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SITE SERVICING AND STORMWATER MANAGEMENT REPORT

FOR

TRINITY DEVELOPMENT GROUP INC.
145 LORETTA AVENUE NORTH
& 951 GLADSTONE AVENUE

CITY OF OTTAWA

PROJECT NO.: 18-1026
CITY APPLICATION NO.: D07-12-XX-XXXX

AUGUST 2019 – REV. 1

SITE SERVICING AND STORMWATER MANAGEMENT REPORT
FOR
145 LORETTA AVENUE NORTH
& 951 GLADSTONE AVENUE

TRINITY DEVELOPMENT GROUP INC.

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1.0 INTRODUCTION

David Schaeffer Engineering Limited (DSEL) has been retained by Trinity Development Group Inc. to prepare a Site Servicing and Stormwater Management report in support of the application for Site Plan Control (SPC) at 145 Loretta Avenue North and 951 Gladstone Avenue.

The subject property is located within the City of Ottawa urban boundary, in the Kitchissippi Ward. As illustrated in ***Figure 1***, below, the subject property is located north east of the intersection of Loretta Avenue and Gladstone Avenue. The subject property measures approximately ***1.0 ha*** and is currently zoned General Industrial, (IG1 H(11)) however, it is anticipated to be rezoned to Mixed-Use Centre (MC) to accommodate the development as part of a concurrent rezoning application (ZBLA).

Figure 1: Site Location

The proposed SPC and ZBLA would allow for the ultimate development of three mixed-use towers. The proposed redevelopment will be constructed in 2 phases. Phase 1 includes two multi-storey residential towers (35 and 33 storeys) consisting of a total of

approximately ***553*** residential units. Both towers are proposed to share a common podium consisting of ***3,276 m²*** of total retail area (including existing retail), and approximately ***17,569 m²*** of office space. An underground parking garage is also estimated to be constructed as part of the first phase. Proposed phase 2 includes one, 30-storey residential tower, consisting of approximately ***192*** residential units.

A copy of the site plan, prepared by Hobin Architecture, including site statistics is included in ***Drawings/Figures.***

The objective of this report is to support the application for SPC by providing sufficient detail to demonstrate that the proposed development is supported by existing municipal servicing infrastructure and that the site design conforms to current City of Ottawa design standards.

1.1 Existing Conditions

The existing site area consists of the following:

- Two (2), 2-storey commercial buildings;
- One (1), 1-storey commercial building;
- One (1), 3-storey commercial building; and
- Surface parking.

The redevelopment of the subject property involves the retention of the existing 3-storey Standard Bread Building, constructed in 1924.

A topographic survey was completed by Stantec Geomatics Ltd. and received by DSEL on September 17, 2019. The site generally slopes from the south to the north and to the east, with elevations varying from 67.70 m to 64.13 m. Localized low points exist, as shown on the survey. See reduced copy of topographic survey in ***Drawings/Figures***.

Sewer and watermain mapping collected from the City of Ottawa indicate that the following services exist across the property frontage within the adjacent municipal right-of-ways:

Loretta Avenue:

- 203 mm diameter unlined cast iron watermain;
- 1372 mm diameter concrete pressure watermain backbone pipe;
- 1350 mm diameter concrete storm sewer tributary to the Ottawa River, and outletting approximately 1.5 km downstream;

- 1050 mm diameter concrete sanitary Mooney's Bay trunk sewer; and
- 300 mm diameter concrete combined sewer.

Gladstone Avenue:

- 203 mm diameter PVC watermain, east of Loretta and Gladstone intersection;
- 406 mm diameter PVC watermain, west of Loretta and Gladstone intersection;
- 1350 mm diameter concrete storm sewer tributary to the Ottawa River, and outletting approximately 1.5 km downstream;
- 375 mm diameter PVC storm sewer tributary to the Ottawa River, and outletting approximately 1 km downstream;
- 1050 mm diameter concrete Mooney's Bay sanitary sewer, east of Loretta and Gladstone intersection; and
- 250 mm diameter PVC sanitary sewer, west of Loretta and Gladstone intersection.

1.2 Required Permits / Approvals

The proposed development is subject to the City of Ottawa Planning and development approval process. The City of Ottawa must approve detailed engineering drawings and reports prepared to support the proposed development plan, prior to issuance of site plan control.

1.3 Pre-consultation

Pre-consultation correspondence from the City of Ottawa, along with the servicing guidelines checklist, is located in ***Appendix A***.

Pre-consultation with RVCA was conducted to confirm stormwater management targets on July 24, 2019, see ***Appendix A.***

2.0 GUIDELINES, PREVIOUS STUDIES, AND REPORTS

2.1 Existing Studies, Guidelines, and Reports

The following studies were utilized in the preparation of this report:

- **Ottawa Sewer Design Guidelines**,
  City of Ottawa, *SDG002,* October 2012.
  (City Standards)

  - **Technical Bulletin ISTB-2018-01**
    City of Ottawa, March 21, 2018.
    (*ISTB-2018-01*)

  - **Technical Bulletin ISTB-2018-03**
    City of Ottawa, March 21, 2018.
    (*ISTB-2018-03*)

- **Ottawa Design Guidelines – Water Distribution**
  City of Ottawa, July 2010.
  (Water Supply Guidelines)

  - **Technical Bulletin ISD-2010-2**
    City of Ottawa, December 15, 2010.
    (*ISD-2010-2*)

  - **Technical Bulletin ISDTB-2014-02**
    City of Ottawa, May 27, 2014.
    (*ISDTB-2014-02*)

  - **Technical Bulletin ISDTB-2018-02**
    City of Ottawa, March 21, 2018.
    (*ISDTB-2018-02*)

- **Design Guidelines for Sewage Works,**
  Ministry of the Environment, 2008.
  (MOE* Design Guidelines*)

- **Stormwater Planning and Design Manual,**
  Ministry of the Environment, March 2003.
  (SWMP Design Manual)

- **Ontario Building Code Compendium**
  Ministry of Municipal Affairs and Housing Building Development Branch,

January 1, 2010 Update.
(OBC)

- **Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems**
  National Fire Protection Association,
  2016 Edition.
  (NFPA)

- **Due Diligence Geotechnical Investigation Report Protection Systems**
  DST Consulting Engineers, dated August 16, 2017
  (Geotech Report)

3.0 WATER SUPPLY SERVICING

3.1 Existing Water Supply Services

The subject property lies within the City of Ottawa 1W pressure zone. A local 203 mm diameter watermain and a 1372 mm diameter backbone pipeline exist within the Loretta Avenue right-of-way and a 203 mm diameter watermain exists within the Gladstone Avenue right-of-way east of the intersection, as shown by the ***City Water Distribution Mapping,*** located in ***Appendix B***.

Table 1, below, estimates the water demand of the existing buildings, based on the ***Water Supply Guidelines*** shown in ***Table 2.***

Table 1
Water Demand
Existing Conditions

Design Parameter	Estimated Demand[1] (L/min)
Average Daily Demand	22.5
Max Day	33.8
Peak Hour	60.8

1) Water demand calculation per ***Water Supply Guidelines***. See ***Appendix B*** for detailed calculations.

3.2 Water Supply Servicing Design

It is proposed to service the development via two 150 mm diameter service connections to the 200 mm diameter watermains within Gladstone and Loretta Avenues, refer to ***SSP-1,*** included with the report, for servicing layout and connection points.

As the water demand exceeds 50 m^3/day it is proposed to loop the services internally to allow for redundancy in case of interruption of service to either service.

Table 2, below, summarizes the ***Water Supply Guidelines*** employed in the preparation of the preliminary water demand estimate.

Table 2
Water Supply Design Criteria

Design Parameter	Value
Residential Bachelor Apartment	1.4 P/unit
Residential 1 Bedroom Apartment	1.4 P/unit
Residential 2 Bedroom Apartment	2.1 P/unit
Residential 3 Bedroom Apartment	3.1 P/unit
Residential Average Daily Demand	280 L/d/P
Residential Maximum Daily Demand	2.5 x Average Daily *
Residential Maximum Hourly	5.5 x Average Daily *
Commercial Space	2500 L/(1000m^2/d)
Minimum Watermain Size	150 mm diameter
Minimum Depth of Cover	2.4 m from top of watermain to finished grade
During normal operating conditions desired operating pressure is within	350 kPa and 480 kPa
During normal operating conditions pressure must not drop below	275 kPa
During normal operating conditions pressure must not exceed	552 kPa
During fire flow operating pressure must not drop below	140 kPa

** Residential Max. Daily and Max. Hourly peaking factors per MOE Guidelines for Drinking-Water Systems Table 3-3 for 0 to 500 persons. Above 500 persons, refer to Table 4.2 from City Guidelines.*
-Table updated to reflect ISD-2018-02

Table 3, below, summarizes the estimated water supply demand and boundary conditions, received from the City of Ottawa, for the proposed development based on the ***Water Supply Guidelines***. Refer to ***Appendix B*** for correspondence with the City of Ottawa.

Table 3
Water Demand and Boundary Conditions
Proposed Conditions

Design Parameter	Estimated Demand[1] (L/min)	Connection 1 Boundary Conditions[2] (m H_2O / kPa)		Connection 2 Boundary Conditions[3] (m H_2O / kPa)	
Average Daily Demand	373.4	47.6	466.7	47.3	464.2
Max Day + Fire Flow Scenario 1 (per ISDTB-2018-02)	823.8 +4,150	41.6	407.8	40.2	394.6
Peak Hour	1746.5	40.3	395.0	40.2	392.6

1) Water demand calculation per ***Water Supply Guidelines***. See ***Appendix B*** for detailed calculations.
2) Boundary conditions above for connection 1 to Gladstone Avenue assumed ground elevation equal to 67.2m
3) Boundary condition for connection 2 to Loretta Avenue assumed ground elevation equal to 67.5m

The City of Ottawa was contacted to obtain boundary conditions associated with the estimated water demand, as indicated in the boundary request correspondence included in ***Appendix B***.

Based on correspondence with the City of Ottawa, Loretta North Avenue will undergo reconstruction, resulting in the replacement of the existing 203 mm diameter watermain between Gladstone and Laurel with a new 203 mm diameter watermain. The future watermain project could potentially affect the boundary condition results, refer to ***Appendix B*** for correspondence with the City.

For the purpose of estimating fire flow, the short method within the National Fire Protection Association (NFPA) standards was utilized. As indicated by Section 11.2.2 from the ***NFPA Standards***, fire flow requirements are to be determined by combining the required flow rate for the sprinkler system, along with the estimated hose stream. As indicated by Table 11.2.2.1 and Table 11.2.3.1.2 extracted from the ***NFPA Standards*** and included in ***Appendix B***, the estimated fire flow requirements for the sprinkler system is ***3,200 L/min*** (850 gpm) and the estimated internal and external total combined inside and outside hose stream demand is ***950 L/min*** (250 gpm).

As a result, the total fire flow is estimated to be ***4,150 L/min*** (1,100 gpm), refer to supporting calculation in ***Appendix B***. Based on the boundary conditions provided by the City of Ottawa, sufficient supply is available for fire flow. A certified fire protection system specialist will need to be employed to design the building's fire suppression system and confirm the actual fire flow demand.

3.3 Water Supply Conclusion

It is proposed to service the development via two 150 mm diameter service connections at the local 203 mm watermain along Loretta Avenue and Gladstone Street.

The estimated water demand was submitted to the City of Ottawa for establishing boundary conditions. The City provided both the estimated minimum and maximum water pressures. As demonstrated by ***Table 2,*** which was based on the City's model, the municipal system is capable of delivering water within the pressure range prescribed in the ***Water Supply Guidelines***.

Fire flow requirements were estimated in accordance with ***NFPA Standards***. Based on the boundary conditions provided by the City of Ottawa, sufficient flow is available to service the development.

DSEL employed a daily consumption rate of 280 L/person/day to align with the revised wastewater rates identified by City of Ottawa Technical Bulletin ISTB-2018-03. As a result, DSEL is submitting for a deviation from the ***Water Supply Guidelines***.

4.0 WASTEWATER SERVICING

4.1 Existing Wastewater Services

The subject site lies within Mooney's Bay Collector Sewer catchment area, as shown by the ***Sanitary & Storm Collection System Maps,*** included in ***Appendix C***. There is an existing 1050 mm diameter Mooney's Bay Collector Trunk sanitary sewer within Loretta Avenue and within Gladstone Avenue, east of the Gladstone and Loretta intersection. A 250 mm diameter sanitary sewer exists within Gladstone Avenue fronting the subject property.

Table 4, below, summarizes the estimated wastewater flows for the existing development.

Table 4
Summary of Estimated Existing Peak Wastewater Flow

Design Parameter	Existing Flow (L/s)
Estimated Average Dry Weather Flow	0.75
Estimated Peak Dry Weather Flow	1.13
Estimated Peak Wet Weather Flow	1.46

The existing building is comprised primarily of commercial space and is estimated to have a peak wastewater flow of **1.46 L/s**.

4.2 Wastewater Design

The development is proposed to discharge to the 1050 mm diameter sanitary trunk within Loretta Avenue via a single 250 mm diameter service lateral.

Table 5, below, summarizes the ***City Standards*** employed in the design of the proposed wastewater sewer system.

Table 5
Wastewater Design Criteria

Design Parameter	Value
Residential 1 Bedroom Apartment	1.4 P/unit
Residential 2 Bedroom Apartment	2.1 P/unit
Residential 3 Bedroom Apartment	3.1 P/unit
Average Daily Demand	280 L/d/per
Peaking Factor	Harmon's Peaking Factor. Max 4.0, Min 2.0
Commercial Floor Space	5 L/m^2/d
Commercial Office Space	75 L/9.3m^2/d
Infiltration and Inflow Allowance	0.33 L/s/ha
Sanitary sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} AR^{2/3} S^{1/2}$
Minimum Sewer Size	250 mm diameter
Minimum Manning's 'n'	0.013
Minimum Depth of Cover	2.5 m from crown of sewer to grade
Minimum Full Flowing Velocity	0.6 m/s
Maximum Full Flowing Velocity	3.0 m/s
Extracted from Sections 4 and 6 of the City of Ottawa Sewer Design Guidelines, October 2012.	

Table 6, below, demonstrates the estimated peak flow from the proposed development. See ***Appendix C*** for associated calculations.

Table 6
Summary of Estimated Proposed Peak Wastewater Flow

Design Parameter	Proposed Flow (L/s)
Estimated Average Dry Weather Flow	6.41
Estimated Peak Dry Weather Flow	16.95
Estimated Peak Wet Weather Flow	17.28

The estimated peak wet weather flow of ***17.28 L/s*** is a ***15.82 L/s*** increase from the existing condition.

It is estimated that the 1050 mm trunk sewer can accommodate the increase in flow. Due to the complexity of the drainage area and the close proximity to a truck sewer, the impacts from the estimated flow from the site require further review by the City in order to confirm available capacity and resulting HGL within the existing sanitary sewer

4.3 Wastewater Servicing Conclusions

The site is tributary to the Mooney's Bay Collector Trunk sanitary sewer. The estimated wet weather flow is ***17.28 L/s,*** which is a ***15.82 L/s*** increase from the existing condition.

The City is required to confirm the existing 1050 mm sanitary trunk sewer within Loretta and Gladstone Avenues is capable of accommodating the increase in flow. The proposed wastewater servicing design conforms to all relevant City Guidelines and Policies.

5.0 STORMWATER MANAGEMENT

5.1 Existing Stormwater Services

Stormwater runoff from the subject property is tributary to the City of Ottawa sewer system and is located within the Ottawa Central sub-watershed. As such, approvals for proposed developments within this area are under the approval authority of the City of Ottawa.

Flows that influence the watershed in which the subject property is located are further reviewed by the principal authority. The subject property is located within the Ottawa River West watershed, and is therefore subject to review by the Rideau Valley Conservation Authority (RVCA). Consultation with the RVCA is located in ***Appendix A***.

An existing 1350 mm diameter Storm Sewer Trunk runs along Loretta Avenue and Gladstone Avenue east of Loretta and Gladstone intersection.

It is estimated that the existing development contains no stormwater management controls for flow attenuation. The estimated pre-development peak flows for the 2, 5, and 100-year events are summarized in ***Table 7,*** below.

Table 7
Summary of Existing Peak Storm Flow Rates

City of Ottawa Design Storm	Estimated Peak Flow Rate (L/s)
2-year	192.0
5-year	260.5
100-year	496.0

5.2 Post-development Stormwater Management Target

City of Ottawa Standards and pre-consultation was used to determine stormwater management requirements, where the development is required to:

- Meet an allowable release rate based on the lesser of either the existing calculated Rational Method Coefficient of 0.50, employing the City of Ottawa IDF parameters for a 2-year storm with a time of concentration equal to or greater than 10 minutes;
- Attenuate all storms up to and including the City of Ottawa 100-year design event on site; and
- Based on coordination with the RVCA, enhanced quality level treatment (80% TSS removal) will be required for the proposed development; correspondence with the RVCA is included in ***Appendix A***.

Based on the above, the allowable release rate for the proposed development is ***106.7 L/s***. Refer to city pre-consultation correspondence in ***Appendix A.***

5.3 Proposed Stormwater Management System

It is proposed that the stormwater outlet from the proposed development will discharge to the existing 1350 mm diameter Mooney's Bay Collector Storm sewer within Loretta Avenue via a 375 mm diameter service lateral. It is proposed that the development utilize an internal cistern to meet the stormwater objectives.

Table 8, below, summarizes post-development flow rates based on the proposed Site Plan, located in ***Drawings/Figures***.

Table 8
Stormwater Flow Rate Summary

Control Area	5-Year Release Rate	5-Year Storage	100-Year Release Rate	100-Year Storage
	(L/s)	(m^3)	(L/s)	(m^3)
Unattenuated Areas	26.3	0.0	56.3	0.0
Attenuated Areas	25.2	148.6	50.4	297.3
Total	**51.5**	**148.6**	**106.7**	**297.3**

It is proposed that approximately ***297 m^3*** of storage, provided via an internal cistern, will be required on site to attenuate flow to the established release rate of ***106.7 L/s***; storage calculations are contained within ***Appendix D***.

The City of Ottawa conducted a Hydraulic Grade Line (***HGL***) analysis of the storm sewers surrounding the site. ***Table 9,*** below, summarized the results provided by the City at three maintenance structures.

Table 9
Summary of 100-Year HGL Levels

Maintenance Structure	Location	HGL (m)
MHST101877	Northwest Corner	60.53
MHST10187	Southwest Corner	61.76
MHST101875	Southeast Corner	62.40

The HGL analysis has been utilized in order to ensure City drainage does not back up into the onsite storage system during a greater than 2-year storm event. Refer to ***Appendix D*** for correspondence with the City, identifying the MH above maintenance structures. The service lateral into the site are proposed to provide approximately 0.30m of freeboard from the HGL in order to ensure that stormwater from the storm sewer within Loretta avenue does not enter the proposed ***297 m^3*** of storage, thus compromising the system. Further, a backwater valve will be utilized to protect the system as specified on ***SSP-1***.

To meet quality control requirements, on-site treatment via an oil/grit separator, located within the building is proposed in order to achieve 80% TSS removal. See ***Appendix D*** for details.

5.4 Stormwater Servicing Conclusions

In accordance with City of Ottawa ***City Standards***, post development stormwater runoff will be required to be restricted to the allowable target release rate for storm events up to and including the 100-year storm. The post-development allowable release rate was calculated as ***106.7 L/s***. It is estimated that ***297 m³*** of storage, provided by an internal cistern, will be required to meet the established release rate.

Based on coordination with the RVCA, enhanced quality level treatment (80% TSS removal) is required for the proposed development; correspondence with the RVCA is included in ***Appendix A***. To meet quality control requirements, on-site treatment via an oil/grit separator, located within the building, is proposed to achieve 80% TSS removal.

The proposed stormwater design conforms to all relevant ***City Standards*** and Policies for approval.

6.0 UTILITIES

Utility servicing will be coordinated with the individual utility companies prior to site development.

7.0 EROSION AND SEDIMENT CONTROL

Soil erosion occurs naturally and is a function of soil type, climate and topography. During construction the extent of erosion losses is exaggerated due to the removal of vegetation and the top layer of soil becoming agitated.

Prior to topsoil stripping, earthworks or underground construction, erosion and sediment controls will be implemented and will be maintained throughout construction.

