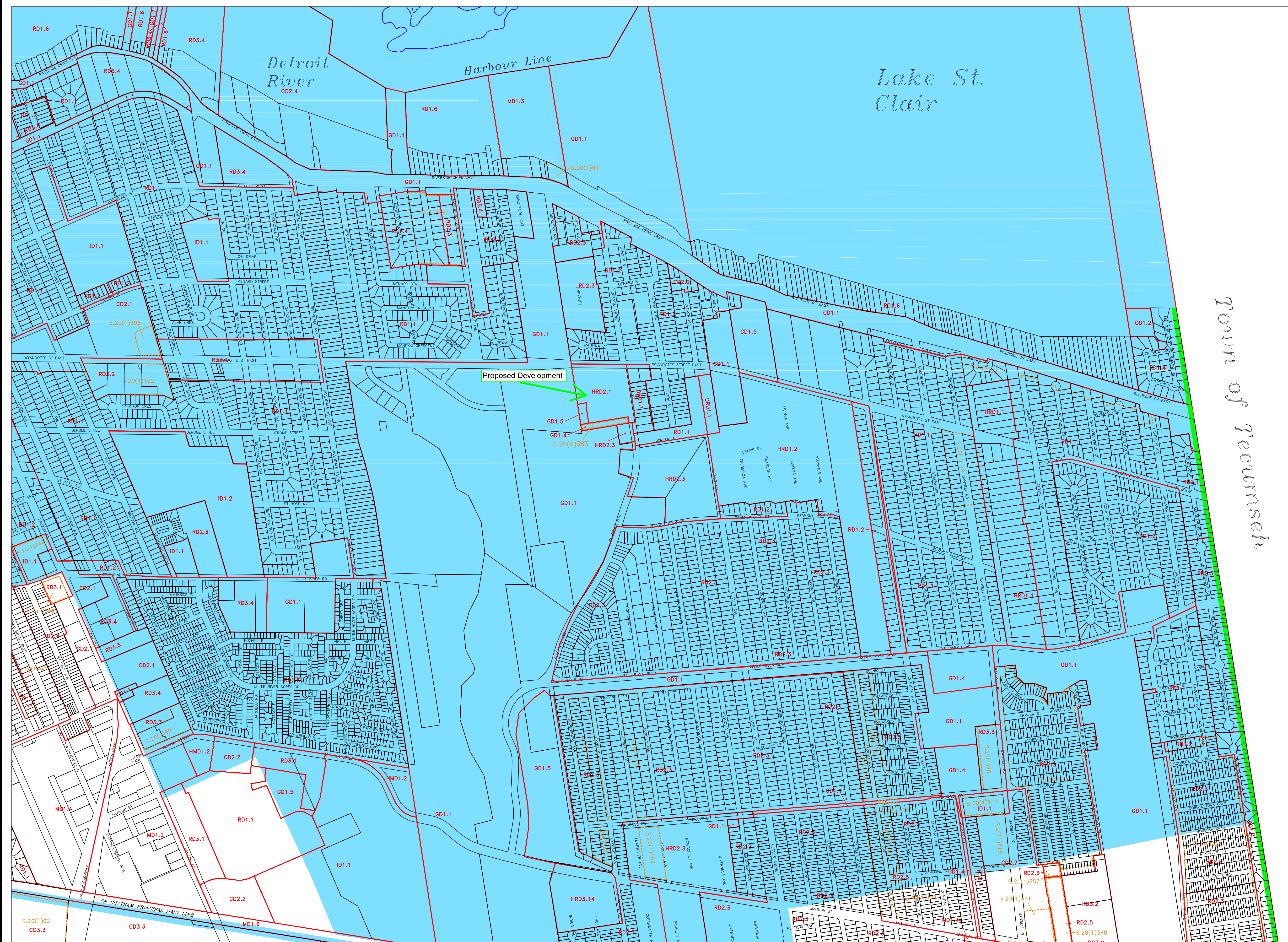
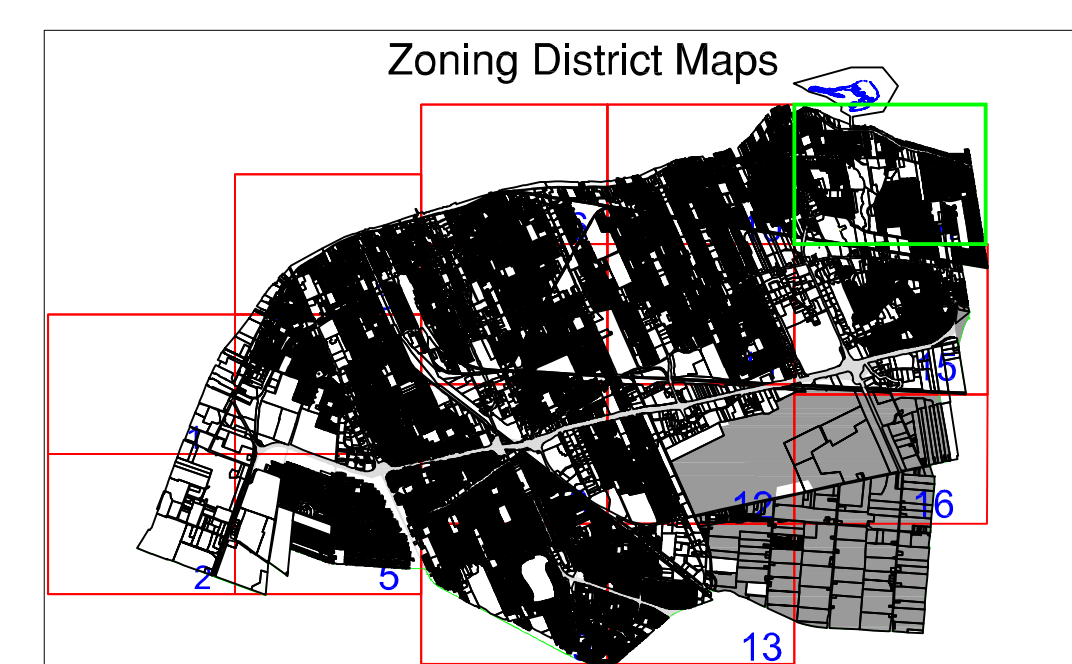
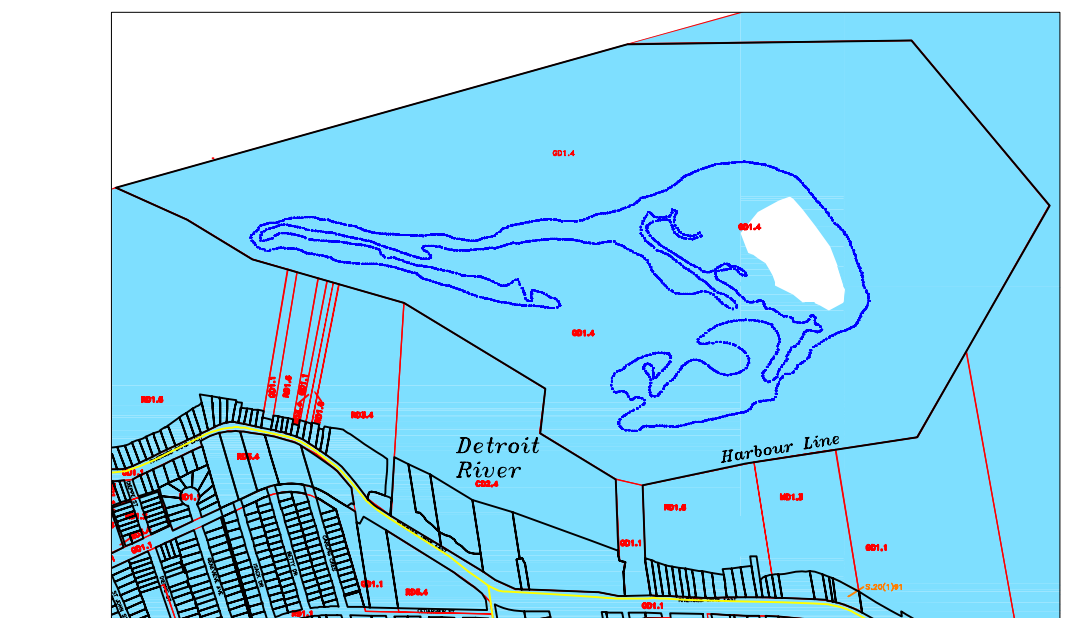
- NOTES:**
- Each Zoning District symbol corresponds to a zoning district set out in the text of By-law 8600 (i.e. CD1.1 - Commercial District 1.1.)
- | | |
|---|-------------------|
| RD1.1 - Residential District (Low Density) | - See Section 8 |
| RD1.2 - Residential District (Medium Density) | - See Section 9 |
| RD1.3 - Residential District (High Density) | - See Section 10 |
| RD2.1 - Residential District (Low Density) | - See Section 11 |
| RD2.2 - Residential District (Medium Density) | - See Section 12 |
| RD2.3 - Residential District (High Density) | - See Section 13 |
| RD3.1 - Residential District (Low Density) | - See Section 14 |
| RD3.2 - Residential District (Medium Density) | - See Section 15 |
| RD3.3 - Residential District (High Density) | - See Section 16 |
| RD3.4 - Residential District (High Density) | - See Section 17 |
| RD3.5 - Residential District (High Density) | - See Section 18 |
| RD3.6 - Residential District (High Density) | - See Section 19 |
| RD3.7 - Residential District (High Density) | - See Section 20 |
| RD3.8 - Residential District (High Density) | - See Section 21 |
| RD3.9 - Residential District (High Density) | - See Section 22 |
| RD3.10 - Residential District (High Density) | - See Section 23 |
| RD3.11 - Residential District (High Density) | - See Section 24 |
| RD3.12 - Residential District (High Density) | - See Section 25 |
| RD3.13 - Residential District (High Density) | - See Section 26 |
| RD3.14 - Residential District (High Density) | - See Section 27 |
| RD3.15 - Residential District (High Density) | - See Section 28 |
| RD3.16 - Residential District (High Density) | - See Section 29 |
| RD3.17 - Residential District (High Density) | - See Section 30 |
| RD3.18 - Residential District (High Density) | - See Section 31 |
| RD3.19 - Residential District (High Density) | - See Section 32 |
| RD3.20 - Residential District (High Density) | - See Section 33 |
| RD3.21 - Residential District (High Density) | - See Section 34 |
| RD3.22 - Residential District (High Density) | - See Section 35 |
| RD3.23 - Residential District (High Density) | - See Section 36 |
| RD3.24 - Residential District (High Density) | - See Section 37 |
| RD3.25 - Residential District (High Density) | - See Section 38 |
| RD3.26 - Residential District (High Density) | - See Section 39 |
| RD3.27 - Residential District (High Density) | - See Section 40 |
| RD3.28 - Residential District (High Density) | - See Section 41 |
| RD3.29 - Residential District (High Density) | - See Section 42 |
| RD3.30 - Residential District (High Density) | - See Section 43 |
| RD3.31 - Residential District (High Density) | - See Section 44 |
| RD3.32 - Residential District (High Density) | - See Section 45 |
| RD3.33 - Residential District (High Density) | - See Section 46 |
| RD3.34 - Residential District (High Density) | - See Section 47 |
| RD3.35 - Residential District (High Density) | - See Section 48 |
| RD3.36 - Residential District (High Density) | - See Section 49 |
| RD3.37 - Residential District (High Density) | - See Section 50 |
| RD3.38 - Residential District (High Density) | - See Section 51 |
| RD3.39 - Residential District (High Density) | - See Section 52 |
| RD3.40 - Residential District (High Density) | - See Section 53 |
| RD3.41 - Residential District (High Density) | - See Section 54 |
| RD3.42 - Residential District (High Density) | - See Section 55 |
| RD3.43 - Residential District (High Density) | - See Section 56 |
| RD3.44 - Residential District (High Density) | - See Section 57 |
| RD3.45 - Residential District (High Density) | - See Section 58 |
| RD3.46 - Residential District (High Density) | - See Section 59 |
| RD3.47 - Residential District (High Density) | - See Section 60 |
| RD3.48 - Residential District (High Density) | - See Section 61 |
| RD3.49 - Residential District (High Density) | - See Section 62 |
| RD3.50 - Residential District (High Density) | - See Section 63 |
| RD3.51 - Residential District (High Density) | - See Section 64 |
| RD3.52 - Residential District (High Density) | - See Section 65 |
| RD3.53 - Residential District (High Density) | - See Section 66 |
| RD3.54 - Residential District (High Density) | - See Section 67 |
| RD3.55 - Residential District (High Density) | - See Section 68 |
| RD3.56 - Residential District (High Density) | - See Section 69 |
| RD3.57 - Residential District (High Density) | - See Section 70 |
| RD3.58 - Residential District (High Density) | - See Section 71 |
| RD3.59 - Residential District (High Density) | - See Section 72 |
| RD3.60 - Residential District (High Density) | - See Section 73 |
| RD3.61 - Residential District (High Density) | - See Section 74 |
| RD3.62 - Residential District (High Density) | - See Section 75 |
| RD3.63 - Residential District (High Density) | - See Section 76 |
| RD3.64 - Residential District (High Density) | - See Section 77 |
| RD3.65 - Residential District (High Density) | - See Section 78 |
| RD3.66 - Residential District (High Density) | - See Section 79 |
| RD3.67 - Residential District (High Density) | - See Section 80 |
| RD3.68 - Residential District (High Density) | - See Section 81 |
| RD3.69 - Residential District (High Density) | - See Section 82 |
| RD3.70 - Residential District (High Density) | - See Section 83 |
| RD3.71 - Residential District (High Density) | - See Section 84 |
| RD3.72 - Residential District (High Density) | - See Section 85 |
| RD3.73 - Residential District (High Density) | - See Section 86 |
| RD3.74 - Residential District (High Density) | - See Section 87 |
| RD3.75 - Residential District (High Density) | - See Section 88 |
| RD3.76 - Residential District (High Density) | - See Section 89 |
| RD3.77 - Residential District (High Density) | - See Section 90 |
| RD3.78 - Residential District (High Density) | - See Section 91 |
| RD3.79 - Residential District (High Density) | - See Section 92 |
| RD3.80 - Residential District (High Density) | - See Section 93 |
| RD3.81 - Residential District (High Density) | - See Section 94 |
| RD3.82 - Residential District (High Density) | - See Section 95 |
| RD3.83 - Residential District (High Density) | - See Section 96 |
| RD3.84 - Residential District (High Density) | - See Section 97 |
| RD3.85 - Residential District (High Density) | - See Section 98 |
| RD3.86 - Residential District (High Density) | - See Section 99 |
| RD3.87 - Residential District (High Density) | - See Section 100 |

An H symbol preceding the zoning district symbol represents a hold on the issuance of a building permit until specific development preconditions have been satisfied. Subsection 21(13) specifies the uses permitted until such time as the H symbol is removed by an amending by-law approved by Council.