Silt fence will be installed around the perimeter of the site and will be cleaned and maintained throughout construction. Silt fence will remain in place until the working areas have been stabilized and re-vegetated.

Catch basins will have SILTSACKs or an approved equivalent installed under the grate during construction to protect from silt entering the storm sewer system.

A mud mat will be installed at the construction access in order to prevent mud tracking onto adjacent roads.

Erosion and sediment controls must be in place during construction. The following recommendations to the contractor will be included in contract documents:

- Limit extent of exposed soils at any given time;
- Re-vegetate exposed areas as soon as possible;
- Minimize the area to be cleared and grubbed;
- Protect exposed slopes with plastic or synthetic mulches;
- Install silt fence to prevent sediment from entering existing ditches;
- No refueling or cleaning of equipment near existing watercourses;
- Provide sediment traps and basins during dewatering;
- Install filter cloth between catch basins and frames;
- Plan construction at proper time to avoid flooding; and
- Establish material stockpiles away from watercourses, so that barriers and filters may be installed.

The contractor will, at every rainfall, complete inspections and guarantee proper performance. The inspection is to include:

- Verification that water is not flowing under silt barriers; and
- Clean and change filter cloth at catch basins.

8.0 CONCLUSION AND RECOMMENDATIONS

David Schaeffer Engineering Ltd. (DSEL) has been retained by Trinity Development Group Inc. to prepare a Site Servicing and Stormwater Management Report in support of application for Site Plan Control (SPC) at 145 Loretta Avenue North and 951 Gladstone Avenue. The preceding report outlines the following:

- Based on boundary conditions provided by the City the existing municipal water infrastructure is capable of providing the contemplated development with water within the City's required pressure range;
- Fire flow requirements were estimated in accordance with ***NFPA Standards***. Based on the boundary conditions provided by the City of Ottawa, sufficient flow is available to service the development;
- The proposed development is estimated to have a peak wet weather flow of ***17.28 L/s***, which is a ***15.82 L/s*** increase from the existing condition. The City is required to confirm the existing 1050 mm sanitary trunk sewer within Loretta and Gladstone Avenues is capable of accommodating the increase in flow;
- Based on the City of Ottawa's City Standards the proposed development will be required to attenuate post development flows to an equivalent release rate of ***106.7 L/s*** for all storms up to and including the 100-year storm event;
- It is proposed that stormwater objectives will be met by an internal cistern, it is estimated that ***297 m^3*** of onsite storage will be required to attenuate flow to the established release rate; and
- To meet quality controls, on-site treatment using an oil/grit separator is proposed to achieve 80% TSS removal.

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Per: Charlotte M. Kelly, EIT

Reviewed by,
David Schaeffer Engineering Ltd.

Per: Stephen J. Pichette, P.Eng.

Prepared by,
David Schaeffer Engineering Ltd.

Per: Brandon N. Chow

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APPENDIX A

Pre-Consultation

DEVELOPMENT SERVICING STUDY CHECKLIST

18-1026 07/08/2019

4.1 General Content

☐	Executive Summary (for larger reports only).	N/A
☒	Date and revision number of the report.	Report Cover Sheet
☒	Location map and plan showing municipal address, boundary, and layout of proposed development.	Drawings/Figures
☒	Plan showing the site and location of all existing services.	Figure 1
☒	Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.	Section 1.0
☒	Summary of Pre-consultation Meetings with City and other approval agencies.	Section 1.3
☒	Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.	Section 2.1
☒	Statement of objectives and servicing criteria.	Section 1.0
☒	Identification of existing and proposed infrastructure available in the immediate area.	Sections 3.1, 4.1, 5.1
☐	Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).	N/A
☐	Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	N/A
☐	Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.	N/A
☐	Proposed phasing of the development, if applicable.	N/A
☐	Reference to geotechnical studies and recommendations concerning servicing.	N/A
☐	All preliminary and formal site plan submissions should have the following information: -Metric scale -North arrow (including construction North) -Key plan -Name and contact information of applicant and property owner -Property limits including bearings and dimensions -Existing and proposed structures and parking areas -Easements, road widening and rights-of-way -Adjacent street names	N/A

4.2 Development Servicing Report: Water

☐	Confirm consistency with Master Servicing Study, if available	N/A
☒	Availability of public infrastructure to service proposed development	Section 3.1
☒	Identification of system constraints	Section 3.1
☒	Identify boundary conditions	Section 3.1, 3.2
☒	Confirmation of adequate domestic supply and pressure	Section 3.3

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☒	Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.	Section 3.2
☐	Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.	N/A
☐	Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design	N/A
☐	Address reliability requirements such as appropriate location of shut-off valves	N/A
☐	Check on the necessity of a pressure zone boundary modification	N/A
☒	Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range	Section 3.2, 3.3
☐	Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.	N/A
☐	Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.	N/A
☒	Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Section 3.2
☐	Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	N/A

4.3 Development Servicing Report: Wastewater

☒	Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).	Section 4.2
☐	Confirm consistency with Master Servicing Study and/or justifications for deviations.	N/A
☐	Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.	N/A
☒	Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Section 4.1
☒	Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)	Section 4.2
☒	Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	Section 4.2, Appendix C
☒	Description of proposed sewer network including sewers, pumping stations, and forcemains.	Section 4.2
☐	Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).	N/A

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☐	Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	N/A
☐	Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	N/A
☐	Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	N/A
☐	Special considerations such as contamination, corrosive environment etc.	N/A

4.4 Development Servicing Report: Stormwater Checklist

☒	Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)	Section 5.1
☐	Analysis of available capacity in existing public infrastructure.	N/A
☐	A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	N/A
☒	Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.	Section 5.2
☒	Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Section 5.2
☒	Description of the stormwater management concept with facility locations and descriptions with references and supporting information	Section 5.3
☐	Set-back from private sewage disposal systems.	N/A
☐	Watercourse and hazard lands setbacks.	N/A
☒	Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	Appendix A
☐	Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	N/A
☒	Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).	Section 5.3
☐	Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	N/A
☒	Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.	Section 5.1, Section 5.3
☐	Any proposed diversion of drainage catchment areas from one outlet to another.	N/A
☐	Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	N/A
☐	If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.	N/A
☐	Identification of potential impacts to receiving watercourses	N/A
☐	Identification of municipal drains and related approval requirements.	N/A

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☒	Descriptions of how the conveyance and storage capacity will be achieved for the development.	Section 5.3
☐	100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	N/A
☐	Inclusion of hydraulic analysis including hydraulic grade line elevations.	N/A
☐	Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	N/A
☐	Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.	N/A
☐	Identification of fill constraints related to floodplain and geotechnical investigation.	N/A

4.5 Approval and Permit Requirements: Checklist

☐	Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement ct. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.	N/A
☐	Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.	N/A
☐	Changes to Municipal Drains.	N/A
☐	Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)	N/A

4.6 Conclusion Checklist

☒	Clearly stated conclusions and recommendations	Section 8.0
☐	Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.	
☐	All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario	

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

Charlotte Kelly

Subject: FW: 145 Loretta Avenue North/ 951 Gladstone Avenue

From: Fraser, Mark <Mark.Fraser@ottawa.ca>
Sent: August 7, 2019 4:09 PM
To: Brandon Chow <BChow@dsel.ca>
Cc: O'Connor, Ann <Ann.O'Connor@ottawa.ca>
Subject: RE: 145 Loretta Avenue North/ 951 Gladstone Avenue

Hi Brandon,

The stormwater management criteria noted in the attached correspondence was provided in error after further review of the install year of the receiving storm sewer. Based on the install year of **1967** the 1350mm dia. storm sewer within Loretta Ave. was only designed to a 2-year level of service not a 5-year level of service [pre-1970 the design of the storm sewers were based on a 2-year storm].

Post-development flows from the subject site are to be controlled up to a 100-year storm event, to a **2-year allowable release rate** calculated using a runoff coefficient (C) determined using the pre-development runoff coefficient or a maximum equivalent 'C' of 0.5, whichever is less (Cl.8.3.7.3) [If 0.5 applies it needs to be clearly demonstrated in the report that the pre-development runoff coefficient is greater than 0.5], and a calculated time of concentration (T_c) using an appropriate method to justify the parameter selection [*T_c of 20 minutes should be used for all pre-development calculations without engineering justification, Tc should not be less than 10 min. since IDF curves become unrealistic at less than 10 min; T_c of 10 minutes shall be used for all post-development calculations*].

Please note that the impact from the receiving storm system HGL will need to be assessed if underground storage is proposed as part of the stormwater management solution. The receiving storm sewer system is uncontrolled and therefore subject to surcharge (HGL will be elevated for events greater than 2-year storm event).

If using the modified rational method to calculate the storage requirements for the site any underground storage should not be included in the overall available storage. The modified rational method assumes that the restricted flow rate is constant throughout the storm which underestimates the storage requirement prior to the 1:100 year head elevation being reached. Please note that if you wish to utilize any underground storage as available storage, the $Q_{(release)}$ must be modified to compensate for the lack of head on the orifice. An assumed average release rate equal to 50% of the peak allowable rate shall be applied. Otherwise, disregard the underground storage as available storage or provide modeling to support the SWM strategy.

If you have any questions or require any clarification please let me know.

Regards,

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

From: Brandon Chow <BChow@dsel.ca>
Sent: August 06, 2019 5:41 PM
To: Fraser, Mark <Mark.Fraser@ottawa.ca>
Subject: 145 Loretta Avenue North/ 951 Gladstone Avenue

Hi Mark,

We would like to confirm stormwater management requirements for the proposed development at the above noted site.
A City comment on the Adequacy of Services Report noted that the receiving storm sewer system is a 2-year system. Previous correspondence with the City (attached) indicated the allowable release rate to be based on the below criteria.

- 1:5 year storm
- C=0.5
- 10min concentration time

Can you please confirm?

Thanks,

Brandon Chow
Project Coordinator / Intermediate Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext.532
fax: (613) 836-7183
email: bchow@DSEL.ca

'

Amr Salem

From: Eric Lalande <eric.lalande@rvca.ca>
Sent: September 26, 2018 9:29 AM
To: Amr Salem
Cc: Steve Merrick
Subject: RE: 1026- 145 Loretta Ave N/951 Gladstone Ave

Hi Amr,

The RVCA looks for on-site enhance level of protection (80% TSS Removal) for quality control for sites less than 2km away from an outlet without an intervening storm water management facility. Specifically as it relates to surface parking, this standard is expected to be achieved, on-site best management practices including LID could be provided and demonstrated through the Site Servicing report.

Thanks,

Eric Lalande, MCIP, RPP
Planner, Rideau Valley Conservation Authority
613-692-3571 x1137

From: Amr Salem <ASalem@dsel.ca>
Sent: Wednesday, September 26, 2018 9:24 AM
To: Eric Lalande <eric.lalande@rvca.ca>
Cc: Steve Merrick <SMerrick@dsel.ca>
Subject: FW: 1026- 145 Loretta Ave N/951 Gladstone Ave

Good morning Eric,

I just wanted to follow up on this. Did you get a chance to review?

Please let me know if you have any questions.

Thank you,

Amr Salem
Project Coordinator

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext. 512
email: asalem@DSEL.ca

From: Jamie Batchelor <jamie.batchelor@rvca.ca>
Sent: September 21, 2018 1:47 PM
To: Amr Salem <ASalem@dsel.ca>
Cc: Steve Merrick <SMerrick@dsel.ca>; Eric Lalande <eric.lalande@rvca.ca>
Subject: RE: 1026- 1045 Loretta Ave N/951 Gladstone Ave

Good Afternoon Amr,

I am forwarding this to Eric as it would be in his area.

From: Amr Salem <ASalem@dsel.ca>
Sent: Friday, September 21, 2018 11:47 AM
To: Jamie Batchelor <jamie.batchelor@rvca.ca>
Cc: Steve Merrick <SMerrick@dsel.ca>
Subject: 1026- 1045 Loretta Ave N/951 Gladstone Ave

Good morning Jamie ,

We wanted to consult with you regarding a mixed-use development we are working on located at the intersection of Gladstone Avenue and Lorretta Avenue North.

The existing stormwater on site discharges to the municipal infrastructure (1350 mm Diameter Storm Sewer) within Gladstone Avenue and Lorretta Avenue. The stormwater collected from the site travels approximately 1.3 km through municipal sewer to a direct outlet into the Ottawa River.

The development proposes to construct new mixed use buildings (commercial/office/residential) consisting of three high-rise residential towers with one of which stemming from a large commercial/office building fronting Gladstone Ave with the other towers located to the North. The site will be landscape with storm water primarily coming from the roof tops collected from the towers. There will be approximately parking for 14 cars on the surface of the lot with the majority of parking located underground.

At present, the existing site area consists of mostly paved asphalt for surface parking (50+ spots) and 4 buildings.

Can you please provide your input regarding quality controls that maybe required for the site.

Please feel free to contact me if you have any questions.

Regards,

Amr Salem
Project Coordinator

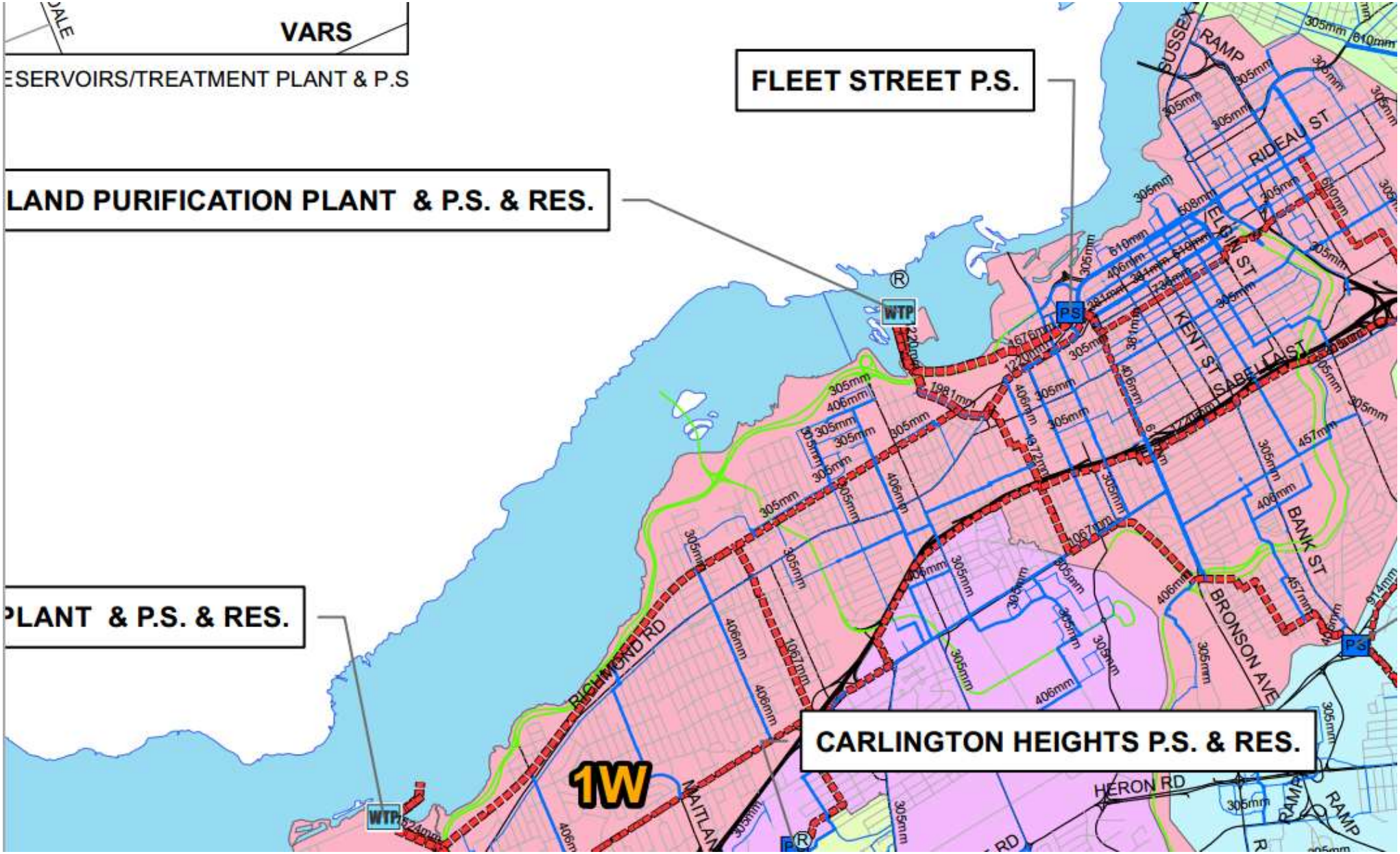
DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext. 512
email: asalem@DSEL.ca

APPENDIX B

Water Supply


VARS
ESERVOIRS/TREATMENT PLANT & P.S
FLEET STREET P.S.
LAND PURIFICATION PLANT & P.S. & RES.
PLANT & P.S. & RES.
CARLINGTON HEIGHTS P.S. & RES.
1W
WTP
PS
RIDEAU ST
KENT ST
BANK ST
BRONSON AVE
RICHMOND RD
HERON RD
SUSSEX
RAMP

2012 Water Distribution System

Department of Infrastructure Services

Scale 1:2,500

Ottawa

366-029

1W

Legend

- Public Hydrant
- Private Hydrant
- Summer only Flusher Hydrant
- Flusher Hydrant
- Gate Valve
- Tapping Valve
- Butterfly Valve
- Buried Valve
- Drain Pipe
- Check Valve
- Closed Valve
- Drain-Out Valve
- Left Hand Valve
- Spot Elevation
- Pressure Reducing Valve
- Air Relief Valve
- Bypass Valve
- Feedermain Valve
- Inspection Plate
- Cap
- Reducer
- Jump
- Water Meter
- Water Service
- Backbone Pipe
- Watermain with Pipe Diameter, Material and Install Year (e.g. 203 PVC-1981)
- Pipe Casing
- Pressure Zone Delineation and Identifier (e.g. 2W)
- Well
- Elevated Tank
- Water Pumping Station
- Water Reservoir
- Water Treatment Plant

Pipe Equivalents

nominal (mm)	actual (inches)	nominal (mm)	actual (inches)	nominal (mm)	actual (inches)
100	4	675	27	1800	72
150	6	750	30	1950	78
200	8	825	33	2025	80
250	10	900	36	2100	84
300	12	975	39	2250	90
375	15	1050	42	2400	96
400	16	1200	48	2550	102
450	18	1350	54	2700	108
525	21	1500	60	2850	114
600	24	1650	66	3000	120

Pipe Materials

A - ASBESTOS
CI - CAST IRON
CO - COPPER
CO0 - AWWA C300
CO1 - AWWA C301
CO2 - AWWA C302
CO3 - AWWA C303
DI - DUCTILE IRON
PE - POLYETHYLENE (DR11 TO DR21)
PVC - POLYVINYL CHLORIDE
STC - CONCRETE LINED STEEL PIPE
UCI - UNLINED CAST IRON
UNK - UNKNOWN MATERIAL

	364-031	366-031	368-031 370-031
362-030	364-030	366-030	368-030 370-030
362-029	364-029	366-029	368-029 370-029
362-028	364-028	366-028	368-028 370-028
362-027	364-027	366-027	368-027 370-027

145 Loretta Avenue North / 951 Gladstone Avenue
Trinity Development Group Inc
Existing Site Water Demand

Water Demand Design Flows per Unit Count
City of Ottawa - Water Distribution Guidelines, July 2010

Domestic Demand

Type of Housing	Per / Unit	Units	Pop
Single Family	3.4		0
Semi-detached	2.7		0
Townhouse	2.7		0
Apartment			0
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8		0

	Pop	Avg. Daily		Max Day		Peak Hour	
		m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Total Domestic Demand	0	0.0	0.0	0.0	0.0	0.0	0.0

Institutional / Commercial / Industrial Demand

				Avg. Daily		Max Day		Peak Hour	
Property Type	**Unit Rate**		**Units**	m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Water Closets	150.0	L/hr		0.00	0.0	0.0	0.0	0.0	0.0
Restaurant	125.0	L/seat/d		0.00	0.0	0.0	0.0	0.0	0.0
Commercial floor space**	5.0	$L/m^2/d$	6,482	32.41	22.5	48.6	33.8	87.5	60.8
Laundry	1,200.0	L/machine/d		0.00	0.0	0.0	0.0	0.0	0.0
School	70	L/student/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Light	35,000	L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Heavy	55,000	L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
		Total I/CI Demand		32.4	22.5	48.6	33.8	87.5	60.8
		Total Demand		**32.4**	**22.5**	**48.6**	**33.8**	**87.5**	**60.8**