2. See Subsection 20(1) and the relevant clause for the specific special provisions.
3. See Subsection 20(2) and the relevant clause for the specific special provisions.

4. Represents the approximate limits of land subject of potential flooding along the Detroit River, Lake St. Clair and inland watercourses as determined by the Essex Region Conservation Authority (ERCA). Within these areas, buildings or structures are generally restricted and possibly prohibited. Application for building permits will be referred to ERCA for its review and the issuance of permits prior to the issuance of any building permit by the City of Windsor.

REVISIONS			
DATE:	BY-LAW #	DATE:	BY-LAW #
04/07/08	86-2008	20/08/20	26-2020
18/03/09	169-2008	15/12/20	150-2020
03/09/09	83-2009	27/01/21	161-2020
03/09/09	88-2009	27/05/21	31-2021
03/09/09	90-2009		
29/12/09	159-2009		
29/12/09	160-2009		
28/10/10	165-2010		
03/03/11	39-2011		
30/03/11	69-2011		
17/05/11	95-2011		
24/06/11	119-2011		
02/05/11	274-2003		
18/10/11	140-2011		
15/06/06	101-2006		
16/10/12	129-2012		
01/11/12	288-2003		
22/02/13	114-2012		
06/09/13	57-2013		
09/04/14	56-2014		
08/09/14	151-2014		
15/05/15	45-2015		
10/08/15	107-2015		
11/09/15	150-2015		
29/02/16	21-2016		
25/07/16	111-2016		
02/10/16	122-2016		
12/06/17	65-2017		
06/07/17	94-2017		
12/06/18	69-2018		
19/05/18	65-2018		
23/07/18	69-2018		
31/07/18	106-2018		
31/07/18	110-2018		
01/03/19	21-2019		
15/04/19	38-2019		
11/03/20	137-2019		
11/03/20	31-2020		

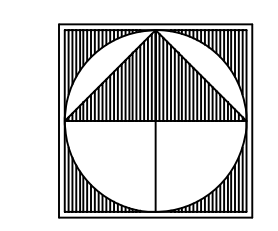


Town of Tecumseh

This forms Part of Schedule 'A'.

City of Windsor Zoning By-law 8600

Scale 1:6000



Zoning District Map 14

Appendix C

*Municipal Sewage Works ECA Number 4681-
BT3L39*

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 4681-BT3L39

Issue Date: January 29, 2021

The Corporation of the City of Windsor
 4155 Ojibway Pky
 Windsor, Ontario
 N9A 6S1

Site Location: Little River Pollution Control Plant
 9400 Little River Road
 City of Windsor, County Of Essex

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act , R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

usage and operation of existing municipal sewage works, for the treatment of sanitary sewage and disposal of effluent to Little River via a Sewage Treatment Plant (Little River Wastewater Treatment Plant) and Final Effluent disposal facilities as follows:

Classification of Collection System: Separate Sanitary Sewer System

Classification of Sewage Treatment Plant: Secondary

Design Capacity of Sewage Treatment Plant

Design Capacity with All Treatment Trains in Operation	Existing Works
Rated Capacity	72,800 m ³ /d

Influent and Imported Sewage

Receiving Location	Types
In Collection System	Sanitary Sewage
At Sewage Treatment Plant	Leachate

Existing Works:

Little River Wastewater Treatment Plant (WWTP)

Leachate Unloading Facility

- one (1) storage tank with a total effective storage volume of 734 m³, designed to receive up to 210 m³/d of leachate from Landfill #3 and Essex-Windsor Regional Landfill;

- one (1) submersible pump rated at 2.31 L/s at a total dynamic head (TDH) of 10 m, discharging to the inlet chamber;
- one (1) leachate metering gravity drain line;

Influent Sewers

- one (1) 1,500 mm diameter sanitary sewer and one (1) 900 mm diameter sanitary sewer to the Preliminary Treatment System;

Preliminary Treatment System

- inlet chamber and screening
 - a 13.4 m x 6.4 m inlet chamber consisting of two (2) screen channels, each equipped with an automatically cleaned bar screen with 19 mm clear openings, inlet and outlet isolating sluice gates;
 - a 1,800 mm diameter sewer to the raw sewage pumping station;
- Raw Sewage Pumping Station
 - a 16.9 m x 2.21 m with 8.4 m depth wet well;
 - one (1) vertical centrifugal pump (RSP#1) rated at 56.4 m³/min. at a TDH of 16.2 m, equipped with variable speed drive;
 - one (1) vertical centrifugal pump (RSP#2) rated at 59.0 m³/min. at a TDH of 16.6 m, equipped with constant speed drive;
 - one (1) vertical centrifugal pump (RSP#3) rated at 59.0 m³/min. at a TDH of 16.6 m, equipped with variable speed drive;
 - one (1) vertical centrifugal pump (RSP#4) rated at 60.9 m³/min. at a TDH of 17.1 m, equipped with constant speed drive;
 - two (2) 600 mm diameter forcemains on easements from Raw Sewage Pumping Station to inlet feed channels at the Grit Removal Facility;
- Grit Removal
 - two (2) 7.92 x 7.92 m grit separators equipped with mechanical grit removal mechanism and reciprocating rake type grit clarifier;
 - two (2) 1.22 m x 3.05 m deep channels to the Flow Distribution Chamber and overflow through storm overflow weirs and sluice gates via a 1070 mm diameter overflow pipe to the Storm Overflow Chamber;

Flow Distribution/Areated Chamber

- one (1) 7.92 m x 7.92 m with nominal depth of 5.69 m flow distribution/aerated chamber located downstream of the Storm Overflow Chamber and Influent Flow Measurement Facility, equipped with six (6) downward opening weir type outlet side gates and discharging to the primary clarifiers of Plant #1 and Plant #2 and two (2) by-pass gates, electric motor operators, handwheel operators;

Storm Overflow Chamber

- one (1) storm overflow chamber to the overflow disinfection system;

Influent Flow Measurement and Sampling Point

- flow measurement device at the two (2) 1.22 m x 3.05 m deep channels;
- automatic composite sampler at the Raw Sewage Pumping Station;

Plant 1

Primary Treatment System

- four (4) 24.4 m diameter by 2.74 m side water depth (SWD), centre feed type primary clarifiers (PSTs #1 to #4), each equipped with sludge storage and thickening compartment, each having a hydraulic capacity of 9,092 m³/d, discharging to aeration tanks;
- sludge collection mechanisms and scum removal systems;
- two (2) sludge and scum pumps for PST #1 and PST #2, each with a maximum capacity of 750 L/min;
- two (2) sludge and scum pumps for PST #3 and PST #4, with a maximum capacity of 750 L/min and a maximum capacity of 662 L/min;
- one (1) washwater pump with a capacity of 1,893 L/min at a TDH of 70 m;

Secondary Treatment Systems

- Biological Treatment
 - four (4) 37.5 m x 9.1 m x 3.9 m SWD aeration tanks, each equipped with fine bubble aeration system and divided into four

(4) 9.1 m square compartments by a baffle wall, discharging to the secondary settling tanks, discharging to the secondary settling tanks;

- anoxic selector zones in first stage AT #1, AT #3 and AT #4;
- 900 mm diameter interconnection to aeration tanks in Plant 2;
- four (4) multistage centrifugal air blowers rated at 2,975 m³/h at 49 kPa and 3,600 rpm;
- Secondary Sedimentation
 - four (4) 24.4 m diameter with 2.74 m SWD, centre feed type secondary settling tanks (FSTs #1 to #4) with sludge collection mechanisms and scum removal system, discharging to an effluent disinfection system;
 - one (1) 5.7 m x 2.59 m x 3.15 m activated sludge pump well;
 - two (2) variable speed vertical centrifugal return activated sludge pumps (RAS #6 and RAS #7), each rated at 13.2 m³/min at a TDH of 10.7 m and 1,200 rpm;
 - one (1) constant speed return activated sludge pump (RAS #5) rated at 15.1 m³/min at a TDH of 10.7 m and 870 rpm;

Effluent Aeration System

- an aeration chamber with fine bubble are diffusers, two (2) centrifugal type are blowers with a rated capacity of 470 m³/h at 4,75 psi gauge pressure, discharging to the disinfection system;

Disinfection System

- two (2) 1.46 m wide channels each equipped with 352 ultraviolet germicidal lamps to disinfect effluent serving FSTs #1 to #4, discharging to final effluent disposal facility;

Final Effluent Flow Measurement and Sampling Point

- flow measurement device installed in the outlet channel, for measuring Plant 1 flow;
- automatic composite sampler at outlet of disinfection channel;

Final Effluent Disposal Facilities

- one (1) 0.94 m wide x 1.575 m deep outlet channel, discharging to an elliptical underground pipe;
- 0.96 m x 1.52 m elliptical underground pipe connected to the outfall chamber (outfall No. 1) discharging to the Little River;

Effluent Water System

- one (1) effluent water system with two (2) centrifugal pumps, each rated at 11.4 L/s at a TDH of 47 m, a hydropneumatic pressure tank, sourcing effluent water from the contact chamber;
- a back-up connection to the municipal water supply;

Plant 2

Primary Treatment System

- two (2) 30.5 m diameter with 3.35 m SWD, centre feed type primary clarifiers (PSTs #5 and #6), each equipped with sludge storage and thickening compartment, each having a hydraulic capacity of 18,184 m³/d, discharging to the aeration tanks;
- sludge collection mechanisms and scum removal systems;
- two (2) sludge and scum pumps for PST #5 and PST #6, each with a maximum capacity of 908 L/min;
- one (1) washwater pump with a capacity of 1,893 L/min at a TDH of 70 m;

Secondary Treatment Systems

- Biological Treatment
 - six (6) 30.5 m x 7.6 m with an average liquid depth of 6.04 m aeration tanks (ATs #9 to #14), each equipped with fine bubble air diffusers and divided into two (2) 7.6 m square compartments and one (1) 14.7 m x 7.6 m compartment by a baffle walls;
 - anoxic selector zones in first stage AT#10, AT#11 and AT#14;
 - 900 mm diameter interconnection to aeration tanks in Plant 1;
 - three (3) multistage centrifugal air blowers rated at 3,960 m³/h at 61 kPa and 3,600 rpm;
- Secondary Sedimentation
 - two (2) 37.4 m diameter with 4.01 m SWD, centre feed type secondary settling tanks (FSTs #5 and #6) with sludge collection mechanisms and scum removal system, discharging to the disinfection system;
 - one (1) 7.9 m x 2.59 m x 2.0 m x 4.98 m activated sludge pump well;
 - two (2) variable speed vertical centrifugal return activated sludge pumps (RAS #1 and #2), each rated at 12.7 m³/min at a TDH of 5.8 m and 875 rpm, one (1) constant speed return activated sludge pump (RAS #3), rated at 12.7 m³/min at a TDH of 5.8 m and 875 rpm, discharging to the aeration tanks distribution chamber;
 - one (1) constant speed waste activated sludge pump, rated at 1.1 m³/min at a TDH of 8.4 m and 1,750 rpm, discharging to the sludge management system;

Disinfection System

- two (2) 1.08 m wide channels each equipped with 265 ultraviolet germicidal lamps to disinfect effluent serving FSTs #5 and #6, discharging to the final effluent disposal facility;

Final Effluent Disposal Facilities

- a 1.83 m wide effluent aeration channel equipped with fine bubble are diffusers, equipped with two (2) centrifugal type are blowers with a rated capacity of 635 m³/h at 4 psi gauge pressure;
- a 1050 mm diameter pipe to outfall chamber to Little River;

Final Effluent Flow Measurement and Sampling Point

- flow measurement device at outlet of effluent aeration channel;
- automatic composite sampler at outlet of disinfection channel;

Effluent Water System

- one (1) effluent water system with one (1) centrifugal pump rated at 3.15 L/s at a TDH of 61 m, a hydropneumatic pressure tank, sourcing effluent water from the effluent aeration channel;

Overflow Disinfection System

- a double wall sodium hypochlorite storage tank with a storage capacity of 24.5 m³, located within a containment area, equipped with diaphragm metering pumps and contact chamber, for the disinfection of overflow from storm overflow chamber to the outfall chamber (outfall No. 1), and serves as a back up to UV disinfection System for Plant 1;

Supplementary Treatment System

- Phosphorus Removal
 - three (3) vertical, circular, fibreglass reinforced, above ground outdoor phosphorus removal chemical storage tanks with two (2) tanks having a storage capacity of 56,750 L capacity and one (1) tank having a storage capacity of 63,560 L;
 - two (2) diaphragm metering feed pumps with a maximum capacity of 341 L/h, from the storage tanks to the raw sewage flow upstream of primary clarifiers;

Sludge Management System

- Sludge Dewatering

- two (2) inclined macerator pumps, discharging to one (1) 3.65 m x 2.4 m x 3,5 m sludge holding tank;
 - three (3) variable speed progressive cavity pumps, each rated at up to 1,120 L/min at a TDH of 28.2 m and 265 rpm;
 - three (3) solid bowl centrifuges, each rated at up to 34.2 m³/h operating at 2,600 rpm;
 - polymer feed system, sludge cake transport system and odour control system;
 - a truck loading system capable of loading two (2) trucks consecutively and simultaneously with eight (8) sludge discharge port;
- Sludge Condition System
 - two (2) polymer batching and feed system to aid in bulking of solids in the centrifuges, consisting of:
 - one (1) dry polymer batch feeding and wetting unit for metering dry polymer from a bulk bag supply to prepare polymer solution and transfer it to either of the two (2) mixing/holding tank, capable of supplying up to 1.25 L/s of solution;
 - two (2) mixing/holding tanks, each with a capacity of 3,028 L, stainless steel mixing impeller, alternate on a fill-use cycle;
 - three (3) single positive displacement, progressing cavity type polymer pump with variable speed drive to pump polymer solution through static mixer to the centrifuge, with rated capacity of 4 to 60 L/min at a maximum pressure of 50 psi;
 - three (3) polymer dilution and mixing units (one unit per polymer pumps) with rotameter and static mixer;
 - three water meters to measure and record dilution water used when doing polymer to suction side of the sludge feed pumps;

Odour Control Facility

- one (1) odour control unit for removing odours resulting from primary sludge, domestic and industrial waste, and activated sludge secondary treatment facilities;
- one (1) above ground hypochlorite storage tank with a capacity of 2,400 L;

including all other mechanical system, electrical system, instrumentation and control system, standby power system, piping, pumps, valves and appurtenances essential for the proper, safe and reliable operation of the Works in accordance with this Approval, in the context of process performance and general principles of wastewater engineering

only;

all in accordance with the submitted supporting documents listed in Schedule A.

For the purpose of this environmental compliance approval, the following definitions apply:

1. "Annual Average Daily Influent Flow" means the cumulative total sewage flow of Influent to the Sewage Treatment Plant during a calendar year divided by the number of days during which sewage was flowing to the Sewage Treatment Plant that year;
2. "Approval" means this environmental compliance approval and any schedules attached to it, and the application;
3. "BOD5" (also known as TBOD5) means five day biochemical oxygen demand measured in an unfiltered sample and includes carbonaceous and nitrogenous oxygen demands;
4. "Bypass" means diversion of sewage around one or more treatment processes, excluding Preliminary Treatment System, within the Sewage Treatment Plant with the diverted sewage flows being returned to the Sewage Treatment Plant treatment train upstream of the Final Effluent sampling point(s) and discharged via the approved effluent disposal facilities;
5. "CBOD5" means five day carbonaceous (nitrification inhibited) biochemical oxygen demand measured in an unfiltered sample;
6. "Director" means a person appointed by the Minister pursuant to section 5 of the EPA for the purposes of Part II.1 of the EPA;
7. "District Manager" means the District Manager of the appropriate local district office of the Ministry where the Works is geographically located;
8. "*E. coli*" refers to coliform bacteria that possess the enzyme beta-glucuronidase and are capable of cleaving a fluorogenic or chromogenic substrate with the corresponding release of a fluorogen or chromogen, that produces fluorescence under long wavelength (366 nm) UV light, or color development, respectively. Enumeration methods include tube, membrane filter, or multi-well procedures. Depending on the method selected, incubation temperatures include 35.5 ± 0.5 °C or 44.5 ± 0.2 °C (to enumerate thermotolerant species). Depending on the procedure used, data are reported as either colony forming units (CFU) per 100 mL (for membrane filtration methods) or as most probable number (MPN) per 100 mL (for tube or multi-well

methods);

9. "EPA" means the *Environmental Protection Act*, R.S.O. 1990, c.E.19, as amended;

10. "Equivalent Equipment" means alternate piece(s) of equipment that meets the design requirements and performance specifications of the piece(s) of equipment to be substituted;

11. "Event" means an action or occurrence, at a given location within the Works that causes a Bypass or Overflow. An Event ends when there is no recurrence of Bypass or Overflow in the 12-hour period following the last Bypass or Overflow. Overflows and Bypasses are separate Events even when they occur concurrently;

12. "Existing Works" means those portions of the Works included in the Approval that have been constructed previously;

13. "Final Effluent" means effluent that is discharged to the environment through the approved effluent disposal facilities, including all Bypasses, that are required to meet the compliance limits stipulated in the Approval for the Sewage Treatment Plant at the Final Effluent sampling point(s);

14. "Imported Sewage" means sewage hauled to the Sewage Treatment Plant by licensed waste management system operators of the types and quantities approved for co-treatment in the Sewage Treatment Plant, including hauled sewage and leachate within the meaning of R.R.O. 1990, Regulation 347: General – Waste Management, as amended;

15. "Influent" means flows to the Sewage Treatment Plant from the collection system and Imported Sewage;

16. "Limited Operational Flexibility" (LOF) means the conditions that the Owner shall follow in order to undertake any modification that is pre-authorized as part of this Approval;

17. "Ministry" means the ministry of the government of Ontario responsible for the EPA and OWRA and includes all officials, employees or other persons acting on its behalf;

18. "Monthly Average Effluent Concentration" is the mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar month, calculated and reported as per the methodology specified in Schedule F;

19. "Monthly Geometric Mean Density" is the mean of all Single Sample Results of *E. coli* measurement in the samples taken during a calendar month, calculated and reported as per the methodology specified in Schedule F;
20. "Normal Operating Condition" means the condition when all unit process(es), excluding Preliminary Treatment System, in a treatment train is operating within its design capacity;
21. "Operating Agency" means the Owner or the entity that is authorized by the Owner for the management, operation, maintenance, or alteration of the Works in accordance with this Approval;
22. "Overflow" means a discharge to the environment from the Works at designed location(s) other than the approved effluent disposal facilities or via the effluent disposal facilities downstream of the Final Effluent sampling point;
23. "Owner" means The Corporation of the City of Windsor and its successors and assignees;
24. "OWRA" means the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40, as amended;
25. "Preliminary Treatment System" means all facilities in the Sewage Treatment Plant associated with screening and grit removal;
26. "Primary Treatment System" means all facilities in the Sewage Treatment Plant associated with the primary sedimentation unit process and includes chemically enhanced primary treatment;
27. "Professional Engineer" means a person entitled to practice as a Professional Engineer in the Province of Ontario under a license issued under the Professional Engineers Act;
28. "Rated Capacity" means the Annual Average Daily Influent Flow for which the Sewage Treatment Plant is designed to handle;
29. "Sanitary Sewers" means pipes that collect and convey wastewater from residential, commercial, institutional and industrial buildings, and some infiltration and inflow from extraneous sources such as groundwater and surface runoff through means other than stormwater catch basins;
30. "Secondary Effluent" means the effluent from the Secondary Treatment System that

are required to meet the compliance limits stipulated in the Approval for the Sewage Treatment Plant at the Secondary Treatment Effluent sampling point;

31. "Secondary Treatment System" means all facilities in the Sewage Treatment Plant associated with biological treatment, secondary sedimentation and phosphorus removal unit processes;

32. "Separate Sewer Systems" means wastewater collection systems that comprised of Sanitary Sewers while runoff from precipitation and snowmelt are separately collected in Storm Sewers;

33. "Sewage Treatment Plant" means all the facilities related to sewage treatment within the sewage treatment plant site excluding the Final Effluent disposal facilities;

34. "Single Sample Result" means the test result of a parameter in the effluent discharged on any day, as measured by a probe, analyzer or in a composite or sample, as required;

35. "Source Protection Authority" has the same meaning as in the *Clean Water Act, 2006*;

36. "Source Protection Plan" means a drinking water source protection plan prepared under the *Clean Water Act, 2006*;

37. "Storm Sewers" means pipes that collect and convey runoff resulting from precipitation and snowmelt (including infiltration and inflow);

38. "Works" means the approved sewage works, and includes Existing Works and modifications made under Limited Operational Flexibility.

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL PROVISIONS

2. The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the terms and conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

3. The Owner shall design, construct, operate and maintain the Works in accordance with the conditions of this Approval.

4. Where there is a conflict between a provision of any document referred to in this Approval and the conditions of this Approval, the conditions in this Approval shall take precedence.

5. CHANGE OF OWNER AND OPERATING AGENCY

6. The Owner shall, within thirty (30) calendar days of issuance of this Approval, prepare/update and submit to the District Manager the Municipal and Local Services Board Wastewater System Profile Information Form, as amended (Schedule G) under any of the following situations:

- a. the form has not been previously submitted for the Works;
- b. this Approval is issued for extension, re-rating or process treatment upgrade of the Works;
- c. when a notification is provided to the District Manager in compliance with requirements of change of Owner or Operating Agency under this condition.

7. The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within thirty (30) days of the change occurring:

- a. change of address of Owner;
- b. change of Owner, including address of new owner;
- c. change of partners where the Owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the *Business Names Act, R.S.O. 1990, c. B.17*, as amended, shall be included in the notification;
- d. change of name of the corporation where the Owner is or at any time becomes a corporation, and a copy of the most current information filed under the *Corporations Information Act, R.S.O. 1990, c. C.39*, as amended, shall be included in the notification.

8. The Owner shall notify the District Manager, in writing, of any of the following changes within thirty (30) days of the change occurring:

- a. change of address of Operating Agency;
- b. change of Operating Agency, including address of new Operating Agency.

9. In the event of any change in ownership of the Works, the Owner shall notify the succeeding owner in writing, of the existence of this Approval, and forward a copy of

the notice to the District Manager.

10. The Owner shall ensure that all communications made pursuant to this condition refer to the environmental compliance approval number.

11. RECORD DRAWINGS

12. A set of record drawings of the Works shall be kept up to date through revisions undertaken from time to time and a copy shall be readily accessible for reference at the Works.

13. BYPASSES

14. Any Bypass is prohibited, except:

- a. an emergency Bypass when a structural, mechanical or electrical failure causes a temporary reduction in the capacity of a treatment process or when an unforeseen flow condition exceeds the design capacity of a treatment process that is likely to result in personal injury, loss of life, health hazard, basement flooding, severe property damage, equipment damage or treatment process upset, if a portion of the flow is not bypassed;
- b. a planned Bypass that is a direct and unavoidable result of a planned repair and maintenance procedure or other circumstance(s), the Owner having notified the District Manager in writing at least fifteen (15) days prior to the occurrence of Bypass, including an estimated quantity and duration of the Bypass, an assessment of the impact on the quality of the Final Effluent and the mitigation measures if necessary, and the District Manager has given written consent of the Bypass;

15. Notwithstanding the exceptions given in Paragraph 1, the Operating Agency shall undertake everything practicable to maximize the flow through the downstream treatment process(es) prior to bypassing.

16. At the beginning of a Bypass Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

- a. the type of the Bypass as indicated in Paragraph 1 and the reason(s) for the Bypass;
- b. the date and time of the beginning of the Bypass;
- c. the treatment process(es) gone through prior to the Bypass and the treatment process(es) bypassed;

d. the effort(s) done to maximize the flow through the downstream treatment process(es) and the reason(s) why the Bypass was not avoided.

17. Upon confirmation of the end of a Bypass Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

- a. the date and time of the end of the Bypass;
- b. the estimated or measured volume of Bypass.