* Based on a daily demand of 200L/day per person as identified by Appendix 4-A of the Sewer design guidelines
**Assuming a 12 hour commercial operation

145 Loretta Avenue North / 951 Gladstone Avenue
Trinity Development Group Inc
Proposed Site Water Demand

Water Demand Design Flows per Unit Count
City of Ottawa - Water Distribution Guidelines, July 2010

Domestic Demand

Type of Housing	Per / Unit	Units	Pop
Single Family	3.4		0
Semi-detached	2.7		0
Townhouse	2.7		0
Apartment			0
Bachelor	1.4	120	168
1 Bedroom	1.4	244	342
2 Bedroom	2.1	336	706
3 Bedroom	3.1	45	140
Average	1.8		0

	Pop	Avg. Daily		Max Day		Peak Hour	
		m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Total Domestic Demand	1356	379.7	263.7	949.2	659.2	2088.2	1450.2

Institutional / Commercial / Industrial Demand

			Avg. Daily		Max Day		Peak Hour	
Property Type	**Unit Rate**	**Units**	m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Office	75 L/9.3m^2/d	17,569	141.68	98.4	212.5	147.6	382.5	265.7
Commercial floor space**	5 L/m^2/d	3,276	16.38	11.4	24.6	17.1	44.2	30.7
Laundry	1,200 L/machine/d		0.00	0.0	0.0	0.0	0.0	0.0
School	70 L/student/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Light	35,000 L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Heavy	55,000 L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
	Total I/CI Demand		158.1	109.8	237.1	164.7	426.8	296.4
	Total Demand		**537.7**	**373.4**	**1186.3**	**823.8**	**2515.0**	**1746.5**

**Assuming a 12 hour commercial operation

Boundary Conditions Unit Conversion

CONNECTION 1 [203mm dia. – Gladstone Ave.]
Grnd Elev 67.23

	Hight (m)	m H2O	PSI	kPa
Avg. Day	**114.8**	47.57	67.7	466.7
Peak Hour	**107.5**	40.27	57.3	395.0
Max Day + FF	**108.8**	41.57	59.1	407.8

CONNECTION 2 [203mm dia. – Loretta Ave. N.]
Grnd Elev 67.48

	Hight (m)	m H2O	PSI	kPa
Avg. Day	**114.8**	47.32	67.3	464.2
Peak Hour	**107.5**	40.02	56.9	392.6
Max Day + FF	**107.7**	40.22	57.2	394.6

Amr Salem

From: Amr Salem
Sent: July 26, 2019 3:52 PM
To: 'Buchanan, Richard'
Cc: Brandon Chow
Subject: 145 Loretta Avenue North/ 951 Gladstone Avenue - Updated Boundary Conditions Request
Attachments: 2019-07-22 - Architecture Coordination Set.pdf; 2019-07-26 _wtr_Proposed_Conditions_aas.pdf; 2019-07-23_1026_OBC_NFPA_aas.pdf

Hello Richard,

We would like to kindly request updated boundary conditions for the proposed development at **145 Loretta Avenue North/ 951 Gladstone Avenue** using the following proposed development demands:

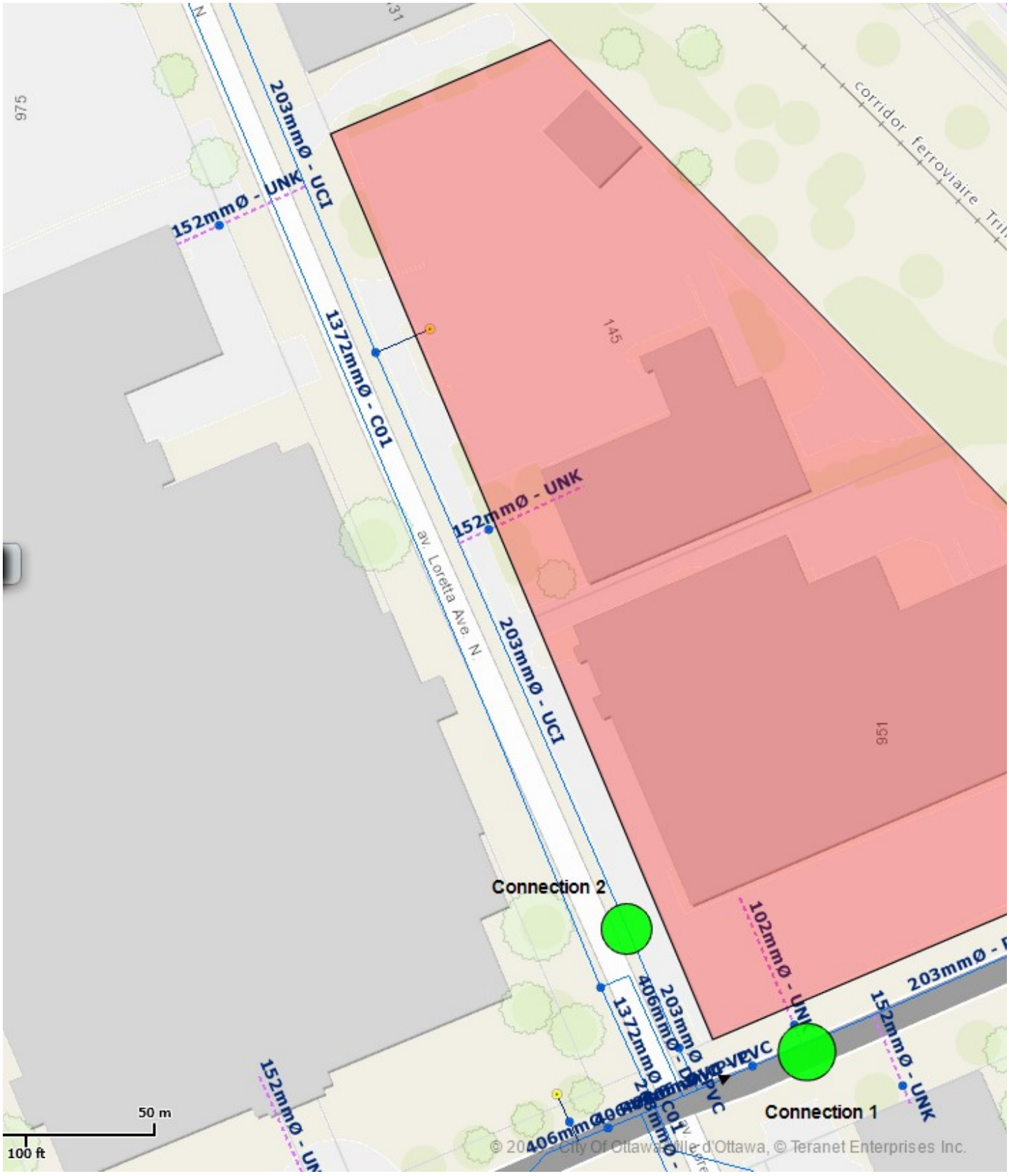
1. Location of Service / Street Number: **145 Loretta Avenue North/ 951 Gladstone Avenue**

2. Type of development: **The proposed mixed-use development involves 3 multi-storey residential towers (30, 33 and 35 storeys) above a common retail and office podium, consisting of a total of 745 residential units. An underground parking garage extending the footprint of the site is also proposed. Please note that the existing 3-storey Standard Bread Building is to be retained.**
Please find attached the Site Plan for reference.

3. Proposed Connection points:
   - **Connection 1 to existing 203mm diameter watermain along Gladstone Avenue east of Loretta and Gladstone intersection.**
   - **Connection 2 to existing 203mm diameter watermain along Loretta Avenue north of Loretta and Gladstone intersection.**
   Please see the diagram below for reference.

4. Please provide pressures for the following water demand scenarios required for the proposed development:

	L/min	L/s
Avg. Daily	373.4	6.2
Max Day + NFPA	823.8 + 4150.0 = 4,973.8	13.7 + 69.2 = 82.9
Peak Hour	1746.5	29.1



Thank you in advance,

Amr Salem
Project Coordinator

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext. 512
email: asalem@DSEL.ca

Amr Salem

From: Fraser, Mark <Mark.Fraser@ottawa.ca>
Sent: August 2, 2019 11:50 AM
To: Amr Salem
Cc: O'Connor, Ann; Brandon Chow
Subject: RE: 145 Loretta Avenue North/ 951 Gladstone Avenue - Updated Boundary Conditions Request
Attachments: 145 Loretta_Gladstone Aug 2019.pdf; 2019-07-22 - Architecture Coordination Set.pdf; 2019-07-26_wtr_Proposed_Conditions_aas.pdf; 2019-07-23_1026_OBC_NFPA_aas.pdf

Hi Arm,

Please find below updated boundary conditions for hydraulic analysis at 145 Loretta Ave. N. / 951 Gladstone Ave. (zone 1W) assumed to be connected to the 203m on Gladstone (Connection 1) and 203mm on Loretta (Connection 2) as requested. See attached PDF for connection locations.

CONNECTION 1 [203mm dia. – Gladstone Ave.]
Minimum HGL = 107.5M
Maximum HGL = 114.8m
MaxDay + Fire Flow (69 L/s) = 108.8m

CONNECTION 2 [203mm dia. – Loretta Ave. N.]
Minimum HGL = 107.5mm
Maximum HGL = 114.8m
MaxDay + Fire Flow (69 L/s) = 107.7m

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

Please refer to *City of Ottawa, Ottawa Design Guidelines – Water Distribution, First Edition, July 2010, WDG001 Clause 4.2*.2 for watermain pressure and demand objectives.

Disclaimer: The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation.

If you have any questions please let me know.

Regards,

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

National Fire Protection Association (NFPA) 13 – Standard for the Installation of Sprinkler Systems

Table 11.2.2.1, Table 11.2.3.1.2

National Fire Protection Association 13 - Standard for the Installation of Sprinkler Systems Report, Table 11.2.2.1

Table 11.2.2.1 Water Supply Requirements for Pipe Schedule Sprinkler Systems

Occupancy Classification	Minimum Residual Pressure Required		Acceptable Flow at Base of Riser (Including Hose Stream Allowance)		Duration (minutes)
	psi	bar	gpm	L/min	
Light hazard	15	1	500–750	1900-2850	30–60
Ordinary hazard	20	1.4	850–1500	3200-5700	60–90

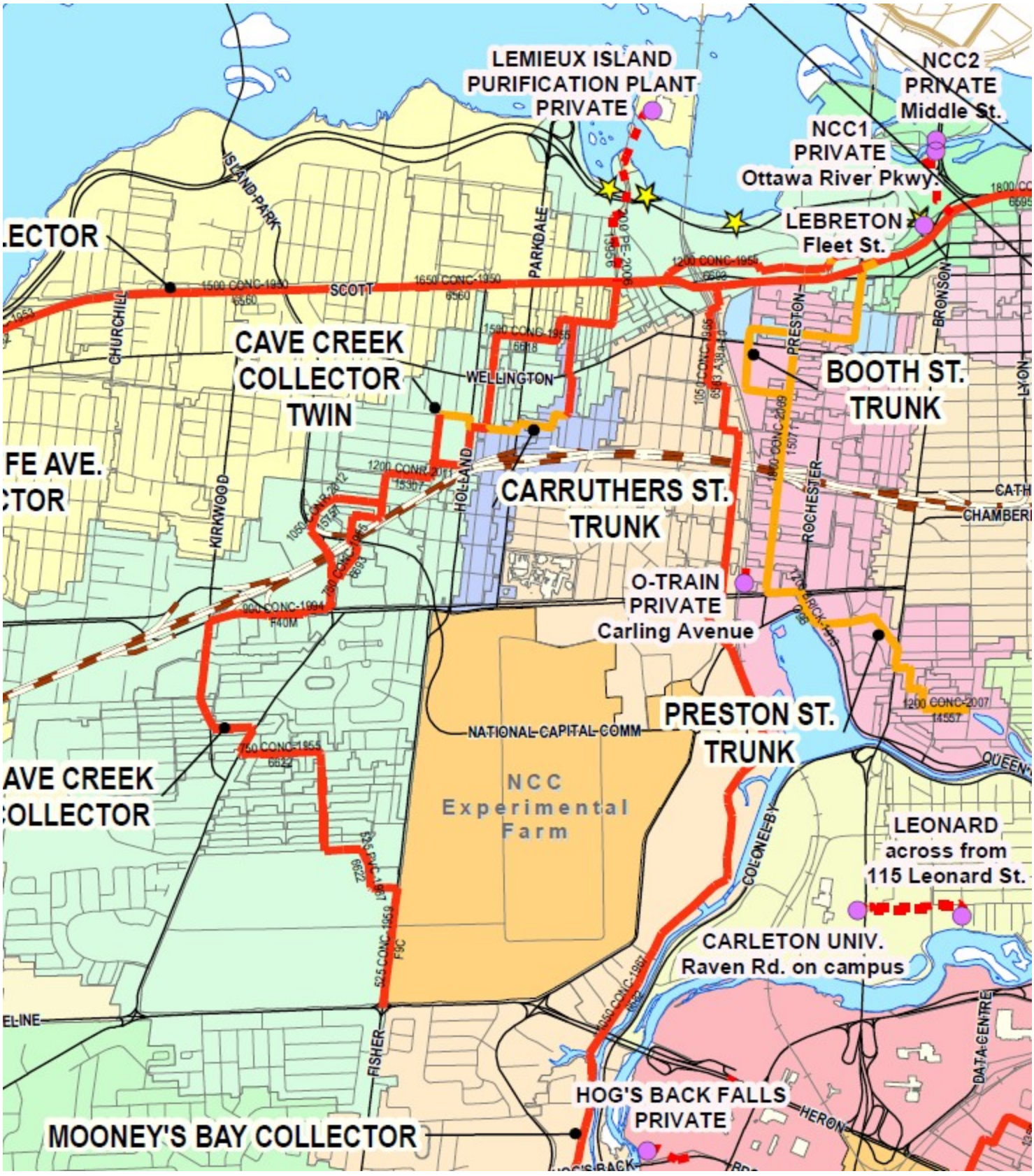
National Fire Protection Association 13 - Standard for the Installation of Sprinkler Systems Report, Table 11.2.3.1.2

Table 11.2.3.1.2 Hose Stream Allowance and Water Supply Duration Requirements for Hydraulically Calculated Systems

Occupancy	Inside Hose		Total Combined Inside and Outside Hose		Duration (minutes)
	gpm	L/min	gpm	L/min	
Light hazard	0, 50, or 100	0, 190, or 380	100	380	30
Ordinary hazard	0, 50, or 100	0, 190, or 380	250	950	60–90
Extra hazard	0, 50, or 100	0, 190, or 380	500	1900	90–120

APPENDIX C

Wastewater Collection


LEMIEUX ISLAND
PURIFICATION PLANT
PRIVATE
NCC2
PRIVATE
Middle St.
NCC1
PRIVATE
Ottawa River Pkwy.
LEBRETON
Fleet St.
ISLAND PARK
PARKDALE
SCOTT
1500 CONC-1930
1650 CONC-1950
1200 CONC-1955
CHURCHILL
CAVE CREEK
COLLECTOR
TWIN
WELLINGTON
1590 CONC-1955
BOOTH ST.
TRUNK
PRESTON
BRONSON
HOLLAND
CARRUTHERS ST.
TRUNK
KIRKWOOD
ROCHESTER
1200 CONC-2011
900 CONC-1994
F40M
O-TRAIN
PRIVATE
Carling Avenue
PRESTON ST.
TRUNK
1200 CONC-2007
NATIONAL CAPITAL COMM
NCC
Experimental
Farm
750 CONC-1955
6622
COLONEL BY
LEONARD
across from
115 Leonard St.
CARLETON UNIV.
Raven Rd. on campus
525 CONC-1959
F9C
FISHER
HOG'S BACK FALLS
PRIVATE
HERON
DATA CENTRE
MOONEY'S BAY COLLECTOR

145 Loretta Avenue North / 951 Gladstone Avenue
Trinity Development Group Inc
Existing Development Sanitary Flow

Wastewater Design Flows per Unit Count
City of Ottawa Sewer Design Guidelines, 2012

Site Area	1.00	**ha**

Extraneous Flow Allowances

Infiltration / Inflow	**0.33**	**L/s**

Domestic Contributions

Unit Type	**Unit Rate**	**Units**	**Pop**
Single Family	3.4		0
Semi-detached and duplex	2.7		0
Townhouse	2.7		0
Stacked Townhouse (Duplex)	2.3		0
Apartment			
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8		0
Type of Housing	**Per/Bed**	**Beds**	**Pop**
Boarding*	1		0

Total Pop	**0**	
Average Domestic Flow	**0.00**	**L/s**
Peaking Factor	**3.80**	
Peak Domestic Flow	**0.00**	**L/s**

Institutional / Commercial / Industrial Contributions

Property Type	**Unit Rate**		**No. of Units**	**Avg Wastewater (L/s)**
Water Closets	150	L/hr		0.00
Restaurant	125	L/seat/d		0.00
Commercial floor space*	5	$L/m^2/d$	6,482	0.75
Laundry*	1,200	L/machine/d		0.00
Hospitals	900	L/bed/d		0.00
School	70	L/student/d		0.00

Average I/C/I Flow	**0.75**
Peak Institutional / Commercial Flow	1.13
Peak Industrial Flow**	0.00
Peak I/C/I Flow	**1.13**

** assuming a 12 hour commercial operation*

Total Estimated Average Dry Weather Flow Rate	**0.75**	**L/s**
Total Estimated Peak Dry Weather Flow Rate	**1.13**	**L/s**
Total Estimated Peak Wet Weather Flow Rate	**1.46**	**L/s**

145 Loretta Avenue North / 951 Gladstone Avenue
Trinity Development Group Inc
Proposed Development Sanitary Flow

Wastewater Design Flows per Unit Count
City of Ottawa Sewer Design Guidelines, 2012

Site Area	1.00	**ha**

Extraneous Flow Allowances

Infiltration / Inflow	**0.33**	**L/s**

Domestic Contributions

Unit Type	Unit Rate	Units	Pop
Single Family	3.4		0
Semi-detached and duplex	2.7		0
Townhouse	2.7		0
Stacked Townhouse (Duplex)	2.3		0
Apartment			
Bachelor	1.4	120	168
1 Bedroom	1.4	244	342
2 Bedroom	2.1	336	706
3 Bedroom	3.1	45	140
Average	1.8		0
	Total Pop		**1356**

Average Domestic Flow	**4.39**	**L/s**
Peaking Factor	**3.17**	
Peak Domestic Flow	**13.92**	**L/s**

Institutional / Commercial / Industrial Contributions

Property Type	Unit Rate	No. of Units	Avg Wastewater (L/s)
Office	75 L/9.3m^2/d	17,569	1.64
Restaurant	125 L/seat/d		0.00
Commercial floor space*	5 L/m^2/d	3,276	0.38
Laundry*	1,200 L/machine/d		0.00
Hospitals	900 L/bed/d		0.00
School	70 L/student/d		0.00

Average I/C/I Flow	**2.02**
Peak Institutional / Commercial Flow	3.03
Peak Industrial Flow**	0.00
Peak I/C/I Flow	**3.03**

** assuming a 12 hour commercial operation*

Total Estimated Average Dry Weather Flow Rate	**6.41**	**L/s**
Total Estimated Peak Dry Weather Flow Rate	**16.95**	**L/s**
Total Estimated Peak Wet Weather Flow Rate	**17.28**	**L/s**

APPENDIX D

Stormwater Management

Estimated Peak Stormwater Flow Rate
City of Ottawa Sewer Design Guidelines, 2012

Existing Drainage Charateristics From Internal Site

Area	1.00	ha	
C	0.90	Rational Method runoff coefficient	
L	139	m	
Up Elev	67.25	m	
Dn Elev	64.25	m	
Slope	2.2	%	
Tc	6.0	min	
Tc	10.0	min	<-- Assume 10 minutes as minimum

1) Time of Concentration per Federal Aviation Administration

$$t_c = \frac{1.8(1.1-C)L^{0.5}}{S^{0.333}}$$

tc, in minutes
C, rational method coefficient, (-)
L, length in ft
S, average watershed slope in %