18. For any Bypass Event, the Owner shall collect daily sample(s) of the Final Effluent, inclusive of the Event and analyze for all effluent parameters outlined in Compliance Limits condition that require composite samples, following the same protocol specified in the Monitoring and Recording condition for the regular samples. The sample(s) shall be in addition to the regular Final Effluent samples required under the monitoring and recording condition. If the Event occurs on a scheduled monitoring day, the regular sampling requirements prevail. If representative sample for the effluent parameter(s) that require sample cannot be obtained, they shall be collected after the Event at the earliest time when situation returns to normal.

19. The Owner shall submit a summary report of the Bypass Event(s) to the District Manager on a quarterly basis, no later than each of the following dates for each calendar year: February 15, May 15, August 15, and November 15. The summary reports shall contain, at a minimum, the types of information set out in Paragraphs (3), (4) and (5) and either a statement of compliance or a summary of the non-compliance notifications submitted as required under Paragraph 1 of Condition 11. If there is no Bypass Event during a quarter, a statement of no occurrence of Bypass is deemed sufficient.

20. The Owner shall develop a notification procedure in consultation with the District Manager and SAC and notify the public and downstream water users that may be adversely impacted by any Bypass Event.

21. **OVERFLOWS**

22. Any Overflow is prohibited, except:

- a. an emergency Overflow in an emergency situation when a structural, mechanical or electrical failure causes a temporary reduction in the capacity of the Works or when an unforeseen flow condition exceeds the design capacity of the Works that is likely to result in personal injury, loss of life, health hazard, basement flooding, severe property damage, equipment damage or treatment process upset, if a

portion of the flow is not overflowed;

- b. a planned Overflow that is a direct and unavoidable result of a planned repair and maintenance procedure or other circumstance(s), the Owner having notified the District Manager in writing at least fifteen (15) days prior to the occurrence of Overflow, including an estimated quantity and duration of the Overflow, an assessment of the impact on the environment and the mitigation measures if necessary, and the District Manager has given written consent of the Overflow;

23. Notwithstanding the exceptions given in Paragraph 1, the Operating Agency shall undertake everything practicable to maximize the flow through the downstream treatment process(es) and Bypass(es) prior to overflowing.

24. At the beginning of an Overflow Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

- a. the type of the Overflow as indicated in Paragraph 1 and the reason(s) for the Overflow;
- b. the date and time of the beginning of the Overflow;
- c. the point of the Overflow from the Works, the treatment process(es) gone through prior to the Overflow, the disinfection status of the Overflow and whether the Overflow is discharged through the effluent disposal facilities or an alternate location;
- d. the effort(s) done to maximize the flow through the downstream treatment process(es) and Bypass(es) and the reason(s) why the Overflow was not avoided.

25. Upon confirmation of the end of an Overflow Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

- a. the date and time of the end of the Overflow;
- b. the estimated or measured volume of the Overflow.

26. For any Overflow Event

- a. in the Sewage Treatment Plant, the Owner shall collect sample(s) of the Overflow (Storm Overflow Chamber), at the frequency specified, by means of the specified sample type and analyzed for each parameter listed in the tables under the monitoring program included in Schedule D.
- b. at a sewage pumping station in the collection system, the Owner shall collect at

least one (1) sample representative of the Overflow Event and have it analyzed for BOD5, total suspended solids, total phosphorus and total Kjeldahl nitrogen.

27. The Owner shall submit a summary report of the Overflow Event(s) to the District Manager on a quarterly basis, no later than each of the following dates for each calendar year: February 15, May 15, August 15, and November 15. The summary report shall contain, at a minimum, the types of information set out in Paragraphs (3), (4) and (5). If there is no Overflow Event during a quarter, a statement of no occurrence of Overflow is deemed sufficient.

28. The Owner shall develop a notification procedure in consultation with the District Manager and SAC and notify the public and downstream water users that may be adversely impacted by any Overflow Event.

29. The Owner shall develop a response plan for any unplanned Overflows, consisting of measures to mitigate and prevent the contamination of drinking water.

30. DESIGN OBJECTIVES

31. The Owner shall design and undertake everything practicable to operate the Sewage Treatment Plant in accordance with the following objectives:

- a. Final Effluent parameters design objectives listed in the table(s) included in Schedule B.
- b. Final Effluent is essentially free of floating and settleable solids and does not contain oil or any other substance in amounts sufficient to create a visible film or sheen or foam or discolouration on the receiving waters.
- c. Annual Average Daily Influent Flow is within the Rated Capacity of the Sewage Treatment Plant.

32. COMPLIANCE LIMITS

1. The Owner shall operate and maintain the Sewage Treatment Plant such that compliance limits for both the Monthly Average Effluent and the Single Sample Results included in Schedule C are met.

2. The Owner shall operate and maintain the Sewage Treatment Plant such that the Final Effluent is disinfected during the disinfection period between May 1 and October 31 inclusive.

33.

OPERATION AND MAINTENANCE

1. The Owner shall ensure that, at all times, the Works and the related equipment and appurtenances used to achieve compliance with this Approval are properly operated and maintained. Proper operation and maintenance shall include effective performance, adequate funding, adequate staffing and training, including training in all procedures and other requirements of this Approval and the OWRA and regulations, adequate laboratory facilities, process controls and alarms and the use of process chemicals and other substances used in the Works.

2. The Owner shall maintain the operations manual for the Works, that includes, but not necessarily limited to, the following information:

- a. operating procedures for the Works under Normal Operating Conditions;
- b. inspection programs, including frequency of inspection, for the Works and the methods or tests employed to detect when maintenance is necessary;
- c. repair and maintenance programs, including the frequency of repair and maintenance for the Works;
- d. procedures for the inspection and calibration of monitoring equipment;
- e. operating procedures for the Works to handle situations outside Normal Operating Conditions and emergency situations such as a structural, mechanical or electrical failure, or an unforeseen flow condition, including procedures to minimize Bypasses and Overflows;
- f. a spill prevention and contingency plan, consisting of procedures and contingency plans, including notification to the District Manager, to reduce the risk of spills of pollutants and prevent, eliminate or ameliorate any adverse effects that result or may result from spills of pollutants;
- g. procedures for receiving, responding and recording public complaints, including recording any followup actions taken.

3. The Owner shall maintain the operations manual up-to-date and make the manual readily accessible for reference at the Works.

4. The Owner shall ensure that the Operating Agency fulfills the requirements under O. Reg. 129/04, as amended for the Works, including the classification of facilities, licensing of operators and operating standards.

34. MONITORING AND RECORDING

35. The Owner shall, upon commencement of operation of the Works, carry out a

scheduled monitoring program of collecting samples at the required sampling points, at the frequency specified or higher, by means of the specified sample type and analyzed for each parameter listed in the tables under the monitoring program included in Schedule D and record all results, as follows:

- a. all samples and measurements are to be taken at a time and in a location characteristic of the quality and quantity of the sewage stream over the time period being monitored.
- b. definitions and preparation requirements for each sample type are included in document referenced in Paragraph 3.b.
- c. definitions for frequency:
 - i. Daily means once every day;
 - ii. Weekly means once every week;
 - iii. Quarterly means once every three months;
- d. a schedule of the day of the week/month for the scheduled sampling shall be created. The sampling schedule shall be revised and updated every year through rotation of the day of the week/month for the scheduled sampling program, except when the actual scheduled monitoring frequency is three (3) or more times per week.

36. In addition to the scheduled monitoring program required in Paragraph 1, the Owner shall collect daily sample(s) of the Final Effluent, on any day when there is any situation outside Normal Operating Conditions, and analyze for all effluent parameters outlined in Compliance Limits condition that require composite samples, following the same protocol specified in this condition for the regular samples. If the Event occurs on a scheduled monitoring day, the regular sampling requirements prevail. If representative sample for the effluent parameter(s) that require sample cannot be obtained, they shall be collected after the Event at the earliest time when situation returns to normal.

37. The methods and protocols for sampling, analysis and recording shall conform, in order of precedence, to the methods and protocols specified in the following documents and all analysis shall be conducted by a laboratory accredited to the ISO/IEC:17025 standard or as directed by the District Manager:

- a. the Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works (Liquid Waste Streams Only), as amended;
- b. the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater Version 2.0" (January 2016), PIBS 2724e02, as amended;

c. the publication "Standard Methods for the Examination of Water and Wastewater", as amended.

38. The Owner shall monitor and record the flow rate and daily quantity using flow measuring devices or other methods of measurement as approved below calibrated to an accuracy within plus or minus 15 per cent (+/- 15%) of the actual flowrate of the following:

- a. Influent flow to the Sewage Treatment Plant by continuous flow measuring devices and instrumentations/pumping rates, or in lieu of an actual installation of equipment, adopt the flow measurements of the Final Effluent for the purpose of estimating Influent flows if the Influent and Final Effluent streams are considered not significantly different in flow rates and quantities;
- b. Final Effluent discharged from the Sewage Treatment Plant by continuous flow measuring devices and instrumentations/pumping rates, or in lieu of an actual installation of equipment, adopt the flow measurements of the Influent for the purpose of estimating Final Effluent flows if the Influent and Final Effluent streams are considered not significantly different in flow rates and quantities;
- c. each type of Imported Sewage received for co-treatment at the Sewage Treatment Plant by flow measuring devices/pumping rates/haul truck manifests;

39. The Owner shall retain for a minimum of five (5) years from the date of their creation, all records and information related to or resulting from the monitoring activities required by this Approval.

40.

LIMITED OPERATIONAL FLEXIBILITY

1. The Owner may make pre-authorized modifications to the sewage pumping stations and Sewage Treatment Plant in Works in accordance with the document "Limited Operational Flexibility - Protocol for Pre-Authorized Modifications to Municipal Sewage Works" (Schedule E), as amended, subject to the following:

- a. the modifications will not involve the addition of any new treatment process or the removal of an existing treatment process, including chemical systems, from the liquid or solids treatment trains as originally designed and approved.
- b. the scope and technical aspects of the modifications are in line with those delineated in Schedule E and conform with the Ministry's publication "Design Guidelines for Sewage Works 2008", as amended, Ministry's regulations, policies, guidelines, and industry engineering standards;

- c. the modifications shall not negatively impact on the performance of any process or equipment in the Works or result in deterioration in the Final Effluent quality;
- d. where the pre-authorized modification requires notification, a "Notice of Modifications to Sewage Works" (Schedule E), as amended shall be completed with declarations from a Professional Engineer and the Owner and retained on-site prior to the scheduled implementation date. All supporting information including technical memorandum, engineering plans and specifications, as applicable and appropriate to support the declarations that the modifications conform with LOF shall remain on-site for future inspection.

2. The following modifications are not pre-authorized under Limited Operational Flexibility:

- a. Modifications that involve addition or extension of process structures, tankages or channels;
- b. Modifications that involve relocation of the Final Effluent outfall or any other discharge location or that may require reassessment of the impact to the receiver or environment;
- c. Modifications that involve addition of or change in technology of a treatment process or that may involve reassessment of the treatment train process design;
- d. Modifications that require changes to be made to the emergency response, spill prevention and contingency plan; or
- e. Modifications that are required pursuant to an order issued by the Ministry.

41. REPORTING

1. The Owner shall report to the District Manager orally as soon as possible any non-compliance with the compliance limits, and in writing within seven (7) days of non-compliance.

2. The Owner shall, within fifteen (15) days of occurrence of a spill within the meaning of Part X of the EPA, submit a full written report of the occurrence to the District Manager describing the cause and discovery of the spill, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation, in addition to fulfilling the requirements under the EPA and O. Reg. 675/98 "Classification and Exemption of Spills and Reporting of Discharges".

3. The Owner shall, upon request, make all manuals, plans, records, data, procedures and supporting documentation available to Ministry staff, Source Protection Authority and any other parties identified in the Source Protection Plans.

4. The Owner shall prepare performance reports on a calendar year basis and submit to the District Manager by March 31 of the calendar year following the period being reported upon. The reports shall contain, but shall not be limited to, the following information pertaining to the reporting period:

- a. a summary and interpretation of all Influent monitoring data, and a review of the historical trend of the sewage characteristics and flow rates;
- b. a summary and interpretation of all Final Effluent monitoring data, including concentration, flow rates and a comparison to the design objectives and compliance limits in this Approval, including an overview of the success and adequacy of the Works;
- c. a summary of all operating issues encountered and corrective actions taken;
- d. a summary of all normal and emergency repairs and maintenance activities carried out on any major structure, equipment, apparatus or mechanism forming part of the Works;
- e. a summary of any effluent quality assurance or control measures undertaken;
- f. a summary of the calibration and maintenance carried out on all Influent, Imported Sewage and Final Effluent monitoring equipment to ensure that the accuracy is within the tolerance of that equipment as required in this Approval or recommended by the manufacturer;
- g. a summary of efforts made to achieve the design objectives in this Approval, including an assessment of the issues and recommendations for pro-active actions if any are required under the following situations:
 - i. when any of the design objectives is not achieved more than 50% of the time in a year, or there is an increasing trend in deterioration of Final Effluent quality;
 - ii. when the Annual Average Daily Influent Flow reaches 80% of the Rated Capacity;
- h. a tabulation of the volume of sludge generated, an outline of anticipated volumes to be generated in the next reporting period and a summary of the locations to where the sludge was disposed;
- i. a summary of any complaints received and any steps taken to address the complaints;
- j. a summary of all Bypasses, Overflows, other situations outside Normal Operating Conditions and spills within the meaning of Part X of EPA and abnormal discharge events;
- k. a summary of all Notice of Modifications to Sewage Works completed under Paragraph 1.d. of Condition 10, including a report on status of implementation of

all modification.