Estimated Peak Flow

	2-year	**5-year**	**100-year**	
i	76.8	104.2	178.6	mm/hr
Q	192.0	260.5	496.0	L/s

Stormwater - Proposed Development
City of Ottawa Sewer Design Guidelines, 2012
Target Flow Rate

Area 1.00 ha
C 0.50 Rational Method runoff coefficient
t_c 10.0 min **Based on a time of concentration equal to or greater than 10 min*

2-year
i 76.8 mm/hr
Q 106.7 L/s

Estimated Post Development Peak Flow from Unattenuated Areas

Total Area 0.165 ha
C 0.55 Rational Method runoff coefficient

	5-year					100-year				
t_c (min)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)	i (mm/hr)	Q_{actual}* (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)
10.0	104.2	26.3	26.3	0.0	0.0	178.6	56.3	56.3	0.0	0.0

Note:
C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

Estimated Post Development Peak Flow from Attenuated Areas

Total Area 0.84 ha
C 0.85 Rational Method runoff coefficient

	5-year					100-year				
t_c (min)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)
10	104.2	205.4	25.0	180.4	108.3	178.6	414.2	50.4	363.7	218.2
15	83.6	164.7	25.1	139.7	125.7	142.9	331.4	50.4	281.0	252.9
20	70.3	138.5	25.1	113.4	136.1	120.0	278.2	50.4	227.8	273.4
25	60.9	120.1	25.1	94.9	142.4	103.8	240.9	50.4	190.5	285.7
30	53.9	106.3	25.2	81.2	146.1	91.9	213.1	50.4	162.7	292.8
35	48.5	95.7	25.2	70.5	148.0	82.6	191.5	50.4	141.1	296.4
40	44.2	87.1	25.2	61.9	148.6	75.1	174.3	50.4	123.9	297.3
45	40.6	80.1	25.2	54.9	148.2	69.1	160.2	50.4	109.7	296.3
50	37.7	74.2	25.2	49.0	147.0	64.0	148.3	50.4	97.9	293.8
55	35.1	69.2	25.2	44.0	145.2	59.6	138.3	50.4	87.9	290.0
60	32.9	64.9	25.3	39.7	142.9	55.9	129.6	50.4	79.2	285.2
65	31.0	61.2	25.3	35.9	140.2	52.6	122.1	50.4	71.7	279.6
70	29.4	57.9	25.3	32.6	137.0	49.8	115.5	50.4	65.1	273.3
75	27.9	55.0	25.3	29.7	133.6	47.3	109.6	50.4	59.2	266.4
80	26.6	52.4	25.3	27.1	129.9	45.0	104.4	50.4	53.9	258.9
85	25.4	50.0	25.3	24.7	126.0	43.0	99.6	50.4	49.2	251.0
90	24.3	47.9	25.3	22.6	121.9	41.1	95.4	50.4	44.9	242.7
95	23.3	45.9	25.3	20.6	117.6	39.4	91.5	50.4	41.1	234.0
100	22.4	44.2	25.3	18.8	113.1	37.9	87.9	50.4	37.5	225.0
105	21.6	42.6	25.3	17.2	108.4	36.5	84.7	50.4	34.2	215.7
110	20.8	41.1	25.3	15.7	103.7	35.2	81.7	50.4	31.2	206.2

Note:
C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

5-year $Q_{attenuated}$ 25.19 L/s **100-year $Q_{attenuated}$ 50.41 L/s**
5-year Max. Storage Required 148.6 m^3 **100-year Max. Storage Required 297.3 m^3**

Summary of Release Rates and Storage Volumes

Control Area	5-Year Release Rate (L/s)	5-Year Storage (m^3)	100-Year Release Rate (L/s)	100-Year Storage (m^3)
Unattenuated Areas	26.3	0.0	56.3	0.0
Attenutated Areas	25.2	148.6	50.4	297.3
Total	**51.5**	**148.6**	**106.7**	**297.3**

Detailed Stormceptor Sizing Report – Area 2

Project Information & Location			
Project Name	145 Loretta Ave. N	**Project Number**	-
City	Ottawa	**State/ Province**	Ontario
Country	Canada	**Date**	8/7/2019
Designer Information		**EOR Information (optional)**	
Name	Brandon O'Leary	**Name**	Brandon Chow
Company	Forterra	**Company**	David Schaeffer Engineering Ltd.
Phone #	905-630-0359	**Phone #**	
Email	brandon.oleary@forterrabp.com	**Email**	

Stormwater Treatment Recommendation

The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	Area 2
Recommended Stormceptor Model	EFO8
TSS Removal (%) Provided	84
Particle Size Distribution (PSD)	Fine Distribution
Rainfall Station	OTTAWA MACDONALD-CARTIER INT'L A

The recommended Stormceptor model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

EFO Sizing Summary			
EFO Model	**% TSS Removal Provided**	**% Runoff Volume Captured Provided**	**Standard EFO Hydrocarbon Storage Capacity**
EFO4	69	81	265 L (70 gal)
EFO6	79	92	610 L (160 gal)
EFO8	84	97	1070 L (280 gal)
EFO10	88	99	1670 L (440 gal)
EFO12	90	99	2475 L (655 gal)
Parallel Units / MAX	Custom	Custom	Custom

For Stormceptor Specifications and Drawings Please Visit:
http://www.imbriumsystems.com/technical-specifications

OVERVIEW

Stormceptor ® EF is a continuation and evolution of the most globally recognized oil-grit separator (OGS) stormwater treatment technology - **Stormceptor ®.** Also known as a hydrodynamic separator, the enhanced flow Stormceptor EF is a high performing oil-grit separator that effectively removes a wide variety of pollutants from stormwater and snowmelt runoff at higher flow rates as compared to the original Stormceptor. Stormceptor EF captures and retains sediment (TSS), free oils, gross pollutants and other pollutants that attach to particles, such as nutrients and metals. Stormceptor EF's patent-pending treatment and scour prevention technology and internal bypass ensures sediment is retained during all rainfall events.

Design Methodology

Stormceptor is sized using PCSWMM for Stormceptor, a continuous simulation model based on US EPA SWMM. The program calculates hydrology using local historical rainfall data and specified site parameters. With US EPA SWMM's precision, every Stormceptor unit is designed to achieve a defined water quality objective. The TSS removal data presented follows US EPA guidelines to reduce the average annual TSS load. The Stormceptor's unit process for TSS removal is settling. The settling model calculates TSS removal by analyzing:

- Site parameters
- Continuous historical rainfall data, including duration, distribution, peaks & inter-event dry periods
- Particle size distribution, and associated settling velocities (Stokes Law, corrected for drag)
- TSS load
- Detention time of the system

Hydrology Analysis
PCSWMM for Stormceptor calculates annual hydrology with the US EPA SWMM and local continuous historical rainfall data. Performance calculations of Stormceptor are based on the average annual removal of TSS for the selected site parameters. The Stormceptor is engineered to capture sediment particles by treating the required average annual runoff volume, ensuring positive removal efficiency is maintained during each rainfall event, and preventing negative removal efficiency (scour). Smaller recurring storms account for the majority of rainfall events and average annual runoff volume, as observed in the historical rainfall data analyses presented in this section.

Rainfall Station			
State/Province	Ontario	**Total Number of Rainfall Events**	4093
Rainfall Station Name	OTTAWA MACDONALD-CARTIER INT'L A	**Total Rainfall (mm)**	20978.1
Station ID #	6000	**Average Annual Rainfall (mm)**	567.0
Coordinates	45°19'N, 75°40'W	**Total Evaporation (mm)**	1872.7
Elevation (ft)	370	**Total Infiltration (mm)**	1254.5
Years of Rainfall Data	37	**Total Rainfall that is Runoff (mm)**	17850.9

Notes
• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules. • Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed. • For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

ONLINE APPLICATION

Stormceptor EF's internal bypass and patent-pending scour prevention technology has demonstrated very effective retention of pollutants in third-party testing and verification following the Canadian ETV's **Procedure for Laboratory Testing of Oil-Grit Separators.** Sediment scour prevention demonstrated an effluent concentration of less than 10 mg/L for sediment particles ranging from 1 to 1,000 microns, even during peak influent flow rates associated with infrequent high intensity storm events. While Stormceptor EF will capture oil, only the Stormceptor EFO configuration has been third-party tested and verified to retain greater than 99% of captured oil. Based on these verified performance attributes, the most efficient and widely accepted application of Stormceptor EF is an online configuration, which allows all upstream conveyance flows to enter and exit the unit. The online application eliminates the need for costly additional bypass structures, piping and installation expense.

FLOW ENTRANCE OPTIONS

Single Inlet Pipe – A common design which includes one inlet pipe and one outlet pipe. A 90-degree (maximum) bend is also accepted with this configuration.

Inlet Grate – Allows surface runoff to enter the unit from grade. The inlet grate option can also be used in conjunction with one inlet pipe or multiple inlet pipes. A removable flow deflector is added in the Stormceptor EF4/EFO4.

Maximum Pipe Diameter		
Model	Inlet (in/mm)	Outlet (in/mm)
EF4 / EFO4	24 / 610	24 / 610
EF6 / EFO6	36 / 915	36 / 915
EF8 / EFO8	48 / 1220	48 / 1220
EF10 / EFO10	72 / 1828	72 / 1828
EF12 / EFO12	72 / 1828	72 / 1828

Multiple Inlet Pipe – Allows for multiple inlet pipes of various diameters to enter the unit.

Maximum Pipe Diameter		
Model	Inlet (in/mm)	Outlet (in/mm)
EF4 / EFO4	18 / 457	24 / 610
EF6 / EFO6	30 / 762	36 / 915
EF8 / EFO8	42 / 1067	48 / 1220
EF10 / EFO10	60 / 1524	72 / 1828
EF12 / EFO12	60 / 1524	72 / 1828

Drainage Area	
Total Area (ha)	0.835
Imperviousness %	94

Up Stream Storage	
Storage (ha-m)	Discharge (cms)
0.000	0.000

Up Stream Flow Diversion	
Max. Flow to Stormceptor (cms)	

Water Quality Objective	
TSS Removal (%)	80.0
Runoff Volume Capture (%)	90.00
Oil Spill Capture Volume (L)	
Peak Conveyed Flow Rate (L/s)	
Water Quality Flow Rate (L/s)	

Design Details	
Stormceptor Inlet Invert Elev (m)	
Stormceptor Outlet Invert Elev (m)	
Stormceptor Rim Elev (m)	
Normal Water Level Elevation (m)	
Pipe Diameter (mm)	
Pipe Material	
Multiple Inlets (Y/N)	No
Grate Inlet (Y/N)	No

Particle Size Distribution (PSD)

Removing the smallest fraction of particulates from runoff ensures the majority of pollutants, such as metals, hydrocarbons and nutrients are captured. The table below identifies the Particle Size Distribution (PSD) that was selected to define TSS removal for the Stormceptor design.

Fine Distribution		
Particle Diameter (microns)	Distribution %	Specific Gravity
20.0	20.0	1.30
60.0	20.0	1.80
150.0	20.0	2.20
400.0	20.0	2.65
2000.0	20.0	2.65

Site Name	Area 2

Site Details

Drainage Area

Total Area (ha)	0.835
Imperviousness %	94
Oil Spill Capture Volume (L)	

Infiltration Parameters

Horton's equation is used to estimate infiltration

Max. Infiltration Rate (mm/hr)	61.98
Min. Infiltration Rate (mm/hr)	10.16
Decay Rate (1/sec)	0.00055
Regeneration Rate (1/sec)	0.01

Surface Characteristics

Width (m)	183.00
Slope %	2
Impervious Depression Storage (mm)	0.508
Pervious Depression Storage (mm)	5.08
Impervious Manning's n	0.015
Pervious Manning's n	0.25

Evaporation

Daily Evaporation Rate (mm/day)	2.54

Dry Weather Flow

Dry Weather Flow (L/s)	0

Maintenance Frequency

Maintenance Frequency (months) >	12

Winter Months

Winter Infiltration	0

TSS Loading Parameters

TSS Loading Function	Build Up/ Wash-off

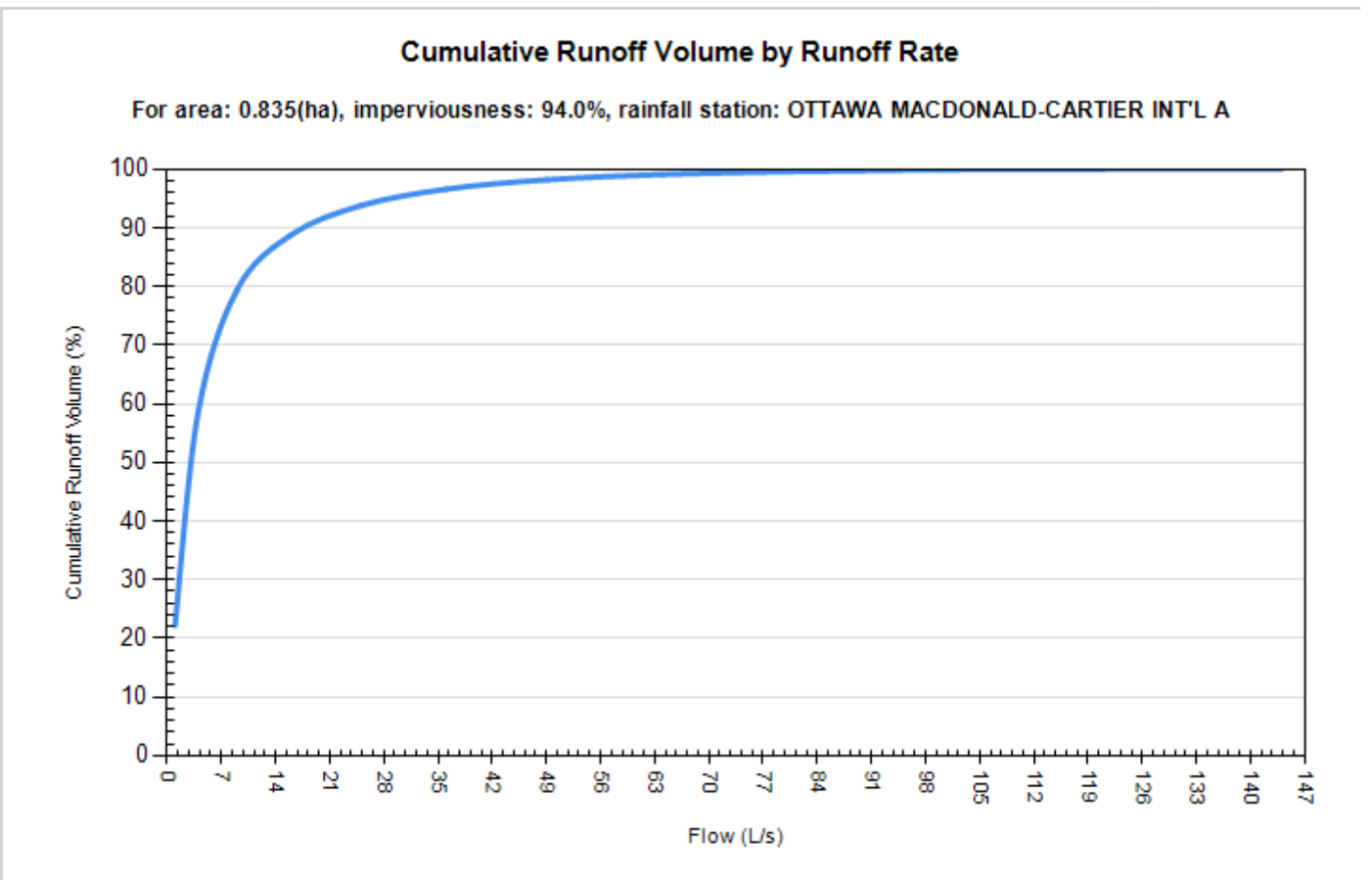
Buildup/Wash-off Parameters

Target Event Mean Conc. (EMC) mg/L	125
Exponential Buildup Power	0.40
Exponential Washoff Exponent	0.20

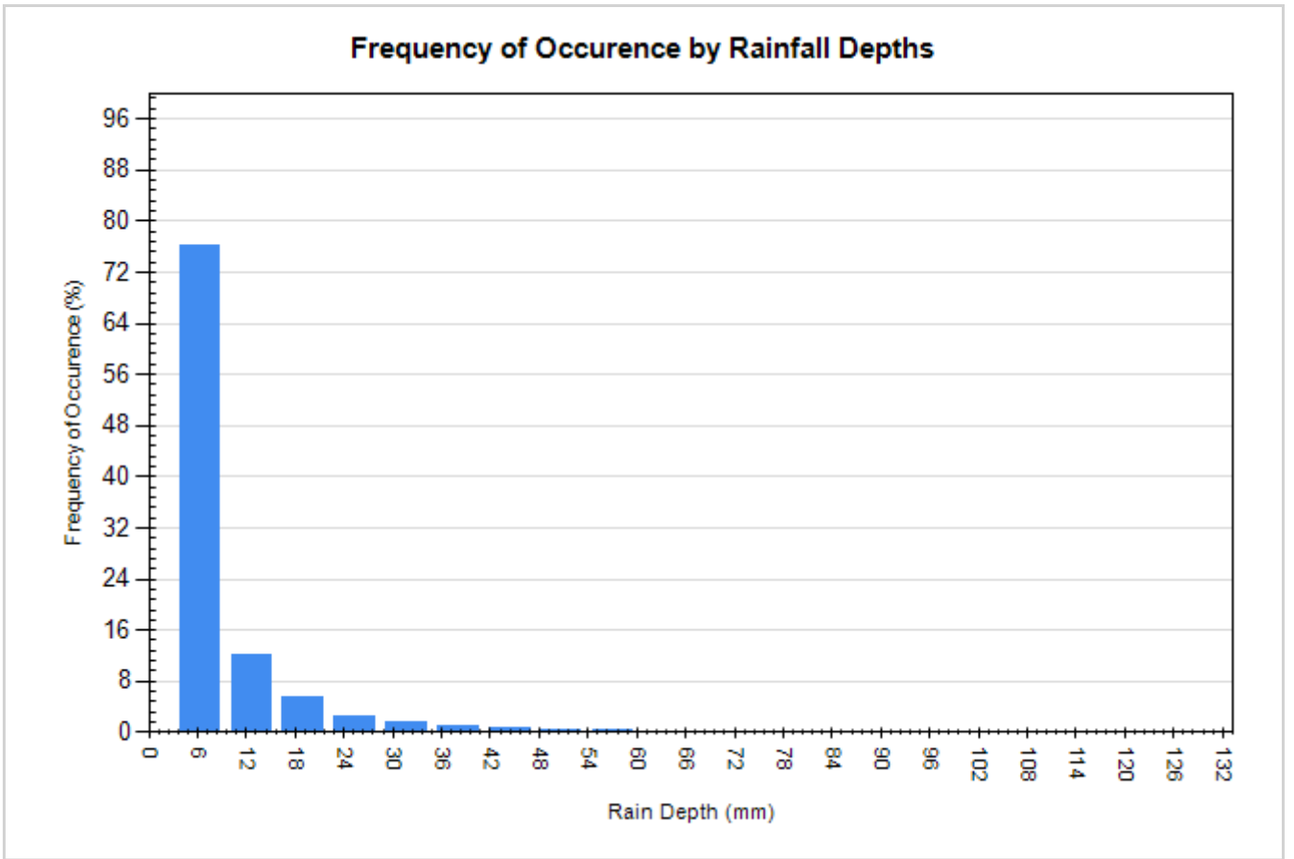
TSS Availability Parameters

Availability Constant A	0.057
Availability Factor B	0.04
Availability Exponent C	1.10
Min. Particle Size Affected by Availability (micron)	400

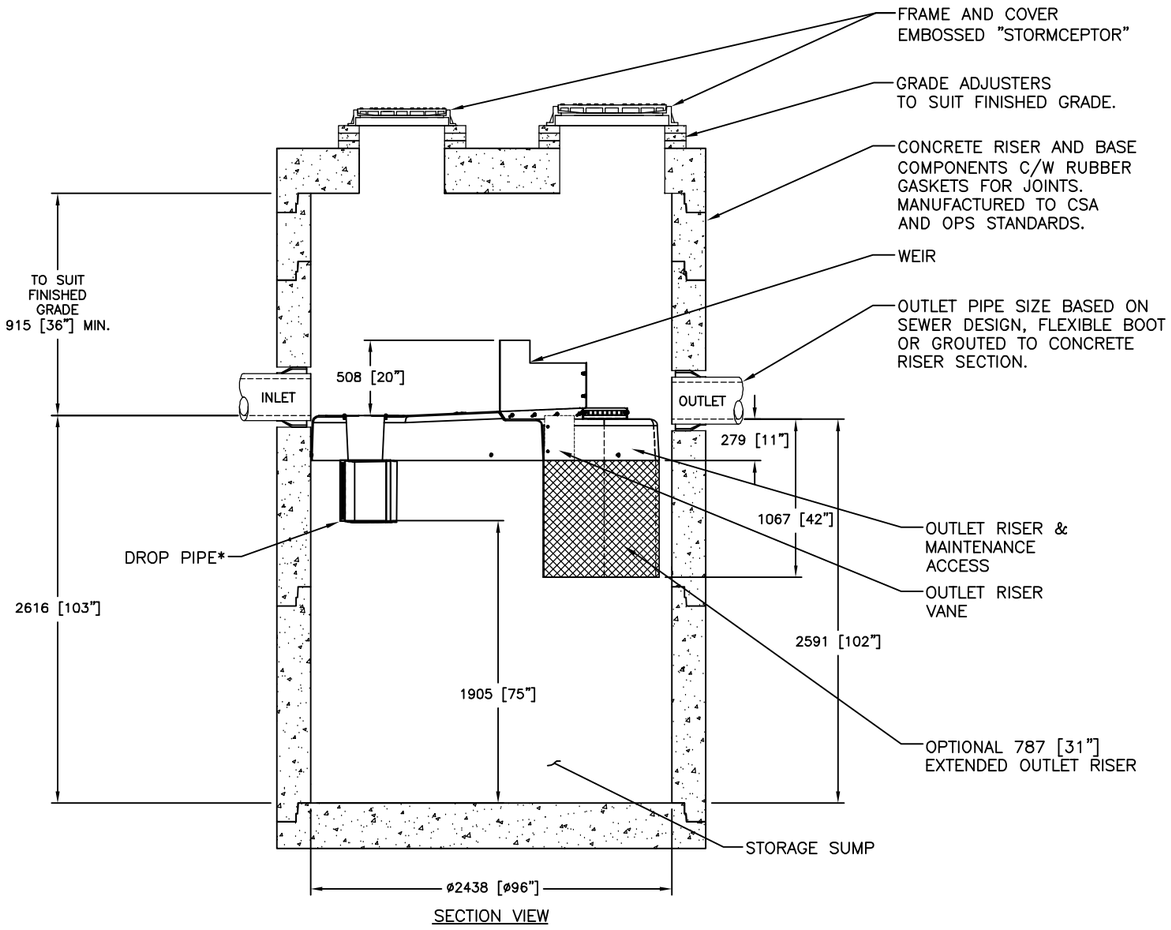
Cumulative Runoff Volume by Runoff Rate			
Runoff Rate (L/s)	**Runoff Volume (m³)**	**Volume Over (m³)**	**Cumulative Runoff Volume (%)**
1	33216	116741	22.2
4	87832	62101	58.6
9	119104	30846	79.4
16	133205	16727	88.8
25	140686	9249	93.8
36	144779	5151	96.6
49	147181	2749	98.2
64	148530	1400	99.1
81	149372	557	99.6
100	149717	212	99.9
121	149856	72	100.0
144	149911	18	100.0



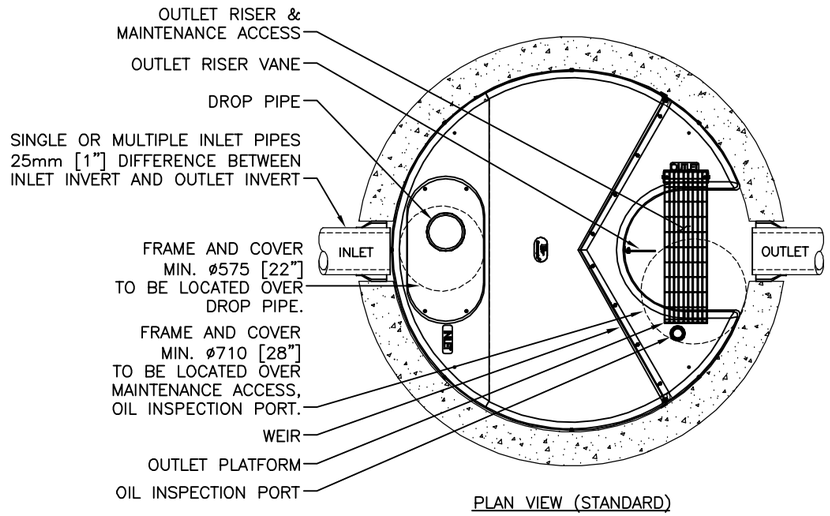
Rainfall Event Analysis				
Rainfall Depth (mm)	**No. of Events**	**Percentage of Total Events (%)**	**Total Volume (mm)**	**Percentage of Annual Volume (%)**
6.35	3113	76.1	5230	24.9
12.70	501	12.2	4497	21.4
19.05	225	5.5	3469	16.5
25.40	105	2.6	2317	11.0
31.75	62	1.5	1765	8.4
38.10	35	0.9	1206	5.8
44.45	28	0.7	1163	5.5
50.80	12	0.3	557	2.7
57.15	7	0.2	378	1.8
63.50	1	0.0	63	0.3
69.85	1	0.0	64	0.3
76.20	1	0.0	76	0.4
82.55	0	0.0	0	0.0
88.90	1	0.0	84	0.4
95.25	0	0.0	0	0.0
101.60	0	0.0	0	0.0
107.95	0	0.0	0	0.0
114.30	1	0.0	109	0.5
120.65	0	0.0	0	0.0
127.00	0	0.0	0	0.0


Frequency of Occurence by Rainfall Depths
Frequency of Occurence (%)
96
88
80
72
64
56
48
40
32
24
16
8
0
0
6
12
18
24
30
36
42
48
54
60
66
72
78
84
90
96
102
108
114
120
126
132
Rain Depth (mm)

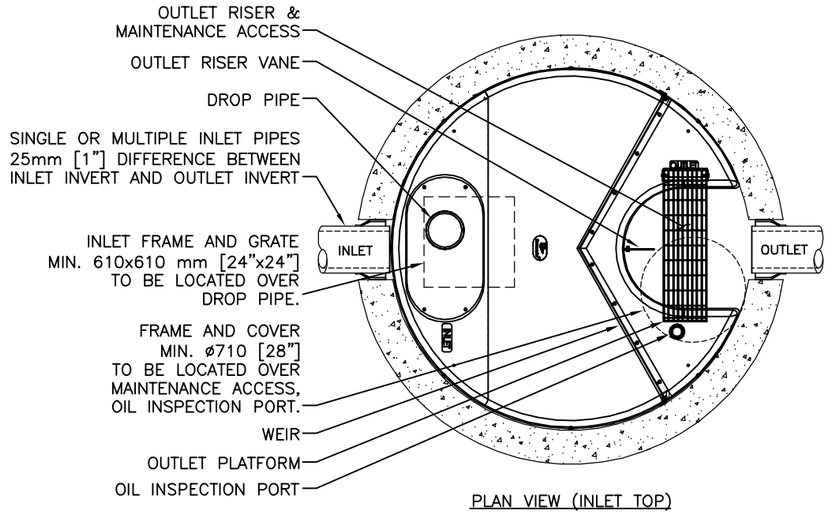
DRAWING NOT TO BE USED FOR CONSTRUCTION



SECTION VIEW



PLAN VIEW (STANDARD)



PLAN VIEW (INLET TOP)

GENERAL NOTES:

* MAXIMUM SURFACE LOADING RATE (SLR) INTO LOWER CHAMBER THROUGH DROP PIPE IS 1135 L/min/m^2 (27.9 gpm/ft^2) FOR STORMCEPTOR EF8 AND 535 L/min/m^2 (13.1 gpm/ft^2) FOR STORMCEPTOR EFO8 (OIL CAPTURE CONFIGURATION).

1. ALL DIMENSIONS INDICATED ARE IN MILLIMETERS (INCHES) UNLESS OTHERWISE SPECIFIED.
2. STORMCEPTOR STRUCTURE INLET AND OUTLET PIPE SIZE AND ORIENTATION SHOWN FOR INFORMATIONAL PURPOSES ONLY.
3. UNLESS OTHERWISE NOTED, BYPASS INFRASTRUCTURE, SUCH AS ALL UPSTREAM DIVERSION STRUCTURES, CONNECTING STRUCTURES, OR PIPE CONDUITS CONNECTING TO COMPLETE THE STORMCEPTOR SYSTEM SHALL BE PROVIDED AND ADDRESSED SEPARATELY.
4. DRAWING FOR INFORMATION PURPOSES ONLY. REFER TO ENGINEER'S SITE/UTILITY PLAN FOR STRUCTURE ORIENTATION.
5. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE (LIFTING CLUTCHES PROVIDED)
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT)
D. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT THE DEVICE FROM CONSTRUCTION-RELATED EROSION RUNOFF.
E. DEVICE ACTIVATION, BY CONTRACTOR, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE STORMCEPTOR UNIT IS CLEAN AND FREE OF DEBRIS.

FOR SITE SPECIFIC DRAWINGS PLEASE CONTACT YOUR LOCAL STORMCEPTOR REPRESENTATIVE. SITE SPECIFIC DRAWINGS ARE BASED ON THE BEST AVAILABLE INFORMATION AT THE TIME. SOME FIELD REVISIONS TO THE SYSTEM LOCATION OR CONNECTION PIPING MAY BE NECESSARY BASED ON AVAILABLE SPACE OR SITE CONFIGURATION REVISIONS. ELEVATIONS SHOULD BE MAINTAINED EXCEPT WHERE NOTED ON BYPASS STRUCTURE (IF REQUIRED).

STANDARD DETAIL
NOT FOR CONSTRUCTION

SITE SPECIFIC DATA REQUIREMENTS

STORMCEPTOR MODEL	EFO8				
STRUCTURE ID					*
HYDROCARBON STORAGE REQ'D (L)					*
WATER QUALITY FLOW RATE (L/s)					*
PEAK FLOW RATE (L/s)					*
RETURN PERIOD OF PEAK FLOW (yrs)					*
DRAINAGE AREA (HA)					*
DRAINAGE AREA IMPERVIOUSNESS (%)					*
PIPE DATA:	I.E.	MAT'L	DIA	SLOPE %	HGL
INLET #1	*	*	*	*	*
INLET #2	*	*	*	*	*
OUTLET	*	*	*	*	*

* PER ENGINEER OF RECORD

MARK	DATE	REVISION DESCRIPTION	BY
1	6/8/18	OUTLET PLATFORM	JSK
0	5/26/17	INITIAL RELEASE	JSK

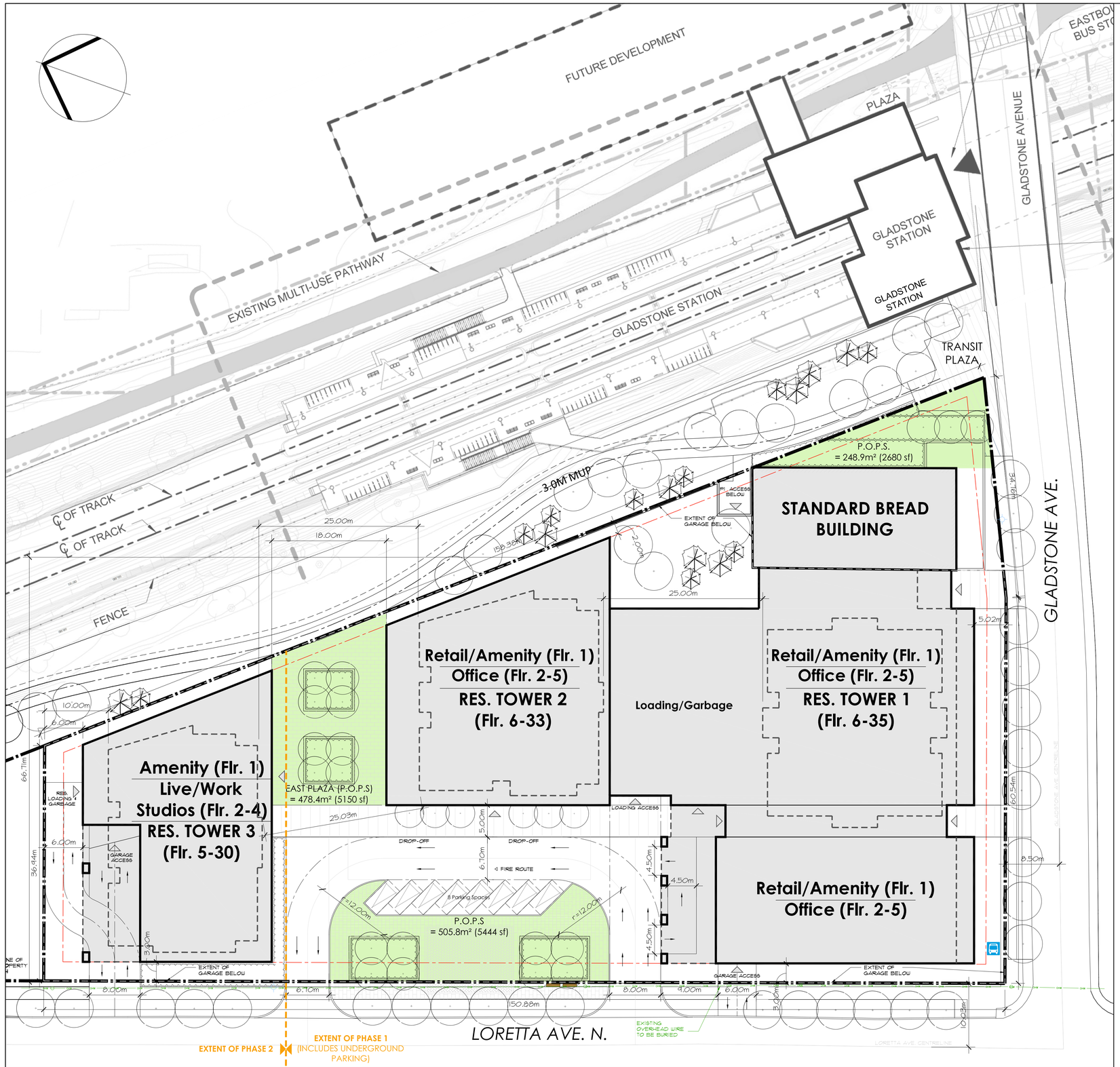
Stormceptor® EF

SCALE = NTS

imbrium®
407 FAIRVIEW DRIVE, WHITBY, ON L1N 9A9
TF 800-565-6801 CA 416-665-8600 INTL +1-416-665-8600

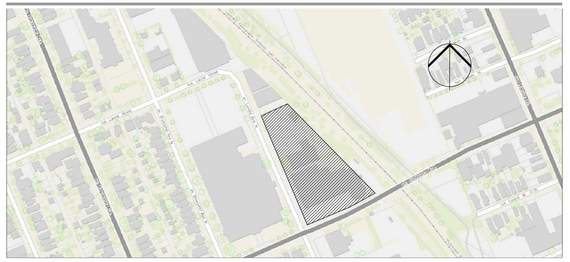
DATE:	10/13/2017
DESIGNED: JSK	DRAWN: JSK
CHECKED: BSF	APPROVED: *
PROJECT No.: EFO8	SEQUENCE No.: *
SHEET:	1 OF 1

DRAWINGS / FIGURES



1 SITE PLAN
A0.01 1 :300

LOCATION PLAN



Zoning Information		
Existing Zone: IGI H(11) – General Industrial Zone, Subzone 1, Height Limit 11m		
Proposed Zone: MC[XXXX] SXXX		
Proposal: Mixed-use development with office, retail, and residential uses in three high-rise towers at 30, 35 and 41 storeys in height		
Zoning Mechanism	**Required**	**Provided**
Minimum Lot Width	NO MINIMUM	66.7m IRREGULAR
Etc.		

Parking & Loading Information		
Schedule 1A, Zoning By-law 2008-250: Area X: Inner Urban		
Performance Standard	**Required**	**Proposed**
Vehicular Parking	1,973 MAX. SPACES	521 SPACES
Bicycle Parking	451 SPACES	518 SPACES
Loading		

ZONING NOTES:

CURRENT ZONING: **IG1 H(11)**

DEVELOPMENT STATS

		PROPOSED
LOT AREA		10,012.3 m² (107,772 sq.ft.)
LOT WIDTH		66.7m IRREGULAR
LOT DEPTH		150.9m
TOTAL UNITS		168
FRONT YARD SETBACK	GLADSTONE AVE.	5 m
REAR YARD SETBACK	N/A	5 m
CORNER SIDE YARD SETBACK	LORETTA AVE. N.	3 m
INTERIOR SIDE YARD SETBACK	TRILLIUM RAIL CORRIDOR	2 m
MAXIMUM HEIGHT		± 123 m
NUMBER OF STOREYS		35
BUILDING FOOTPRINT AREA		5,841 m² (62,874 sq.ft)
GROSS FLOOR AREA		94,673 m² (1,019,062 sq.ft)

PARKING REQUIREMENTS

1. REQUIRED PARKING

LAND USE	REQUIRED	PROVIDED VEHICLE PARKING
APARTMENT	1.75 MAX SPACE PER UNIT	375 SPACES (0.5 SPACES/UNIT)
VISITOR	0.1 SPACE MIN. PER UNIT BUT MAX. 30 SPACES	30 SPACES
RETAIL	3.6 MAX SPACES / 100m² GFA	17 SPACES (1 SPACE / 1076 ft²)
OFFICE	2.2 MAX SPACES / 100m² GFA	99 SPACES (0.75 SPACES / 1076 ft²)
TOTAL		521 SPACES

3. BICYCLE PARKING
REQUIRED BICYCLE PARKING SPACES
RESIDENTIAL (0.5 SPACE/UNIT)
COMMERCIAL (1 / 500 SQ.M. COMMERCIAL GFA)

4. AMENITY SPACE REQUIREMENTS
REQUIRED AMENITY SPACE 6 m² REQUIRED PER UNIT

5. REQUIRED AREA FOR PRIVATELY OWNED PUBLIC SPACE - P.O.P.S.
REQUIRED 1,001m² (10,777 sq.ft.)
PROVIDED 1,233.1m² (13,273 sq.ft.)

NOTE: ALL EXISTING SITE INFORMATION AS PER SITE SURVEY PLAN DATED ____, 2018 AND PREPARED BY STANTEC

LEGEND

BUS STOP		PROPERTY LINE	
OVERHEAD WIRE	OH OH OH	SETBACK LINE	
FIRE HYDRANT		RETAINING WALL	
EXISTING HYDRO POLE		ROAD CENTRELINE	

0 m 10 m 25 m 50 m

no.	date	revision
05	JULY 29, 2019	CHANGES TO TITLEBLOCK
04	JULY 19, 2019	ENTRY TO BUILDING B
03	JUNE 03, 2019	EXTENT OF PH. 1 & PH. 2
02	MAY 24, 2019	LANDSCAPE UPDATED
01	APRIL 17, 2019	LANDSCAPE & PODIUMS

It is the responsibility of the appropriate contractor to check and verify all dimensions on site and report all errors and/or omissions to the architect.

All contractors must comply with all pertinent codes and by-laws.

Do not scale drawings.

This drawing may not be used for construction until signed.