- l. a summary of efforts made to achieve conformance with Procedure F-5-1 including but not limited to projects undertaken and completed in the sanitary sewer system that result in overall Bypass/Overflow elimination including expenditures and proposed projects to eliminate Bypass/Overflows with estimated budget forecast for the year following that for which the report is submitted.
- m. a summary of any deviation from the monitoring schedule and reasons for the current reporting year and a schedule for the next reporting year.

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 regarding general provisions is imposed to ensure that the Works are constructed and operated in the manner in which they were described and upon which approval was granted.
2. Condition 2 regarding change of Owner and Operating Agency is included to ensure that the Ministry records are kept accurate and current with respect to ownership and Operating Agency of the Works and to ensure that subsequent owners of the Works are made aware of the Approval and continue to operate the Works in compliance with it.
3. Condition 3 regarding record drawings is included to ensure that the Works are constructed in accordance with the Approval and that record drawings of the Works "as constructed" are updated and maintained for future references.
4. Condition 4 regarding Bypasses is included to indicate that Bypass is prohibited, except in circumstances where the failure to Bypass could result in greater damage to the environment than the Bypass itself. The notification and documentation requirements allow the Ministry to take action in an informed manner and will ensure the Owner is aware of the extent and frequency of Bypass Events.
5. Condition 5 regarding Overflows is included to indicate that Overflow of untreated or partially treated sewage to the receiver is prohibited, except in circumstances where the failure to Overflow could result in greater damage to the environment than the Overflow itself. The notification and documentation requirements allow the Ministry to take action in an informed manner and will ensure the Owner is aware of the extent and frequency of Overflow Events.
6. Condition 6 regarding design objectives is imposed to establish non-enforceable design objectives to be used as a mechanism to trigger corrective action proactively and voluntarily before environmental impairment occurs.

7. Condition 7 regarding compliance limits is imposed to ensure that the Final Effluent discharged from the Works to the environment meets the Ministry's effluent quality requirements.

8. Condition 8 regarding operation and maintenance is included to require that the Works be properly operated, maintained, funded, staffed and equipped such that the environment is protected and deterioration, loss, injury or damage to any person or property is prevented. As well, the inclusion of a comprehensive operations manual governing all significant areas of operation, maintenance and repair is prepared, implemented and kept up-to-date by the Owner. Such a manual is an integral part of the operation of the Works. Its compilation and use should assist the Owner in staff training, in proper plant operation and in identifying and planning for contingencies during possible abnormal conditions. The manual will also act as a benchmark for Ministry staff when reviewing the Owner's operation of the Works.

9. Condition 9 regarding monitoring and recording is included to enable the Owner to evaluate and demonstrate the performance of the Works, on a continual basis, so that the Works are properly operated and maintained at a level which is consistent with the design objectives and compliance limits.

10. Condition 10 regarding Limited Operational Flexibility is included to ensure that the Works are constructed, maintained and operated in accordance with the Approval, and that any pre-approved modification will not negatively impact on the performance of the Works.

11. Condition 11 regarding reporting is included to provide a performance record for future references, to ensure that the Ministry is made aware of problems as they arise, and to provide a compliance record for this Approval.

Schedule A

1. Application for Approval of Municipal and Private Sewage Works dated September 1, 2009 and submitted under covering letter dated August 31, 2009 by K.J. Madill, P.Eng., of Stantec Consulting Ltd, consulting Engineers;

2. Physical Description, Little River Pollution Control Plant, Corporation of the City of Windsor, revised May 2002, prepared by Jack McRae of the City of Windsor;

3. Application for Approval of Municipal and Private Water and Sewage Works submitted by the City of Windsor dated August 2, 2000, the plans and specifications prepared by Stantec Consulting Ltd. and the treatability testing report prepared by Hydromantis, Inc. dated November 9, 1998.(Ref# 5858-4N8JMA);

4. Application for Approval of Sewage Works dated May 18, 2011, with cover letter submitted by Jian Li, P.Eng., of Stantec Consulting Ltd, Consulting Engineers, dated April 18, 2011;

5. Application for Environmental Compliance Approval dated April 8, 2020 and received May 27, 2020, submitted by The Corporation of the City of Windsor.

Schedule B

Final Effluent Design Objectives

Concentration Objectives

Final Effluent Parameter	Averaging Calculator	Objective (milligrams per litre unless otherwise indicated)
pH	Single Sample Result	6.5 - 9.0 inclusive
Dissolved Oxygen	Single Sample Result	greater than or equal to 4.0 mg/L

Schedule C

Final Effluent Compliance Limits - Monthly Average Effluent Concentration

Final Effluent Parameter	Averaging Calculator	Limit (maximum unless otherwise indicated)
CBOD5	Monthly Average Effluent Concentration	15 mg/L
Total Suspended Solids	Monthly Average Effluent Concentration	15 mg/L
Total Phosphorus	Monthly Average Effluent Concentration	1.0 mg/L
Total Ammonia Nitrogen	Monthly Average Effluent Concentration	6 mg/L
<i>E. coli</i>	Monthly Geometric Mean Density	*200 CFU/100 mL (from May 1 to October 31)

*If the MPN method is utilized for *E. coli* analysis the limit shall be 200 MPN/100 mL

**For the purpose of compliance limits, the effluent value shall be calculated using flow weighted average of Plant 1 and Plant 2 effluent parameters

Concentration Limits at the outlet of Plant 1 and Plant 2 - Single Sample Result

Final Effluent Parameter	Averaging Calculator	Limit (maximum unless otherwise indicated)
CBOD5	Single Sample Result	25 mg/L
Total Suspended Solids	Single Sample Result	25 mg/L
Total Phosphorus	Single Sample Result	1.5 mg/L
Total Ammonia Nitrogen	Single Sample Result	8 mg/L
<i>E. coli</i>	Single Geometric Mean Density	*1000 CFU/100 mL (from May 1 to October 31)
pH	Single Sample Result	between 6.5 - 9.0 inclusive

*If the MPN method is utilized for *E. coli* analysis the limit shall be 1000 MPN/100 mL

Schedule D

Monitoring Program

Influent - Influent sampling point

Parameters	Sample Type	Minimum Frequency
BOD5	24 hour composite	Weekly
Total Suspended Solids	24 hour composite	Weekly
Total Phosphorus	24 hour composite	Weekly
Total Ammonia Nitrogen	24 hour composite	Weekly
Total Kjeldahl Nitrogen	24 hour composite	Weekly
Alkalinity	24 hour composite	Weekly
pH	Grab/Probe	Daily
Temperature	Grab/Probe	Daily

Storm Overflow Chamber - chamber sampling point

Parameters	Sample Type	Minimum Frequency
BOD5	composite	every 2 hours (having same sample volume during the bypass event)
Total Suspended Solids	composite	every 2 hours (having same sample volume during the bypass event)
Total Phosphorus	composite	every 2 hours (having same sample volume during the bypass event)
<i>E. coli</i>	discrete grab	during the first hour of the event

Final Effluent - Final Effluent sampling point

Parameters	Sample Type	Minimum Frequency
CBOD5	24 hour composite	Weekly
Total Suspended Solids	24 hour composite	Weekly
Total Phosphorus	24 hour composite	Weekly
Total Ammonia Nitrogen	24 hour composite	Weekly
Total Kjeldahl Nitrogen	24 hour composite	Weekly
Nitrate as Nitrogen	24 hour composite	Weekly
Nitrite as Nitrogen	24 hour composite	Weekly
<i>E. coli</i>	Grab	Weekly (from May 1 to October 31)
Dissolved Oxygen	Grab/Probe	Daily
pH*	Grab/Probe	Daily
Temperature*	Grab/Probe	Daily
Un-ionized Ammonia**	As Calculated	Weekly

*pH and temperature of the Final Effluent shall be determined in the field at the time of sampling for Total Ammonia Nitrogen.

**The concentration of un-ionized ammonia shall be calculated using the total ammonia concentration, pH and temperature using the methodology stipulated in "Ontario's Provincial Water Quality Objectives" dated July 1994, as amended.

Sludge/Biosolids – holding tank/truck loading bay

Parameters	Sample Type	Minimum Frequency
Total Solids	Grab	Quarterly
Total Phosphorus	Grab	Quarterly
Total Ammonia Nitrogen	Grab	Quarterly
Nitrate as Nitrogen	Grab	Quarterly
Metal Scan - Arsenic - Cadmium - Cobalt - Chromium - Copper - Lead - Mercury - Molybdenum - Nickel - Potassium - Selenium - Zinc	Grab	Quarterly

Schedule E

Limited Operational Flexibility

Protocol for Pre-Authorized Modifications to Municipal Sewage Works

1. General

2. Pre-authorized modifications are permitted only where Limited Operational Flexibility has already been granted in the Approval and only permitted to be made at the pumping stations and sewage treatment plant in the Works, subject to the conditions of the Approval.

3. Where there is a conflict between the types and scope of pre-authorized modifications listed in this document, and the Approval where Limited Operational Flexibility has been granted, the Approval shall take precedence.

4. The Owner shall consult the District Manager on any proposed modifications that may fall within the scope and intention of the Limited Operational Flexibility but is not listed explicitly or included as an example in this document.

5. The Owner shall ensure that any pre-authorized modifications will not:

f. adversely affect the hydraulic profile of the Sewage Treatment Plant or the performance of any upstream or downstream processes, both in terms of hydraulics and treatment performance;

g. result in new Overflow or Bypass locations, or any potential increase in frequency or quantity of Overflow(s) or Bypass(es).

h. result in a reduction in the required Peak Flow Rate of the treatment process or equipment as originally designed.

9. Modifications that do not require pre-authorization:

10. Sewage works that are exempt from Ministry approval requirements;

11. Modifications to the electrical system, instrumentation and control system.

12. Pre-authorized modifications that do not require preparation of "Notice of Modification to Sewage Works"

13. Normal or emergency maintenance activities, such as repairs, renovations, refurbishments and replacements with Equivalent Equipment, or other improvements to an existing approved piece of equipment of a treatment process do not require pre-authorization. Examples of these activities are:

- a. Repairing a piece of equipment and putting it back into operation, including replacement of minor components such as belts, gear boxes, seals, bearings;
- b. Repairing a piece of equipment by replacing a major component of the equipment such as motor, with the same make and model or another with the same or very close power rating but the capacity of the pump or blower will still be essentially the same as originally designed and approved;
- c. Replacing the entire piece of equipment with Equivalent Equipment.

14. Improvements to equipment efficiency or treatment process control do not require pre-authorization. Examples of these activities are:

- a. Adding variable frequency drive to pumps;
- b. Adding on-line analyzer, dissolved oxygen probe, ORP probe, flow measurement or other process control device.

15. Pre-Authorized Modifications that require preparation of “Notice of Modification to Sewage Works”

16. Pumping Stations

- q. Replacement, realignment of existing sewers including manholes, valves, gates, weirs and associated appurtenances provided that the modifications will not add new influent source(s) or result in an increase in flow from existing sources as originally approved.
- r. Extension or partition of wetwell to increase retention time for emergency response and improve station maintenance and pump operation;
- s. Replacement or installation of inlet screens to the wetwell;
- t. Replacement or installation of flowmeters, construction of station bypass;
- u. Replacement, reconfiguration or addition of pumps and modifications to pump suction and discharge pipings including valve, gates, motors, variable frequency drives and associated appurtenances to maintain firm pumping capacity or modulate

the pump rate provided that the modifications will not result in a reduction in the firm pumping capacity or discharge head or an increase in the peak pumping rate of the pumping station as originally designed;

v. Replacement, realignment of existing forcemain(s) including valves, gates, and associated appurtenances provided that the modifications will not reduce the flow capacity or increase the total dynamic head and transient in the forcemain.

23. Sewage Treatment Plant

24. Sewers and appurtenances

a. Replacement, realignment of existing sewers (including pipes and channels) or construction of new sewers, including manholes, valves, gates, weirs and associated appurtenances within the a sewage treatment plant, provided that the modifications will not add new influent source(s) or result in an increase in flow from existing sources as originally approved and that the modifications will remove hydraulic bottlenecks or improve the conveyance of sewage into and through the Works.

25. Flow Distribution Chambers/Splitters

a. Replacement or modification of existing flow distribution chamber/splitters or construction of new flow distribution chamber/splitters, including replacements or installation of sluice gates, weirs, valves for distribution of flows to the downstream process trains, provided that the modifications will not result in a change in flow distribution ratio to the downstream process trains as originally designed.

26. Imported Sewage Receiving Facility

- a. Replacement, relocation or installation of loading bays, connect/disconnect hook-up systems and unloading/transferring systems;
- b. Replacement, relocation or installation of screens, grit removal units and compactors;
- c. Replacement, relocation or installation of pumps, such as dosing pumps and transfer pumps, valves, piping and appurtenances;
- d. Replacement, relocation or installation of storage tanks/chambers and spill containment systems;
- e. Replacement, relocation or installation of flow measurement and sampling equipment;
- f. Changes to the source(s) or quantity from each source, provided that changes will

not result in an increase in the total quantity and waste loading of each type of Imported Sewage already approved for co-treatment.

27. Preliminary Treatment System

- a. Replacement of existing screens and grit removal units with equipment of the same or higher process performance technology, including where necessary replacement or upgrading of existing screenings dewatering washing compactors, hydrocyclones, grit classifiers, grit pumps, air blowers conveyor system, disposal bins and other ancillary equipment to the screening and grit removal processes.
- b. Replacement or installation of channel aeration systems, including air blowers, air supply main, air headers, air laterals, air distribution grids and diffusers.

28. Primary Treatment System

- a. Replacement of existing sludge removal mechanism, including sludge chamber;
- b. Replacement or installation of scum removal mechanism, including scum chamber;
- c. Replacement or installation of primary sludge pumps, scum pumps, provided that:the modifications will not result in a reduction in the firm pumping capacity or discharge head that the primary sludge pump(s) and scum pump(s) are originally designed to handle.

29. Secondary Treatment System

1. Biological Treatment

- a. Conversion of complete mix aeration tank to plug-flow multi-pass aeration tank, including modifications to internal structural configuration;
- b. Addition of inlet gates in multi-pass aeration tank for step-feed operation mode;
- c. Partitioning of an anoxic/flip zone in the inlet of the aeration tank, including installation of submersible mixer(s);
- d. Replacement of aeration system including air blowers, air supply main, air headers, air laterals, air distribution grids and diffusers, provided that the modifications will not result in a reduction in the firm capacity or discharge pressure that the blowers are originally designed to supply or in the net oxygen transferred to the wastewater required for biological treatment as originally required.

2. Secondary Sedimentation

- a. Replacement of sludge removal mechanism, including sludge chamber;
- b. Replacement or installation of scum removal mechanism, including scum chamber;
- c. Replacement or installation of return activated sludge pump(s), waste activated sludge pump(s), scum pump(s), provided that the modifications will not result in a reduction in the firm pumping capacity or discharge head that the activated sludge pump(s) and scum pump(s) are originally designed to handle.

30. Post-Secondary Treatment System

- a. Replacement of filtration system with equipment of the same filtration technology, including feed pumps, backwash pumps, filter reject pumps, filtrate extract pumps, holding tanks associated with the pumping system, provided that the modifications will not result in a reduction in the capacity of the filtration system as originally designed.

31. Disinfection System

1. UV Irradiation

- a. Replacement of UV irradiation system, provided that the modifications will not result in a reduction in the design capacity of the disinfection system or the radiation level as originally designed.

2. Chlorination/Dechlorination and Ozonation Systems

- a. Extension and reconfiguration of contact tank to increase retention time for effective disinfection and reduce dead zones and minimize short-circuiting;
- b. Replacement or installation of chemical storage tanks, provided that the tanks are provided with effective spill containment.

32. Supplementary Treatment Systems

1. Chemical systems

- a. Replacement, relocation or installation of chemical storage tanks for existing chemical systems only, provided that the tanks are sited with effective spill containment;
- b. Replacement or installation of chemical dosing pumps provided that the modifications will not result in a reduction in the firm capacity that the dosing pumps are originally designed to handle.
- c. Relocation and addition of chemical dosing point(s) including chemical feed

pipes and valves and controls, to improve phosphorus removal efficiency;

- d. Use of an alternate chemical provided that it is a non-proprietary product and is a commonly used alternative to the chemical approved in the Works, provided that the chemical storage tanks, chemical dosing pumps, feed pipes and controls are also upgraded, as necessary..

33. Sludge Management System

1. Sludge Holding and Thickening

- a. Replacement or installation of sludge holding tanks, sludge handling pumps, such as transfer pumps, feed pumps, recirculation pumps, provided that modifications will not result in reduction in the solids storage or handling capacities;

2. Sludge Digestion

- a. Replacement or installation of digesters, sludge handling pumps, such as transfer pumps, feed pumps, recirculation pumps, provided that modifications will not result in reduction in the solids storage or handling capacities;
- b. replacement of sludge digester covers.

3. Sludge Dewatering and Disposal

- a. Replacement of sludge dewatering equipment, sludge handling pumps, such as transfer pumps, feed pumps, cake pumps, loading pumps, provided that modifications will not result in reduction in solids storage or handling capacities.

4. Processed Organic Waste

- a. Changes to the source(s) or quantity from each source, provided that changes will not result in an increase in the total quantity already approved for co-processing.

34. Standby Power System

1. Replacement or installation of standby power system, including feed from alternate power grid, emergency power generator, fuel supply and storage systems, provided that the existing standby power generation capacity is not reduced.

35. Pilot Study

1. Small side-stream pilot study for existing or new technologies, alternative treatment process or chemical, provided:

- a. all effluent from the pilot system is hauled off-site for proper disposal or returned back to the sewage treatment plant for at a point no further than immediately downstream of the location from where the side-stream is drawn;
- b. no proprietary treatment process or propriety chemical is involved in the pilot study;
- c. the effluent from the pilot system returned to the sewage treatment plant does not significantly alter the composition/concentration of or add any new contaminant/inhibiting substances to the sewage to be treated in the downstream process;
- d. the pilot study will not have any negative impacts on the operation of the sewage treatment plant or cause a deterioration of effluent quality;
- e. the pilot study does not exceed a maximum of two years and a notification of completion shall be submitted to the District Manager within one month of completion of the pilot project.

36. Lagoons

- a. installing baffles in lagoon provided that the operating capacity of the lagoon system is not reduced;
- b. raise top elevation of lagoon berms to increase free-board;
- c. replace or install interconnecting pipes and chambers between cells, provided that the process design operating sequence is not changed;
- d. replace or install mechanical aerators, or replace mechanical aerators with diffused aeration system provided that the mixing and aeration capacity are not reduced;
- e. removal of accumulated sludge and disposal to an approved location offsite.

37. Final Effluent Disposal Facilities

a1. Replacement or realignment of the Final Effluent channel, sewer or forcemain, including manholes, valves and appurtenances from the end of the treatment train to the discharge outfall section, provided that the sewer conveys only effluent discharged from the Sewage Treatment Plant and that the replacement or re-aligned sewer has similar dimensions and performance criteria and is in the same or approximately the same location and that the hydraulic capacity will not be reduced.

This page contains an image of the form entitled "Notice of Modification to Sewage Works". A digital copy can be obtained from the District Manager.

- a. If the arithmetic mean does not exceed the compliance limit for the contaminant, then report and use this arithmetic mean as the Monthly Average Effluent Concentration for this parameter where applicable in this Approval;
- b. If the arithmetic mean exceeds the compliance limit for the contaminant and there was no Bypass Event during the calendar month, then report and use this arithmetic mean as the Monthly Average Effluent Concentration for this parameter where applicable in this Approval;
- c. If the arithmetic mean exceeds the compliance limit for the contaminant and there was Bypass Event(s) during the calendar month, then proceed to Step 2;
- d. If the arithmetic mean does not exceed the compliance limit for the contaminant and there was Bypass Event(s) during the calendar month, the Owner may still elect to proceed to Step 2 calculation of the flow-weighted arithmetic mean.

Step 2: Calculate the flow-weighted arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar month and proceed depending on the result of the calculation:

- a. Group No Bypass Days (**NBPD**) data and Bypass Days (**BPD**) data during a calendar month separately;
- b. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all NBPD during a calendar month and record it as **Monthly Average NBPD Effluent Concentration**;
- c. Obtain the “**Total Monthly NBPD Flow**” which is the total amount of Final Effluent discharged on all NBPD during the calendar month;
- d. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all BPD during a calendar month and record it as **Monthly Average BPD Effluent Concentration**;
- e. Obtain the “**Total Monthly BPD Flow**” which is the total amount of Final Effluent discharged on all BPD during the calendar month;

f. Calculate the flow-weighted arithmetic mean using the following formula:

$$\frac{[(\text{Monthly Average NBPD Effluent Concentration} \times \text{Total Monthly NBPD Flow}) + (\text{Monthly Average BPD Effluent Concentration} \times \text{Total Monthly BPD Flow})] \div (\text{Total Monthly NBPD Flow} + \text{Total Monthly BPD Flow})$$

It should be noted that in this method, if there are no Bypass Event for the month, the calculated result would be the same as the non-flow-weighted arithmetic mean method;

g. Report and use the lesser of the flow-weighted arithmetic mean obtained in Step 2 and the arithmetic mean obtained in Step 1 as the Monthly Average Effluent Concentration for this parameter where applicable in this Approval.

2. Annual Average Effluent Concentration

Step 1: Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar year and proceed as follows depending on the result of the calculation:

a. If the arithmetic mean does not exceed the compliance limit for the contaminant, then report and use this arithmetic mean as the Annual Average Effluent Concentration for this parameter where applicable in this Approval;

b. If the arithmetic mean exceeds the compliance limit for the contaminant and there was no Bypass Event during the calendar year, then report and use this arithmetic mean as the Annual Average Effluent Concentration for this parameter where applicable in this Approval;

c. If the arithmetic mean exceeds the compliance limit for the contaminant and there was Bypass Event(s) during the calendar year, then proceed to Step 2;

d. If the arithmetic mean does not exceed the compliance limit for the contaminant and there was Bypass Event(s) during the calendar year, the

Owner may still elect to proceed to Step 2 calculation of the flow-weighted arithmetic mean.

Step 2: Calculate the flow-weighted arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar year and proceed depending on the result of the calculation:

- a. Group No Bypass Days (**NBPD**) data and Bypass Days (**BPD**) data during a calendar year separately;
- b. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all NBPD during a calendar year and record it as **Annual Average NBPD Effluent Concentration**;
- c. Obtain the “**Total Annual NBPD Flow**” which is the total amount of Final Effluent discharged on all NBPD during the calendar year;
- d. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all BPD during a calendar year and record it as **Annual Average BPD Effluent Concentration**;
- e. Obtain the “**Total Annual BPD Flow**” which is the total amount of Final Effluent discharged on all BPD during the calendar year;
- f. Calculate the flow-weighted arithmetic mean using the following formula:

$$\frac{[(\text{Annual Average NBPD Effluent Concentration} \times \text{Total Annual NBPD Flow}) + (\text{Annual Average BPD Effluent Concentration} \times \text{Total Annual BPD Flow})] \div (\text{Total Annual NBPD Flow} + \text{Total Annual BPD Flow})}$$

It should be noted that in this method, if there are no Bypass Event for the calendar year, the calculated result would be the same as the non-flow-weighted arithmetic mean method;

- g. Report and use the lesser of the flow-weighted arithmetic mean obtained

in Step 2 and the arithmetic mean obtained in Step 1 as the Annual Average Effluent Concentration for this parameter where applicable in this Approval.

3. Monthly Geometric Mean Density

Geometric mean is defined as the n^{th} root of the product of n numbers. In the context of calculating Monthly Geometric Mean Density for *E. coli*, the following formula shall be used:

$$\sqrt[n]{x_1 x_2 x_3 \cdots x_n}$$

in which,

" n " is the number of samples collected during the calendar month; and

" x " is the value of each Single Sample Result.

For example, four weekly samples were collected and tested for *E. coli* during the calendar month. The *E. coli* densities in the Final Effluent were found below:

Sample Number	<i>E. coli</i> Densities* (CFU/100 mL)
1	10
2	100
3	300
4	50

The Geometric Mean Density for these data:

$$\sqrt[4]{10 \times 100 \times 300 \times 50} = 62$$

*If a particular result is zero (0), then a value of one (1) will be substituted into the calculation of the Monthly Geometric Mean Density. If the MPN method is utilized for *E. coli* analysis, values in the table shall be MPN/100 mL.

Schedule G

Municipal and Local Services Board Wastewater System

Profile Information Form

(For reference only, images of the form are attached on the next four pages. A digital copy can be obtained from the District Manger.)



The information in this form is necessary to administer the Ministry's approvals, compliance and enforcement programs with respect to wastewater treatment and collection systems owned by municipalities and local services boards. These programs are authorized under the Ontario Water Resources Act, the Environmental Protection Act, the Nutrient Management Act and their respective regulations.

Email the completed form to: waterforms@ontario.ca
For any questions call 1-866-793-2586.