TRINITY

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Canada K1S 3K7
T: 613-238-7200
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E: mail@hobinarc.com
hobinarc.com
HOBIN ARCHITECTURE

PROJECT/LOCATION:
951 GLADSTONE AVE.
& 145 LORETTA AVE. NORTH

DRAWING TITLE:
SITE PLAN

DRAWN BY:	DATE:	SCALE:
TD	19/04/17	1:300

PROJECT: 1726

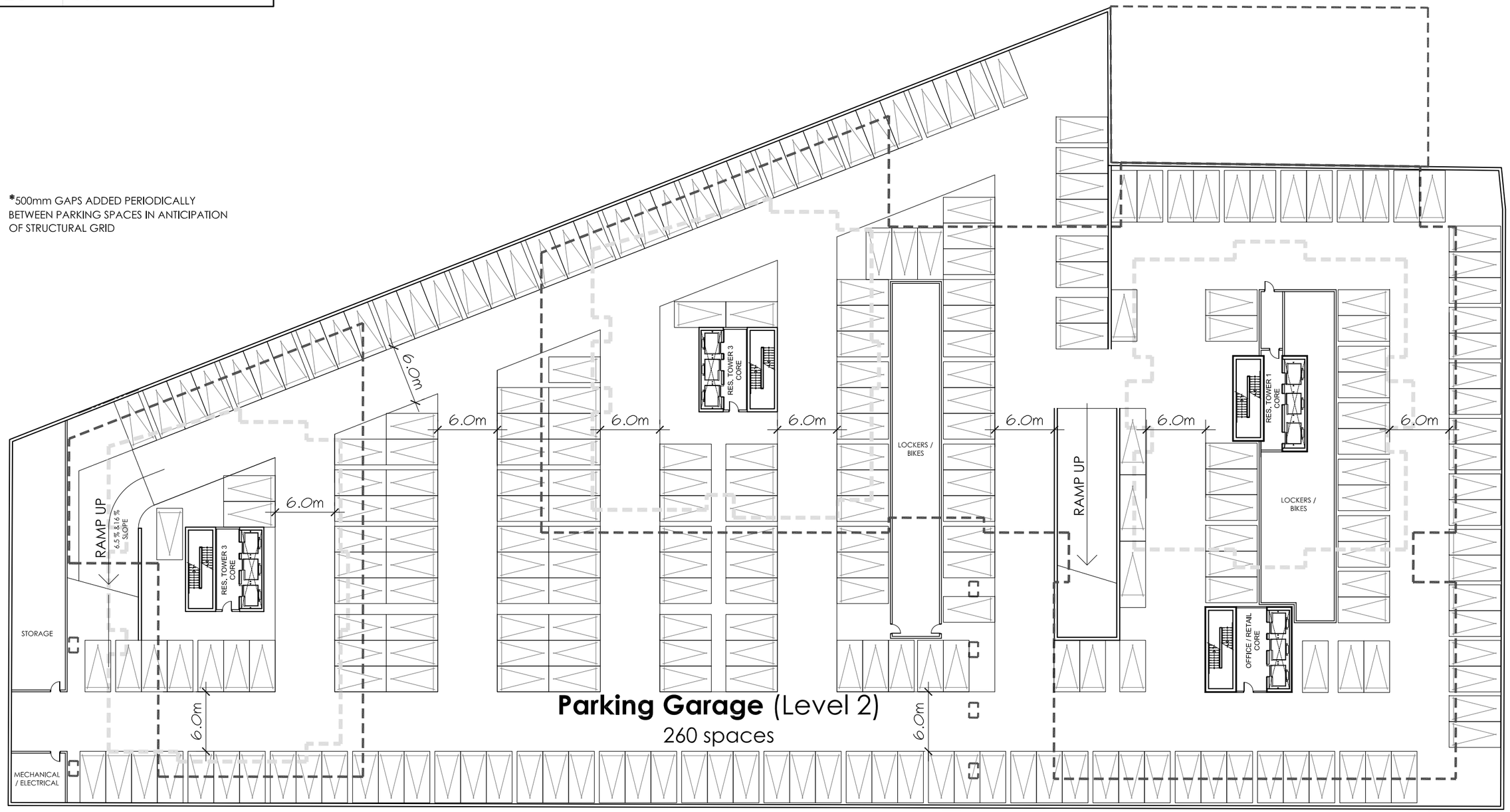
DRAWING NO.: A001

REVISION NO.:

None

PARKING LEVEL P2	
GFA	98,231 ft² (9,126 m²)
# SPACES	260

*500mm GAPS ADDED PERIODICALLY BETWEEN PARKING SPACES IN ANTICIPATION OF STRUCTURAL GRID



Parking Garage (Level 2)

260 spaces

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GLADSTONE + LORETTA

Residential Towers 1, 2 & 3

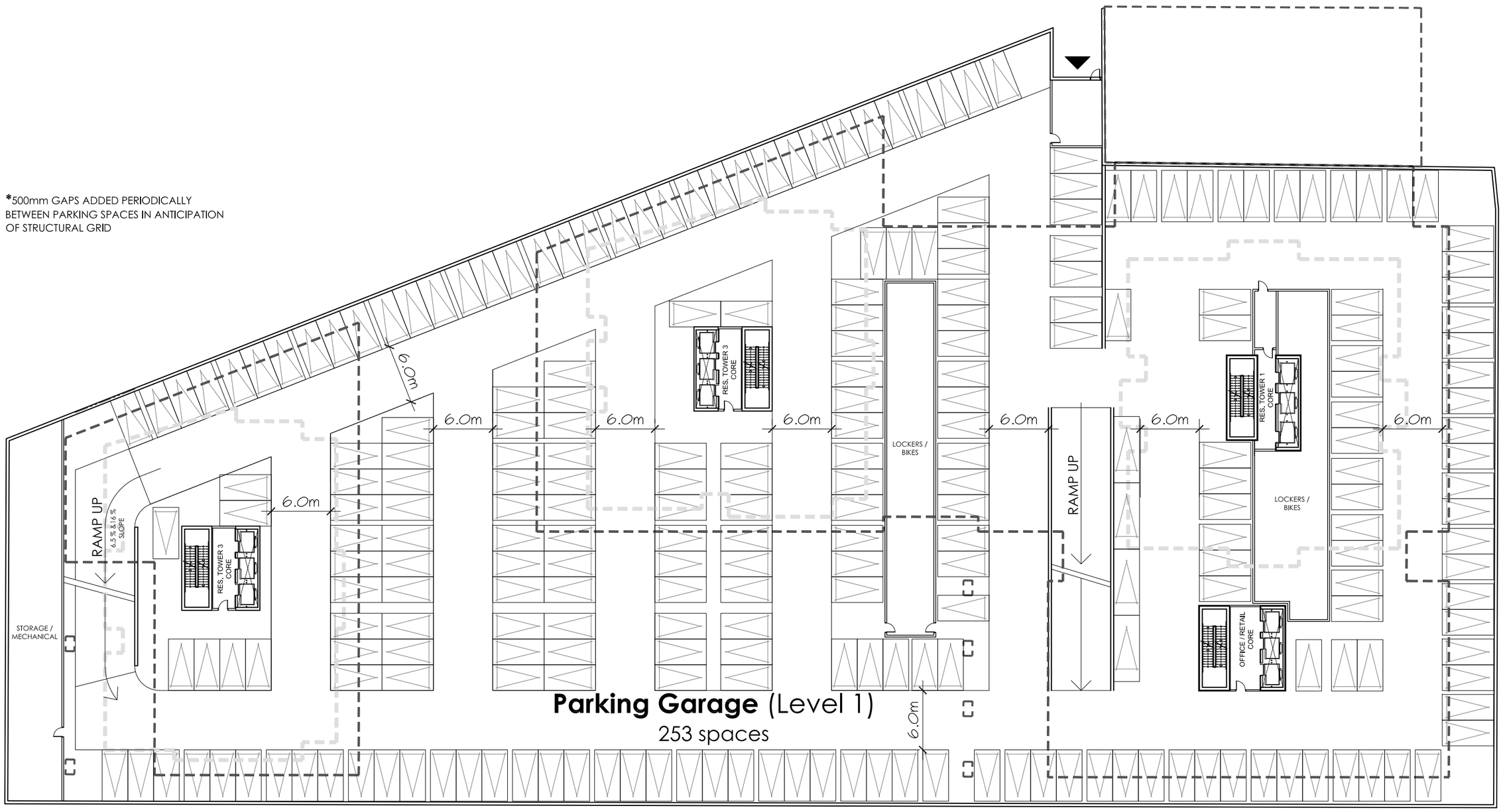
Parking Plan P2

scale 1:400

TRINITY

PARKING LEVEL P1	
GFA	98,231 ft² (9,126 m²)
# SPACES	253

*500mm GAPS ADDED PERIODICALLY BETWEEN PARKING SPACES IN ANTICIPATION OF STRUCTURAL GRID



Parking Garage (Level 1)

253 spaces

HOBIN

GLADSTONE + LORETTA

Residential Towers 1, 2 & 3

Parking Plan P1

scale 1:400

TRINITY

TOWER 1

GROUND FLOOR x1 (Flr. 1)		
GFA	36,010 ft²	(3,345 m²)
RETAIL	17,894 ft²	
LOADING	5,514 ft²	
OFFICE	1,390 ft²	
RESIDENTIAL	5,185 ft²	
EXISTING	5,790 ft²	

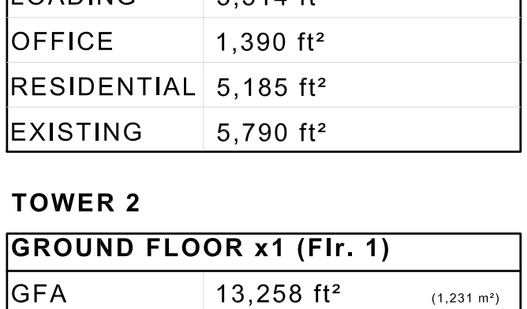
TOWER 2

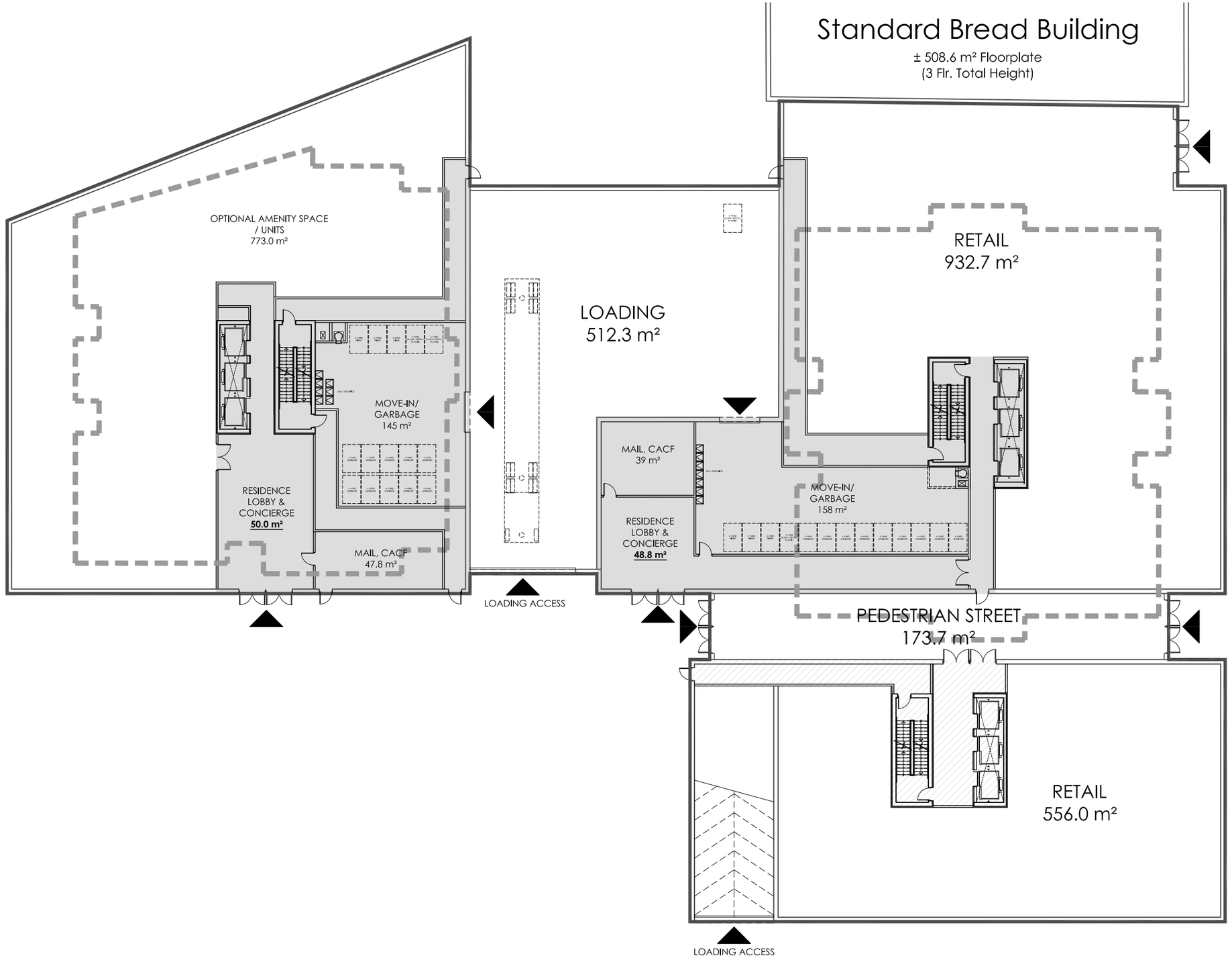
GROUND FLOOR x1 (Flr. 1)		
GFA	13,258 ft²	(1,231 m²)

KEY PLAN

Residential Circulation

Office Circulation





GLADSTONE + LORETTA

Residential Towers 1 & 2

Ground Floor Plan

scale 1:300

HOBIN

TRINITY

PODIUM LEVEL x4 (Flr. 2-5)		
GFA	46,930 ft²	(4,360 m²)

Standard Bread Building

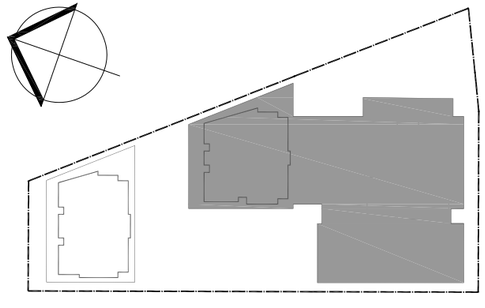
± 508.6 m² Floorplate
(3 Flr. Total Height)

GARBAGE

OFFICE

± 4,360 m² Floorplate (x5)
(6 Flr. Total Height - Retail on Ground Flr.)

GARBAGE



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GLADSTONE + LORETTA

Residential Towers 1 & 2

Typical Podium Plan (Flr. 2-5)

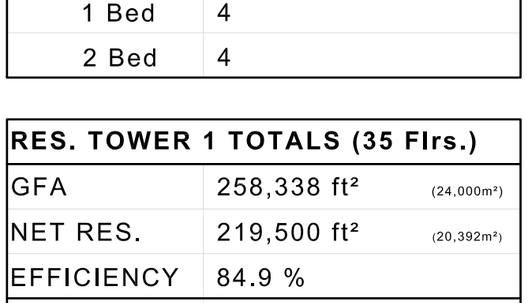
scale 1:300

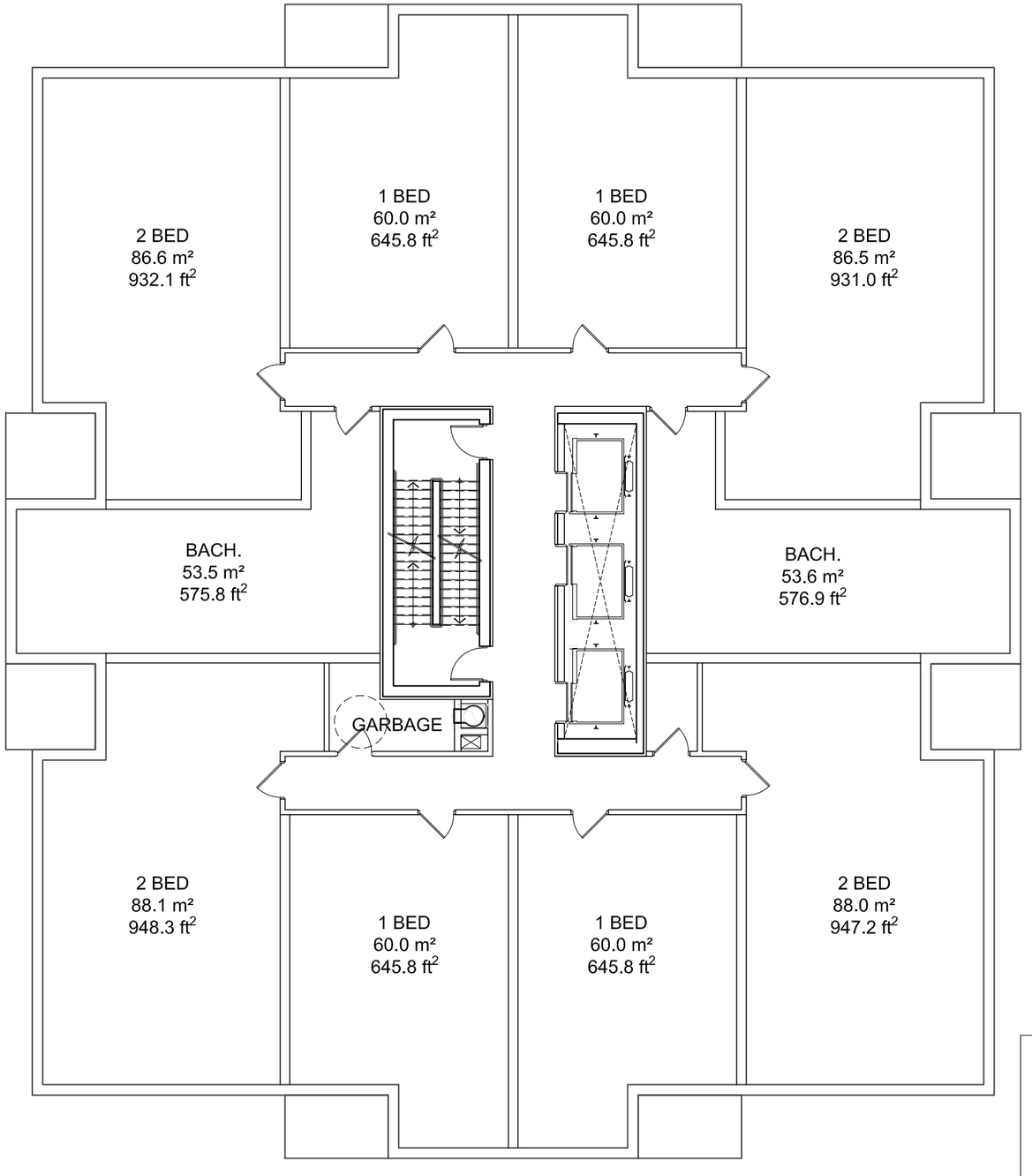
TRINITY

TYPICAL FLOOR x 13 (Flr. 6-18)		
GFA	8,791 ft²	(816.8 m²)
NET RES.	7,457 ft²	(692.7 m²)
EFFICIENCY	84.8%	
UNITS	10	
Bachelor	2	
1 Bed	4	
2 Bed	4	

RES. TOWER 1 TOTALS (35 Flrs.)		
GFA	258,338 ft²	(24,000m²)
NET RES.	219,500 ft²	(20,392m²)
EFFICIENCY	84.9 %	
UNITS	273 (Total)	
Bachelor	54	(~20%)
1 Bed	96	(~35%)
2 Bed	120	(~44%)
3 Bed	3	(~1%)

ROOF TERRACE at LEVEL 6





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Residential Tower 1

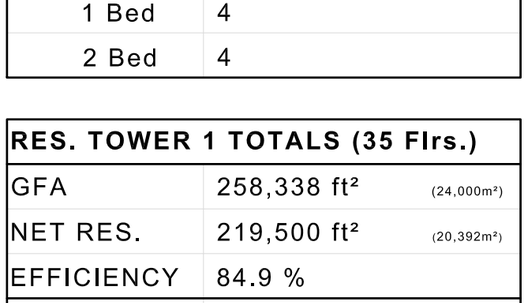
Typical Level (Flr. 6-18)

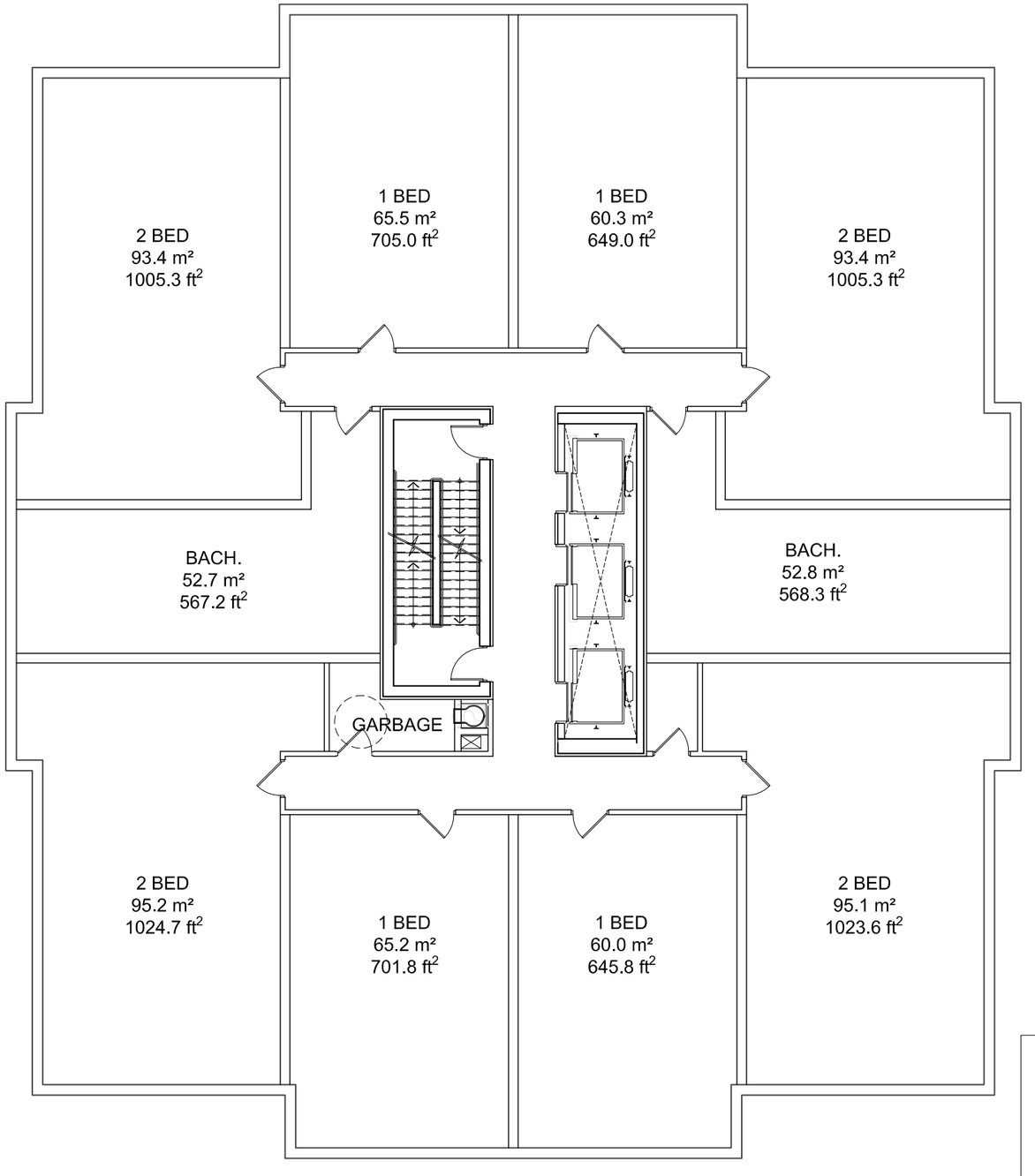
scale 1:150

TRINITY

UPPER FLOOR A x11 (Flr. 19-29)		
GFA	9,308 ft²	(864.8 m²)
NET RES.	7,974 ft²	(740.8 m²)
EFFICIENCY	85.6%	
UNITS	10	
Bachelor	2	
1 Bed	4	
2 Bed	4	

RES. TOWER 1 TOTALS (35 Flrs.)		
GFA	258,338 ft²	(24,000m²)
NET RES.	219,500 ft²	(20,392m²)
EFFICIENCY	84.9 %	
UNITS	273 (Total)	
Bachelor	54	(~20%)
1 Bed	96	(~35%)
2 Bed	120	(~44%)
3 Bed	3	(~1%)





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Residential Tower 1

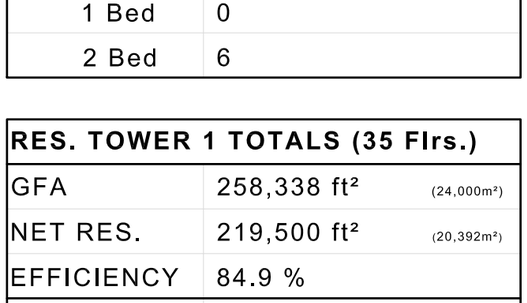
Upper Residential Plan A (Flr. 19-29)

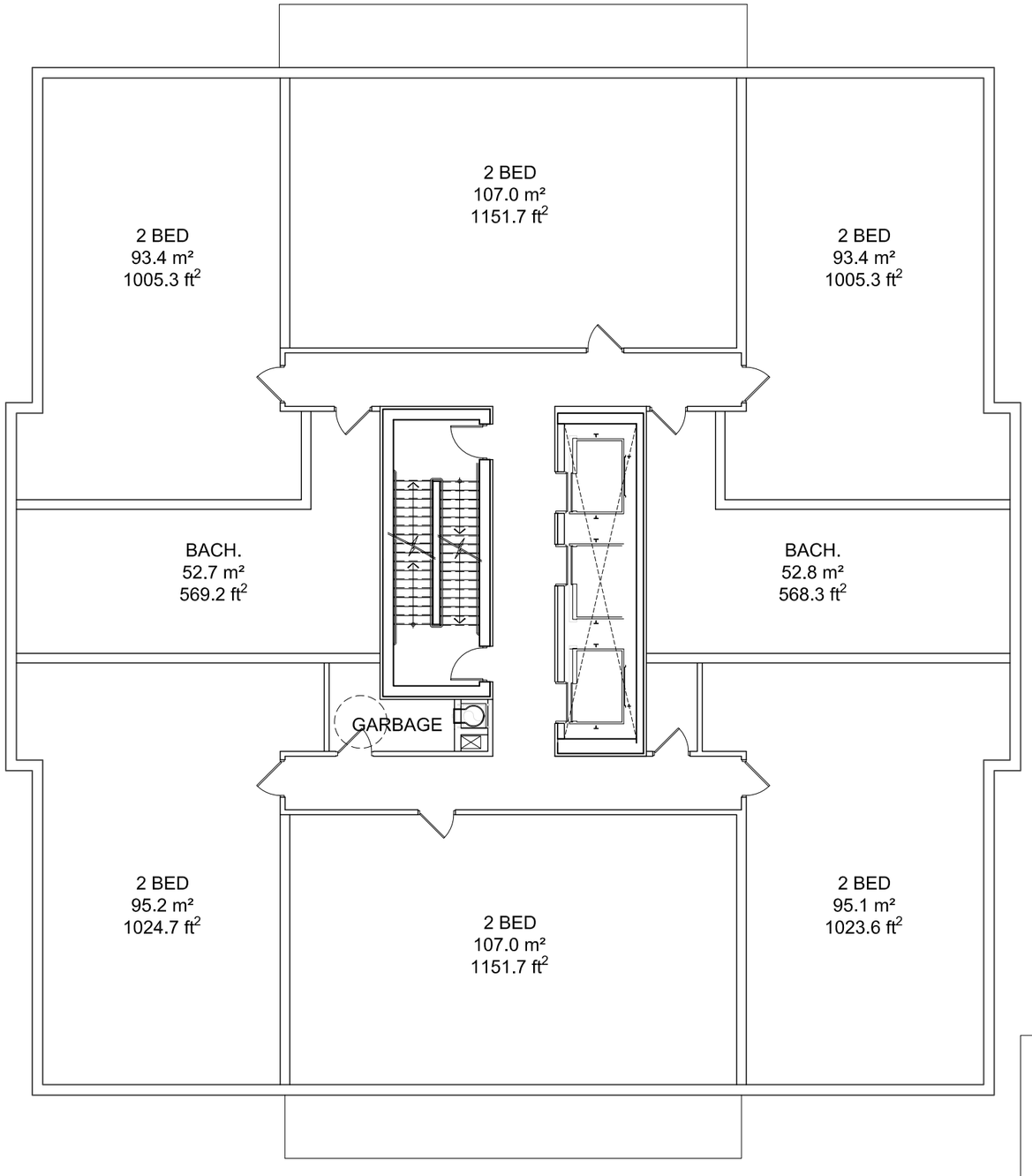
scale 1:150

TRINITY

UPPER FLOOR B x3 (Flr. 30-32)		
GFA	8,799 ft²	(817.5 m²)
NET RES.	7,465 ft²	(693.5 m²)
EFFICIENCY	84.8%	
UNITS	8	
Bachelor	2	
1 Bed	0	
2 Bed	6	

RES. TOWER 1 TOTALS (35 Flrs.)		
GFA	258,338 ft²	(24,000m²)
NET RES.	219,500 ft²	(20,392m²)
EFFICIENCY	84.9 %	
UNITS	273 (Total)	
Bachelor	54	(~20%)
1 Bed	96	(~35%)
2 Bed	120	(~44%)
3 Bed	3	(~1%)





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Residential Tower 1

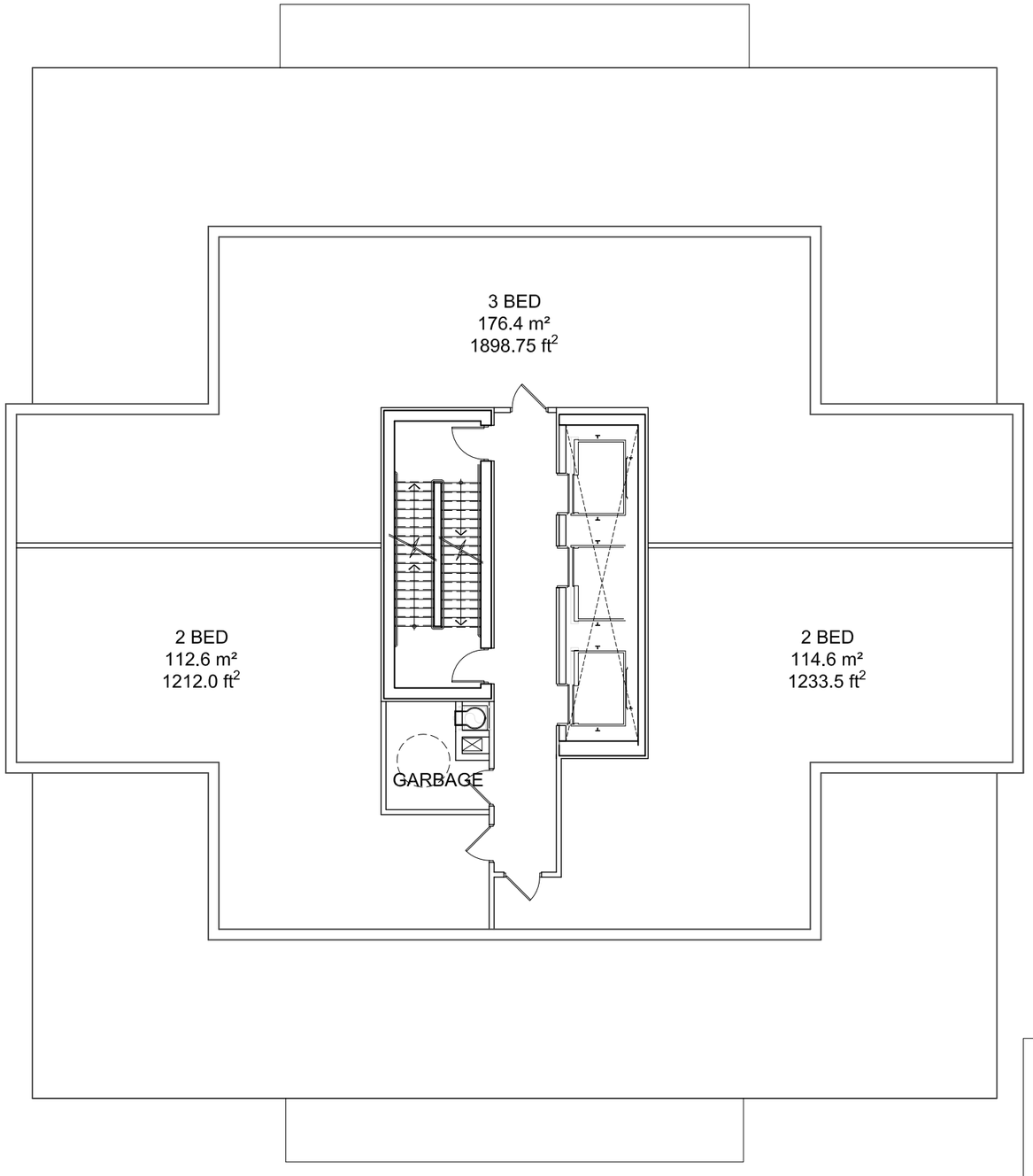
Upper Residential Plan B (Flr. 30-32)

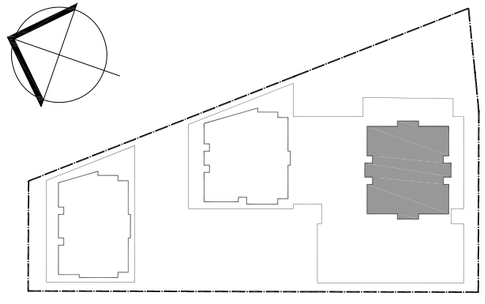
scale 1:150

TRINITY

PENTHOUSE FLOOR x3 (Flr. 33-35)		
GFA	5,090 ft²	(472.9 m²)
NET RES.	4,150 ft²	(385.6 m²)
EFFICIENCY	81.5%	
UNITS	3	
Bachelor	0	
1 Bed	0	
2 Bed	2	
3 Bed	1	

RES. TOWER 1 TOTALS (35 Flrs.)		
GFA	258,338 ft²	(24,000m²)
NET RES.	219,500 ft²	(20,392m²)
EFFICIENCY	84.9 %	
UNITS	273 (Total)	
Bachelor	54	(~20%)
1 Bed	96	(~35%)
2 Bed	120	(~44%)
3 Bed	3	(~1%)





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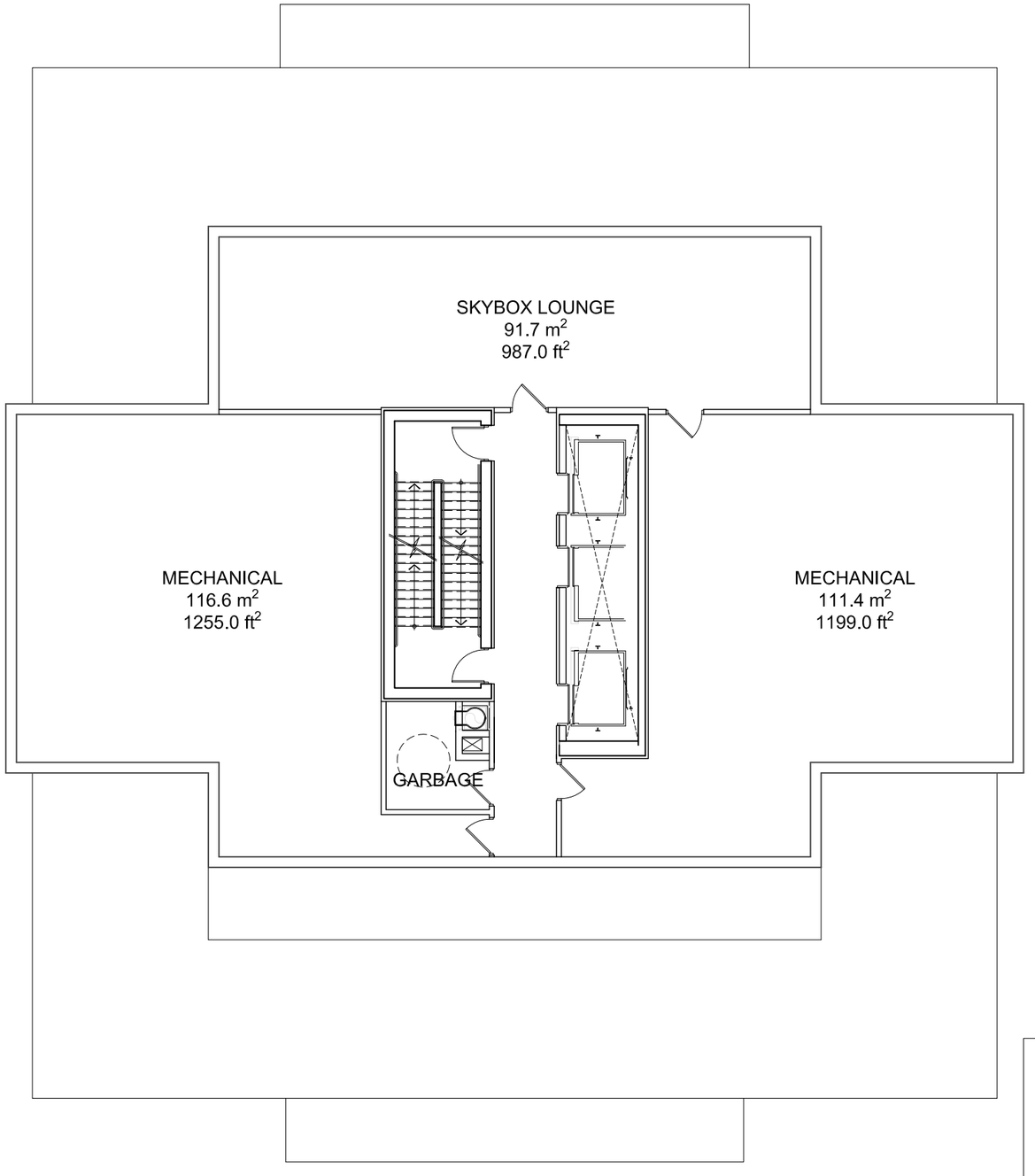
Residential Tower 1

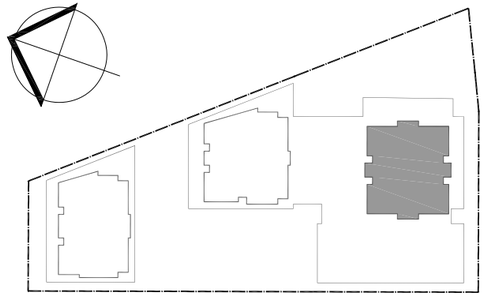
Penthouse Plan (Flr. 33-35)

scale 1:150

TRINITY

MECH. PENTHOUSE x1 (Flr. 36)		
GFA	4,327 ft²	(402.0 m²)





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Residential Tower 1

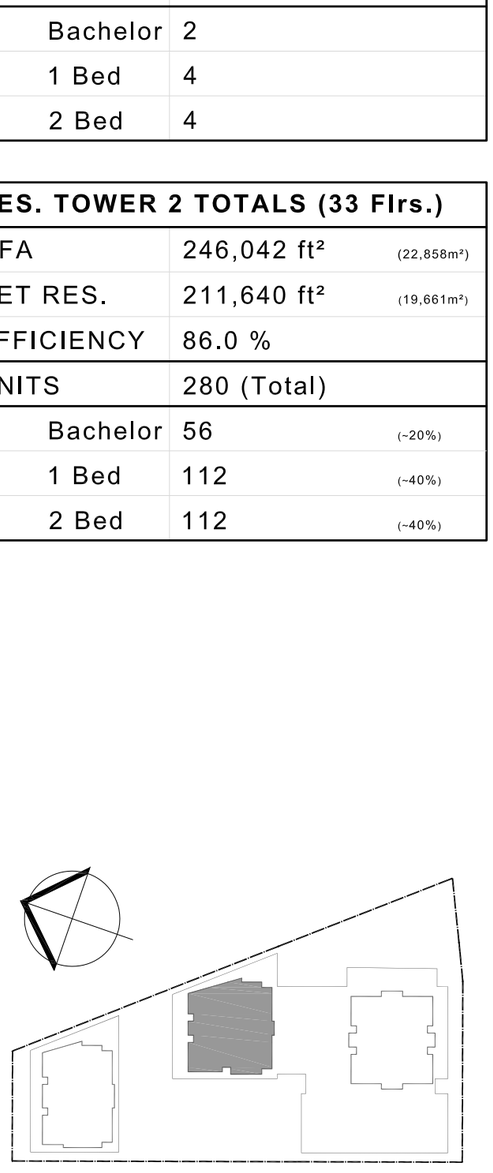
Mechanical Penthouse Plan(Flr. 36)