[A] SYSTEM PROFILE INFORMATION				
Wastewater System Number (if assigned)		<input type="checkbox"/> New Profile <input type="checkbox"/> Update Existing Profile		
Name of System		Level of Treatment (select one*) <input type="checkbox"/> Primary <input type="checkbox"/> Secondary <input type="checkbox"/> Tertiary <input type="checkbox"/> Secondary Equivalent <input type="checkbox"/> Other (specify): *See Terms and Concepts on page 4		
Name of Municipality or Local Services Board				
Population Served	Population (Design)	Type of System <input type="checkbox"/> Treatment & Collection System <input type="checkbox"/> Collection System Only		
Design Rated Capacity (m ³ /day)	Peak Flow Rate (m ³ /day)	Current Environmental Compliance Approval (ECA) Number	Current ECA Issue Date (yyyy/mm/dd):	
The treatment plant receives sewage from: (Check all that applies. * If you have checked more than one option below, indicate the approximate %)				
<input type="checkbox"/> Sanitary Sewer		<input type="checkbox"/> Combined Sewer		
<input type="checkbox"/> Nominally Separated Sewer		<input type="checkbox"/> Partially Separated Sewer *See Terms and Concepts on page 4		

[B] OWNER INFORMATION				
Legal Name of Municipality or Local Services Board				
Unit No	Street No.	Street Name.	Street Type (St, Rd, etc)	Street Direction (N,S,E,W)
PO Box	City/Town		Postal Code	
<input type="checkbox"/> Dr <input type="checkbox"/> Mr <input type="checkbox"/> Ms	<input type="checkbox"/> Miss <input type="checkbox"/> Mrs	Owner Contact First Name	Owner Contact Last Name	Owner Contact Job Title
Tel. No. () - ext.	Fax Number () -	Email address		

[C] OPERATING AUTHORITY <input type="checkbox"/> Check if same as owner				
Legal Name of Operator				
Unit No	Street No.	Street Name.	Street Type (St, Rd, etc)	Street Direction (N,S,E,W)
PO Box	City/Town		Postal Code	
<input type="checkbox"/> Dr <input type="checkbox"/> Mr <input type="checkbox"/> Ms	<input type="checkbox"/> Miss <input type="checkbox"/> Mrs	Operator Contact First Name	Operator Contact Last Name	Operator Contact Job Title
Tel. No. () - ext.	Fax Number () -	Email address		

[D] 24/7 CONTACT

<input type="checkbox"/> Dr	<input type="checkbox"/> Miss	First Name	Last Name	Job Title
<input checked="" type="checkbox"/> Mr	<input type="checkbox"/> Mrs			
<input type="checkbox"/> Ms				
Tel. No. () - ext.		Fax Number () -		Email address

[E] SYSTEM CIVIC LOCATION ADDRESS (I.E. ADDRESS OF TREATMENT PLANT)

Unit No	Street No.	Street Name.	Street Type (St. Rd. etc)	Street Direction (N,S,E,W)
PO Box	City/Town		Postal Code	

If the Wastewater System has no street address

Geographical Township	Lot	Concession
-----------------------	-----	------------

Geographical Referencing (if known, enter the Geographical Reference Information for this Wastewater System)

Map Datum	Geo-Referencing Method	Accuracy Estimate	Location Reference	
Latitude	Longitude	Zone	Easting	Northing

[F] TREATMENT PROCESS

Preliminary	Primary	Secondary	Secondary Equivalent	Post-Secondary	Additional Treatment
<input type="checkbox"/> Screening <input type="checkbox"/> Shredding/ grinding <input type="checkbox"/> Grit Removal <input type="checkbox"/> Other(specify):	<input type="checkbox"/> Settling/sedimentation/ clarification <input type="checkbox"/> Scum Removal <input type="checkbox"/> Polymer Addition <input type="checkbox"/> Other(specify):	<input type="checkbox"/> Conventional Activated Sludge (CAS) <input type="checkbox"/> Extended Aeration <input type="checkbox"/> Membrane Bioreactor (MBR) <input type="checkbox"/> Sequencing Batch Reactor (SBR) <input type="checkbox"/> Rotating Biological Contactor (RBC) <input type="checkbox"/> Trickling Filter (TF) <input type="checkbox"/> Biological Aerated Filter (BAF) <input type="checkbox"/> Other(specify):	<input type="checkbox"/> Aerated Lagoon <input type="checkbox"/> Facultative Lagoon <input type="checkbox"/> Anaerobic Lagoon <input type="checkbox"/> Aerobic Lagoon <input type="checkbox"/> Other(specify):	<input type="checkbox"/> Filtration <input type="checkbox"/> Clarification <input type="checkbox"/> Intermittent Sand Filter (after lagoons) <input type="checkbox"/> Polishing Wetlands <input type="checkbox"/> Polishing Lagoons <input type="checkbox"/> Other(specify):	<input type="checkbox"/> Phosphorous Removal <input type="checkbox"/> Biological <input type="checkbox"/> Chemical If chemical is used, specify: <input type="checkbox"/> Nitrification <input type="checkbox"/> Denitrification <input type="checkbox"/> Other(specify):

[G] DISINFECTION

Method of Disinfection	Disinfection Period
<input type="checkbox"/> Chlorination if you chlorinate, do you practice de-chlorination? <input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Continuous <input type="checkbox"/> Seasonal
<input type="checkbox"/> Ultraviolet Irradiation	<input type="checkbox"/> Continuous <input type="checkbox"/> Seasonal
<input type="checkbox"/> Other (specify):	<input type="checkbox"/> Continuous <input type="checkbox"/> Seasonal

Terms and Concepts

The following Terms and Concepts are provided to assist you when completing Wastewater System Profile Information Form.

In order to determine the level of treatment that applies to the wastewater system, the effluent quality objectives that the wastewater treatment plant was designed to meet must be considered. The process based approach often used in the past has led to confusion and is open to interpretation due to recent developments and practices in the wastewater treatment industry. For example, a plant with a high rate filter (often referred to as a tertiary filter) after its secondary treatment was considered a tertiary treatment in the past since the filter was designed and operated to produce a tertiary quality effluent. However, secondary plants are now being constructed with these filters as a safeguard against any potential secondary clarifier performance degradation and not for the purpose of ensuring tertiary treatment performance. Also, new technologies have evolved that can produce tertiary quality effluent without having these high rate filters (e.g., membrane bioreactors). Lagoons were considered in the past as being capable of providing only secondary equivalent treatment. However, with add-on treatment after the lagoons (e.g. intermittent sand filters), many lagoon treatment systems are capable of producing secondary or tertiary quality effluent.

During the establishment of sewage works, site-specific effluent limits (including averaging periods) are provided by the Ministry's Regional Technical Support Section, considering the assimilative capacity of the receivers and the minimum treatment requirements provided in Procedure F-5-1. The designer of the sewage works then selects objective values that are acceptable to the Ministry and are less (i.e. more stringent) than the effluent limits, in order to provide an adequate safety factor based on the designer's confidence/experience with the technology chosen and other site-specific conditions. The sewage works are then designed (and operated) to meet these design objectives in a reliable and consistent manner. Therefore, the values that are to be used in the determination of the level of treatment that applies to the sewage works must be based on the design objectives, and not the effluent limits.

Two common parameters used in almost all sewage works designs and performance evaluations are CBOD₅ (carbonaceous biochemical oxygen demand) (BOD₅ – biochemical oxygen demand - for primary sewage works) and total suspended solids (TSS). Therefore, it is logical that the **objective values** of these two parameters are used to determine the level of treatment at the sewage works.

Level of Treatment:

Primary:

Wastewater treatment plants that have only settling/sedimentation (with or without chemical addition) and providing 30% and 50% or better reduction of BOD₅ and TSS respectively are considered primary plants (MOE Procedures F-5-1 and F-5-5).

Secondary:

Wastewater treatment plants that have biological processes (e.g. activated sludge process and its variations, fixed film processes) or physical-chemical processes producing an effluent quality of CBOD₅ and TSS of 15 mg/L or better are considered secondary plants (MOE Design Guidelines for Sewage Works, 2008).

Secondary Equivalent:

Wastewater treatment plants producing an effluent quality of CBOD₅ of 25 mg/L and TSS of 30 mg/L or better are considered as secondary equivalent plants.

Note: Wastewater treatment plants that provide only primary settling of solids and the addition of chemicals to improve the removal of TSS (and phosphorus) are not considered as secondary treatment plants or secondary equivalent plants (MOE Design Guidelines for Sewage Works, 2008).

Tertiary:

Wastewater treatment plants that have biological processes (e.g. activated sludge process and its variations, fixed film processes) and/or physical-chemical processes producing an effluent quality of CBOD₅ and TSS of 5 mg/L or better are considered tertiary plants.

Note: Biological processes such as nitrification, denitrification and enhanced biological phosphorus removal can be part of either a secondary or tertiary treatment plant. They may be described as secondary treatment plant with nitrification, secondary treatment plant with enhanced biological phosphorus removal, tertiary treatment plant with nitrification etc.

Sewer System Type:

Sanitary Sewers:

Pipes that convey sanitary sewage flows made up of wastewater discharges from residential, commercial, institutional and industrial establishments plus extraneous flow components from such sources as groundwater and surface run off.

Combined Sewers:

Pipes that convey both sanitary sewage and stormwater runoff through a single-pipe system.

Partially Separated Sewers:

Exist when either a portion of the combined sewer area was retrofitted to separate (sanitary and storm) sewers and/or a service area with combined sewers has had a new development area with separate sewers added to the service area, whatever the case may be, the final flows will be combined sewage.

Nominally Separated Sewers:

These sewers are constructed as separate sewers, but the sanitary sewers accept stormwater from roof and foundation drains (i.e., these are separated sewers in name only).

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 8532-8JBLBT issued on July 26, 2011.

In accordance with Section 139 of the Environmental Protection Act, you may by written

Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

- a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
- b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1
of the Environmental Protection Act
Ministry of the Environment, Conservation and
Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 29th day of
January, 2021

Aziz Ahmed, P.Eng.
Director

appointed for the purposes of Part
II.1 of the *Environmental Protection
Act*

LW/

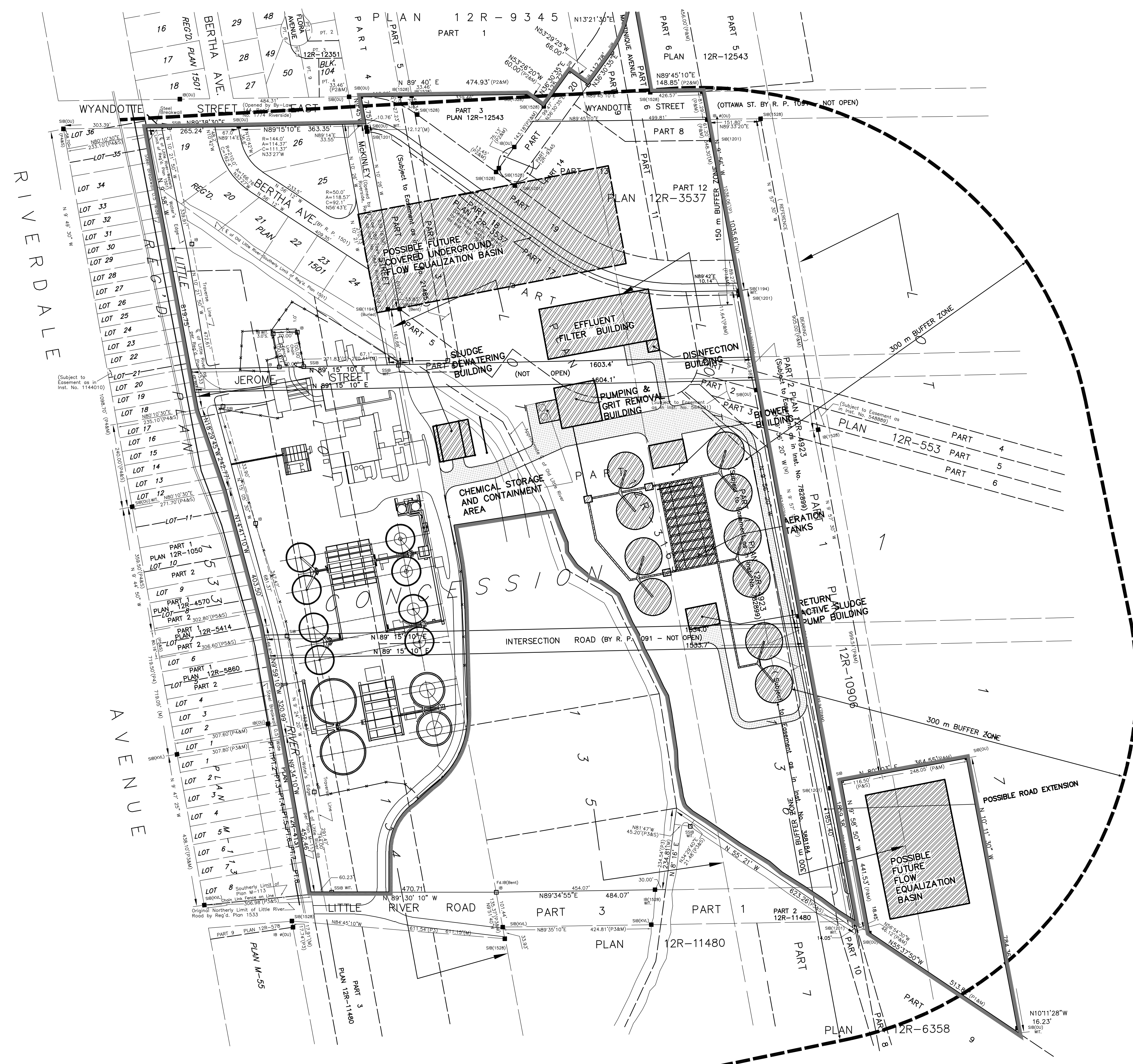
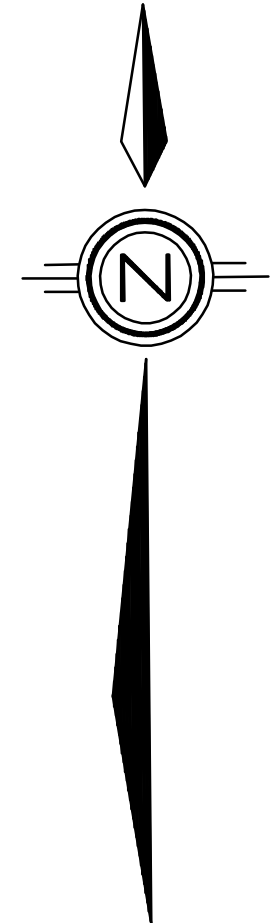
c: Area Manager, MECP Windsor

c: District Manager, DWECD, MECP Sarnia

Pompiliu Ignat, The Corporation of the City of Windsor

Appendix D

Little River Pollution Control Plant Future Layout



SURVEY INFORMATION RECEIVED FROM
 VERHAEGEN STUBBERFIELD HARTLEY
 BREWER BEZAIRE INC., O.L.S.
 TO ILLUSTRATE DESCRIPTIONS
 FOR CLOSING VARIOUS STREETS
 WITHIN THE LITTLE RIVER
 TREATMENT PLANT SITE
 IN THE
 CITY OF WINDSOR
 COUNTY OF ESSEX, ONTARIO

SCALE : 1"=150'

BEARING REFERENCE
 BEARINGS ARE ASTROMOMIC AND ARE REFERRED TO THE EASTERLY LIMIT OF LANDS DESIGNATED AS PART 1 AS SHOWN ON PLAN 12R-10906 AND HAVING A BEARING OF N 9° 57' 30" W.
 BEARINGS FOR SOME OF THE STREET CLOSINGS VARY ACCORDING TO THOSE SHOWN ON THE ORIGINAL DOCUMENT CREATING OR OPENING SUCH STREET.

LEGEND
 SIB DENOTES 1" x 1" x 4'-0" STANDARD IRON BAR
 SSB DENOTES 1" x 1" x 2'-0" SHORT STANDARD IRON BAR
 IB DENOTES 5/8" x 5/8" x 2'-0" IRON BAR
 IB # DENOTES 3/4" DIAMETER X 2'-0" ROUND IRON BAR
 ■ DENOTES SURVEY MONUMENT FOUND
 □ DENOTES SURVEY MONUMENT SET AND MARKED 1528
 WT. DENOTES WITNESS ⊥ DENOTES PERPENDICULAR
 (S) DENOTES SET (M) DENOTES MEASURED
 (S/P) DENOTES SET PROPORTIONALLY (OU) DENOTES ORIGIN UNKNOWN
 (P) DENOTES PLAN 12R-10906 (P1) DENOTES PLAN 12R-3537
 (P2) DENOTES PLAN 12R-12543 (P3) DENOTES PLAN 12R-11480
 (P4) DENOTES PLAN 1533 (P5) DENOTES PLAN 12R-5414
 (1528) DENOTES VERHAEGEN STUBBERFIELD HARTLEY BREWER BEZAIRE INC., O.L.S.
 (1201) DENOTES CLARKE, MATTHEWS LIMITED, O.L.S.
 (K14) DENOTES VERHAEGEN AND BEZAIRE LIMITED, O.L.S.
 (1194) DENOTES JOHN B. SMEETON INC., O.L.S.
 — DENOTES LITTLE RIVER P.C.P. PROPERTY BOUNDARY

REVISIONS	BY	DATE	ISSUED FOR	BY	DATE
1. REVISED AS PER PUBLIC WORKS COMMENTS	H.S.H.	95-03-28	1. REVIEW BY WINDSOR PUBLIC WORKS AND PARKS & RECREATION	H.S.H.	94-12-21

THE CORPORATION OF THE CITY OF WINDSOR
 DEPARTMENT OF PUBLIC WORKS
 SHEET TITLE
LITTLE RIVER POLLUTION CONTROL PLANT LAND USE PLANNING
FUTURE TREATMENT FACILITIES SHOWING BUFFER ZONES AND PROPERTY REQUIREMENTS

LA FONTAINE, COWIE, BURATTO & ASSOCIATES LIMITED Consulting Engineers 3260 Devon Drive, Windsor, Ontario N8X 4L4	
PROJECT NO.	SCALE 1" = 150'
DRAWN	DWG. FILE 2346-L3
CHECKED	OFFICE FILE NO. WD500-L
DATE 94-12-21	
CONTRACT NO.	DRAWING NO.
SHEET NO. L-3	LA-2346-L

Appendix E

Source Summary Table



Table E.1 - Source Summary Table

Source	Source ID	Source Type	Emission Rate (OU/s)	Exhaust Flow Rate(m ³ /s)	Temperature (°C)	Diameter (m)	Area (m ²)	Release Height Above Grade (m) [1]	Release Height Above Roof (m)	Emission Rate Reference	Notes/ Assumptions
EXISTING SOURCES											
Grit removal tank	GRIT1	Volume	350.2	NA	NA	NA	62.7	1.95	NA	[2]	Odour Detection Threshold Value (ODTV) (in units OU/m ³) from Georgetown WWTP Grit Removal building exhaust stack applied to open tanks at LRPCP. ODTV was scaled based on grit tank area ratio between Georgetown WWTP and LRPCP, and resulting OU/m ³ was multiplied by LRPCP grit tank area (m ²) and velocity of 0.001m/s to get OU/s. Velocity of 0.001 m/s was applied to represent virtually no plume rise from tanks, as per the ADMGO
Grit removal tank	GRIT2	Volume	350.2	NA	NA	NA	62.7	1.95	NA	[2]	
Plant 1 Primary Settling Tank	PST1-4	Volume	300.1	NA	NA	NA	296.2	1.37	NA	[2]	Odour emission rates from Georgetown WWTP applied and scaled based on tank area ratio between Georgetown WWTP and LRPCP
Plant 2 Primary Settling Tank	PST5-6	Volume	490.0	NA	NA	NA	483.6	1.675	NA	[2]	Odour emission rates from Georgetown WWTP applied and scaled based on tank area between Georgetown WWTP and LRPCP
Plant 1 Aeration Tanks 1 and 2	AT1-4	Volume	1728.6	NA	NA	NA	1788.4	1.95	NA	[2]	Odour emission rates from Georgetown WWTP applied and scaled based on tank area between Georgetown WWTP and LRPCP
Plant 2 Aeration Tanks	AT9-14	Volume	1670.2	NA	NA	NA	1728.1	3.02	NA	[2]	Odour emission rates from Georgetown WWTP applied and scaled based on tank area between Georgetown WWTP and LRPCP. LRPCP ECA #4681-BT3139 includes tanks 1-4 and 9-14 (total of 10 existing aeration tanks)
Truck loading system exhaust	TRUCK	Point	19861.4	2.6	Ambient	0.508	NA	10.30	3.00	[2]	LRPCP truck loading odour is controlled with sodium hypochlorite scrubber however removal efficiency is unknown. Georgetown truck loading carbon treatment system removal efficiency (88%) was conservatively applied. Exhaust stack parameters provided by the City
Centrifuge dewatering exhaust	DEWAT	Point	4972.5	4.5	Ambient	0.762	NA	10.30	3.00	[3]	LRPCP dewatering odours are controlled with potassium permanganate however removal efficiency is unknown and has not been applied. Exhaust stack parameters provided by the City. ODTV of 1105 OU obtained from reference [3] and multiplied by City provided flowrate to give OU/s
Plant 1 Secondary Settling Tank	FST1-4	Volume	1378.5	NA	NA	NA	296.2	1.37	NA	[4]	Emission factor of 13,100 OU/m ³ wastewater treated (from reference [4]) was applied. 9,092 m ³ wastewater per day was applied to FST1-4, as provided by City
Plant 2 Secondary Settling Tank	FST5-6	Volume	2065.1	NA	NA	NA	832.3	2.00	NA	[4]	Emission factor of 13,100 OU/m ³ wastewater treated (from reference [4]) was applied. 13,620 m ³ wastewater per day was applied to FST5.6, as provided by City
FUTURE SOURCES											
Screening building exhaust	FUT_SCRN	Point	42353.2	2.6	Ambient	0.508	NA	7.00	1.00	[2]	Based on conversations with the City, future Screening Building location is assumed to be between future Underground Equalization Basin (north location) and future Grit Building. The City confirmed that the existing Screening Building is pressurized for confined space entry requirements and odorous air is pushed back into the sewer. Therefore, for the existing scenario, there are no screening related odours that are exhausted to the atmosphere. The City mentioned that there may be screening odours expelled from the future Screening Building. An exhaust stack (point source) was assumed for the future Screening Building. Emission rate from Georgetown WWTP Screening Building louver was applied and scaled based on daily capacity ratio between Georgetown WWTP and LRPCP. Exhaust flow and diameter assumed to be same as existing Truck loading exhaust.
Grit removal tank	F_GRIT1	Volume	350.2	NA	NA	0.0				[2]	Odour Detection Threshold Value (ODTV) (in units OU/m ³) from Georgetown WWTP Grit Removal building exhaust stack applied to open tanks at LRPCP. ODTV was scaled based on grit tank area ratio between Georgetown WWTP and LRPCP, and resulting OU/m ³ was multiplied by LRPCP grit tank area (m ²) and velocity of 0.001m/s to get OU/s. Velocity of 0.001 m/s was applied to represent virtually no plume rise from tanks, as per the ADMGO
Grit removal tank	F_GRIT2	Volume	350.2	NA	NA	0.0					
Plant 1 Primary Clarifier Tank	FUT_PST1-4	Volume	490.0	NA	NA	NA	483.6	1.675	NA	[2]	Emission rates from Georgetown WWTP applied and scaled based on tank area
Plant 2 Primary Clarifier Tank	FUT_PST5-6	Volume	490.0	NA	NA	NA	483.6	1.675	NA	[2]	Emission rates from Georgetown WWTP applied and scaled based on tank area
Plant 1 Aeration Tanks	F_AT1_5	Volume	1352.0	NA	NA	NA	1398.8	3.02	NA	[2]	Emission rates from Georgetown WWTP applied and scaled based on tank area
Plant 2 Aeration Tanks	F_AT9-14	Volume	1352.0	NA	NA	NA	1398.8	3.02	NA	[2]	Emission rates from Georgetown WWTP applied and scaled based on tank area
Truck loading system exhaust	FUT_TRK	Point	359.0	2.6	Ambient	0.508	NA	10.30	3.00	[2]	Assumed to be located in Future Dewatering Building. Future truck loading exhaust parameters assumed to be same as existing
Centrifuge dewatering exhaust	F_DEWAT	Point	4972.5	4.5	Ambient	0.762	NA	10.30	3.00	[3]	Odour emission rate and building and stack parameters assumed to be same as existing Dewatering exhaust
Plant 1 Secondary Settling Tank	FUT_FST1-4	Volume	1758.2	NA	NA	NA	483.6	1.675	NA	[4]	Emission factor of 13,100 OU/m ³ wastewater treated (from reference [4]) was applied. 11,596 m ³ wastewater per day was applied to FUT_FST1-4, based on interpolation of volume-based capacity of existing FST1-4 and FST5.6
Plant 2 Secondary Settling Tank	FUT_FST5-6	Volume	1758.2	NA	NA	NA	483.6	1.675	NA	[4]	Emission factor of 13,100 OU/m ³ wastewater treated (from reference [4]) was applied. 11,596 m ³ wastewater per day was applied to FUT_FST1-4, based on interpolation of volume-based capacity of existing FST1-4 and FST5.6

Notes:

NA: Not applicable for source type

[1]: Release height for volume source is based on 1/2 of tank height

[2]: Dillon Consulting Limited. 2019. Georgetown Wastewater Treatment Plant Odour Assessment Summary Report

[3]: McGinley, M. A. and McGinley, C. M. (St. Croix Sensory, Inc.) 2008. Odor Threshold Emission Factors for Common WWTP Processes. Retrieved from: <http://www.fivesenses.com/Documents/Library/50%20Odor%20Thresholds%20of%20WWTP%20Processes%20WEF-AWMA%20ODORS%202008.pdf>[4]: Capelli, L., Sironi, S. and Del Rosso, R. 2014. Odour Emission Factors: Fundamental Tools for Air Quality Management. Retrieved from: <https://www.aidic.it/cet/14/40/033.pdf>