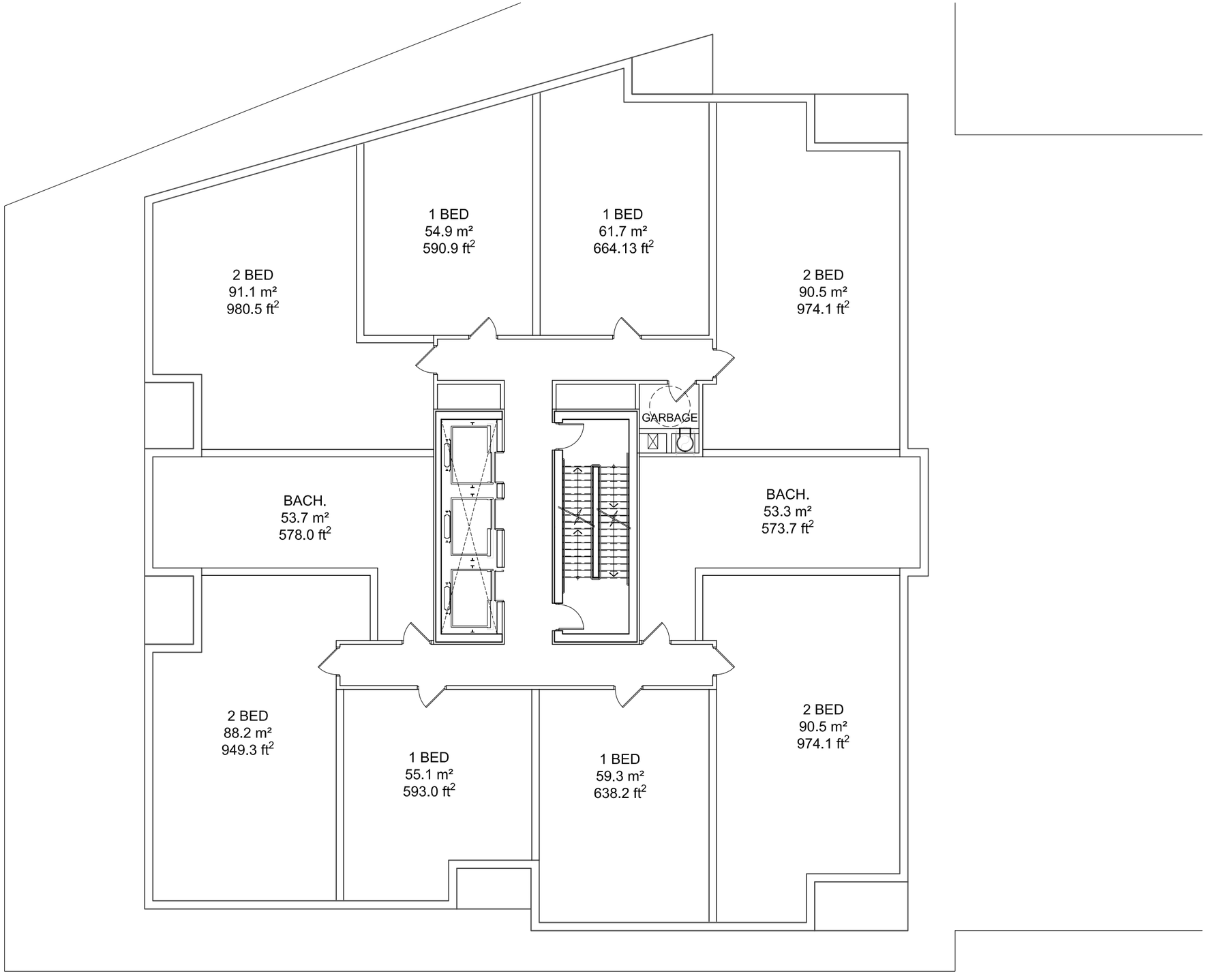
scale 1:150

TRINITY

TYPICAL FLOOR x25 (Flr. 6-30)		
GFA	8,751 ft²	(813.5 m²)
NET RES.	7,523 ft²	(699.0 m²)
EFFICIENCY	85.9%	
UNITS	10	
Bachelor	2	
1 Bed	4	
2 Bed	4	

RES. TOWER 2 TOTALS (33 Flrs.)		
GFA	246,042 ft²	(22,858m²)
NET RES.	211,640 ft²	(19,661m²)
EFFICIENCY	86.0 %	
UNITS	280 (Total)	
Bachelor	56	(~20%)
1 Bed	112	(~40%)
2 Bed	112	(~40%)





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Residential Tower 2

Typical Level (Flr. 6-30)

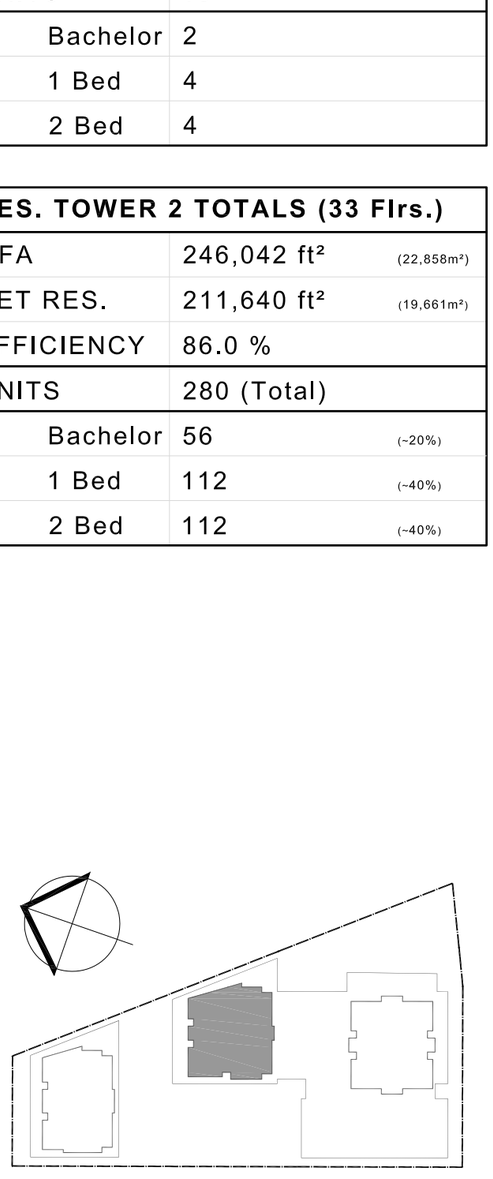
scale 1:150

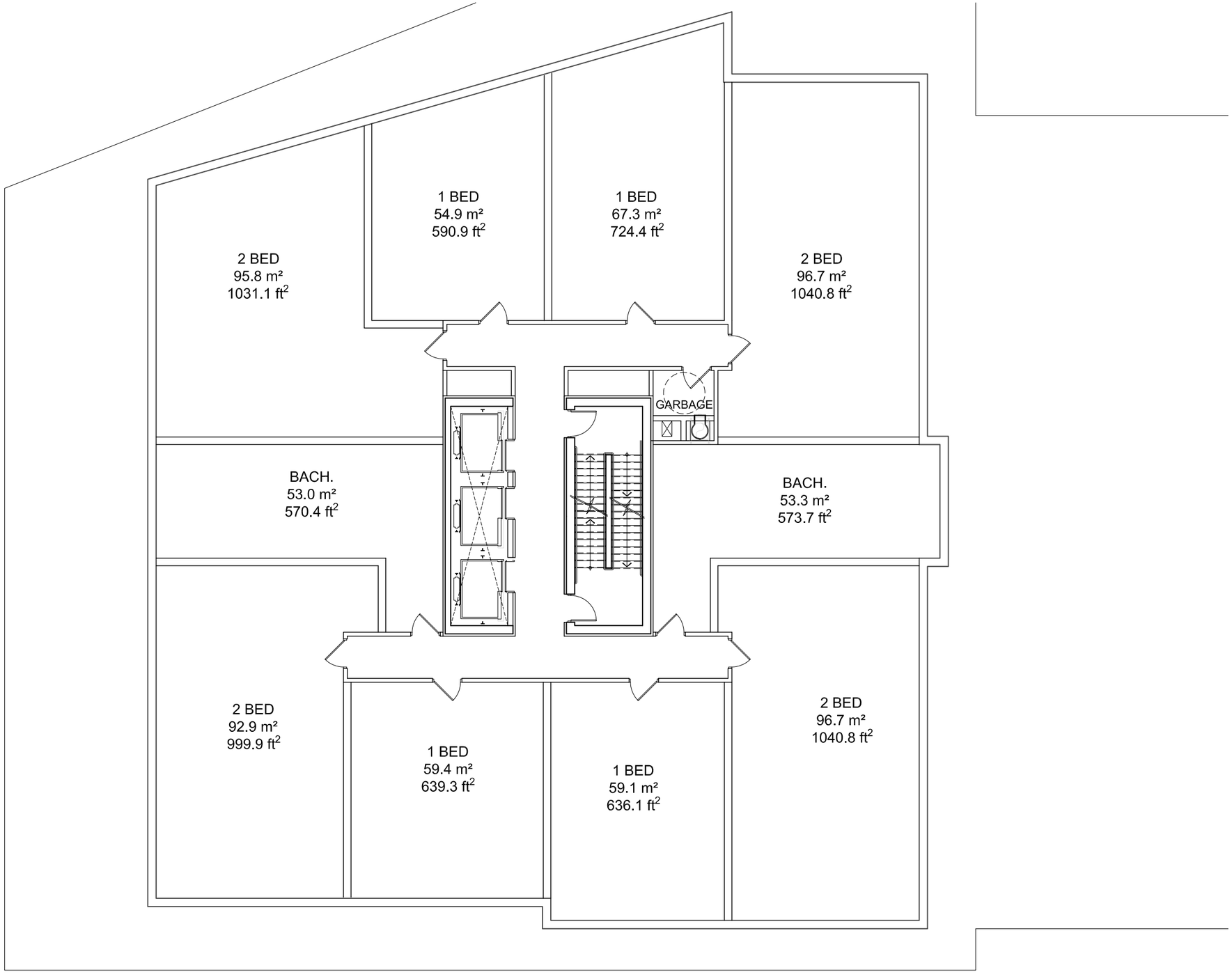
HOBIN

TRINITY

UPPER FLOOR x3 (Flr. 31-33)		
GFA	9,089 ft²	(844.4 m²)
NET RES.	7,855 ft²	(729.8 m²)
EFFICIENCY	86.4%	
UNITS	10	
Bachelor	2	
1 Bed	4	
2 Bed	4	

RES. TOWER 2 TOTALS (33 Flrs.)		
GFA	246,042 ft²	(22,858m²)
NET RES.	211,640 ft²	(19,661m²)
EFFICIENCY	86.0 %	
UNITS	280 (Total)	
Bachelor	56	(~20%)
1 Bed	112	(~40%)
2 Bed	112	(~40%)





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Residential Tower 2

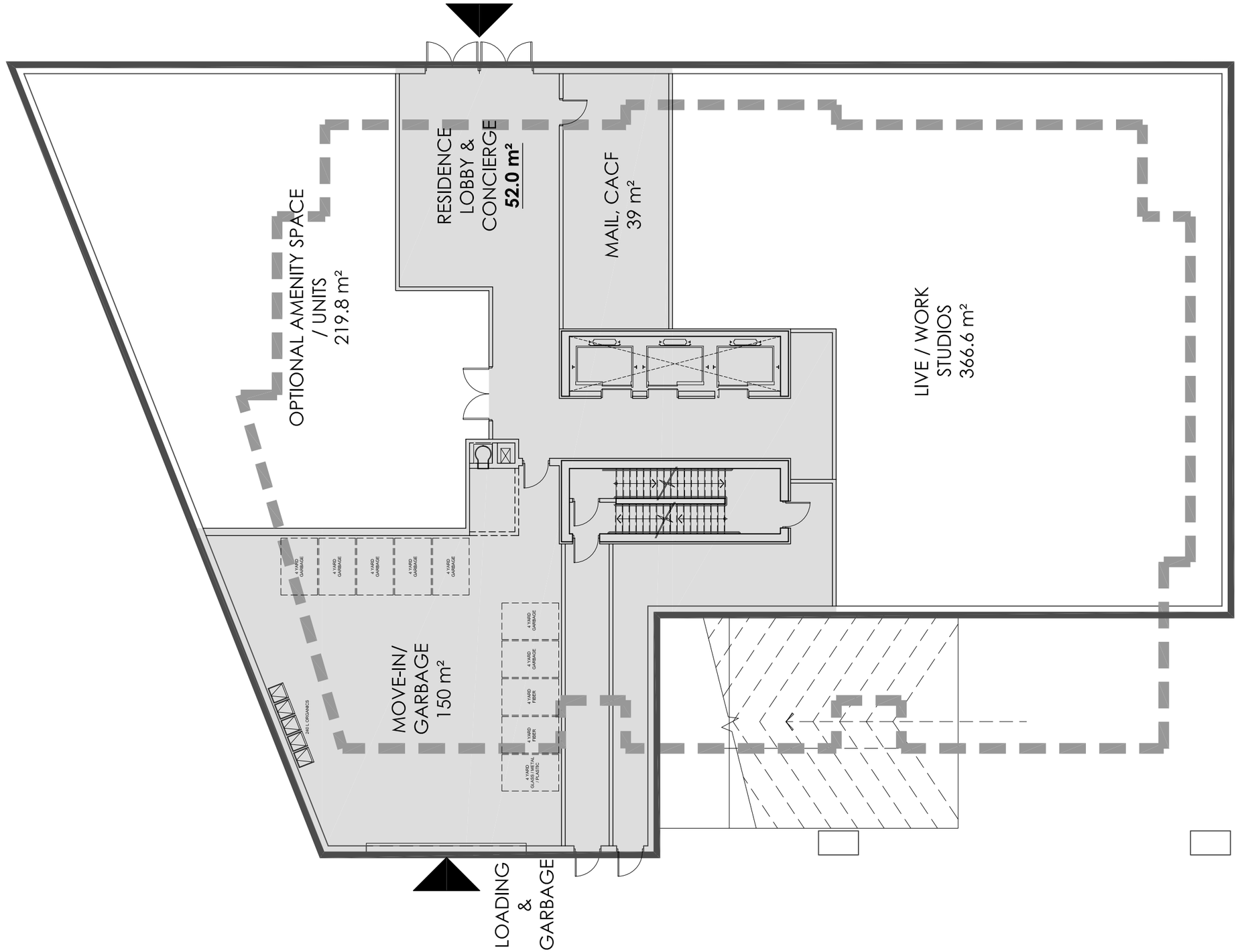
Upper Residential Plan (Flr. 31-33)

scale 1:150

TRINITY

TOWER 3

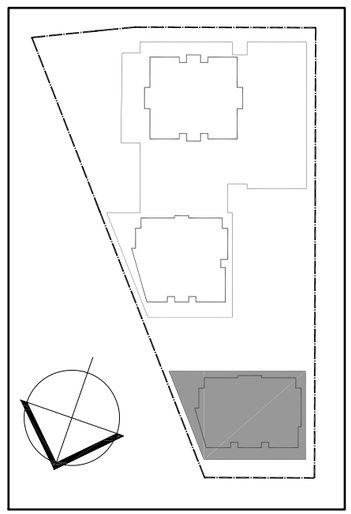
GROUND FLOOR x1 (Flr. 1)		
GFA	10,656 ft²	(990 m²)



KEY PLAN

Residential Circulation

Office Circulation



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Residential Tower 3

Ground Floor Plan

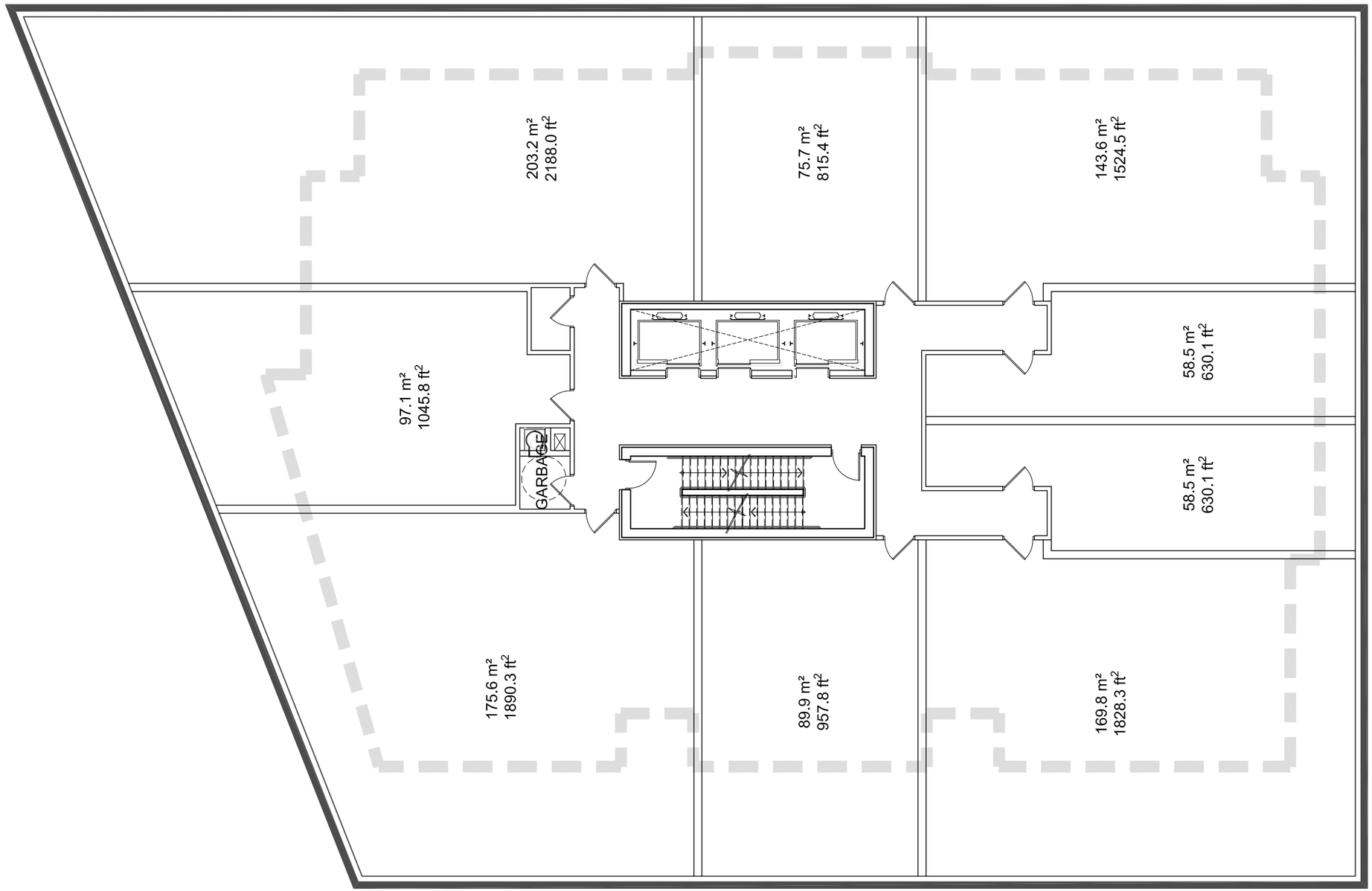
scale 1:150

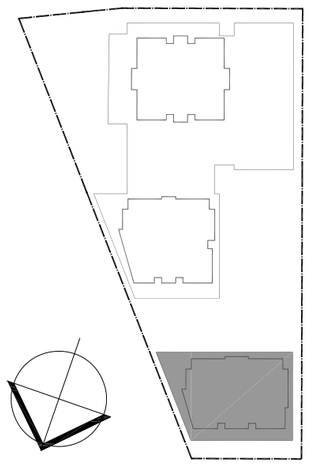
TRINITY

PODIUM LEVEL x3 (Flr. 2-4)		
GFA	12,733 ft²	(1,183 m²)

LIVE/WORK STUDIOS

+/- 1,183 m2
Floorplate (x4)
(5 Flr. Total Height -
Retail on Ground Flr.)





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Residential Tower 3

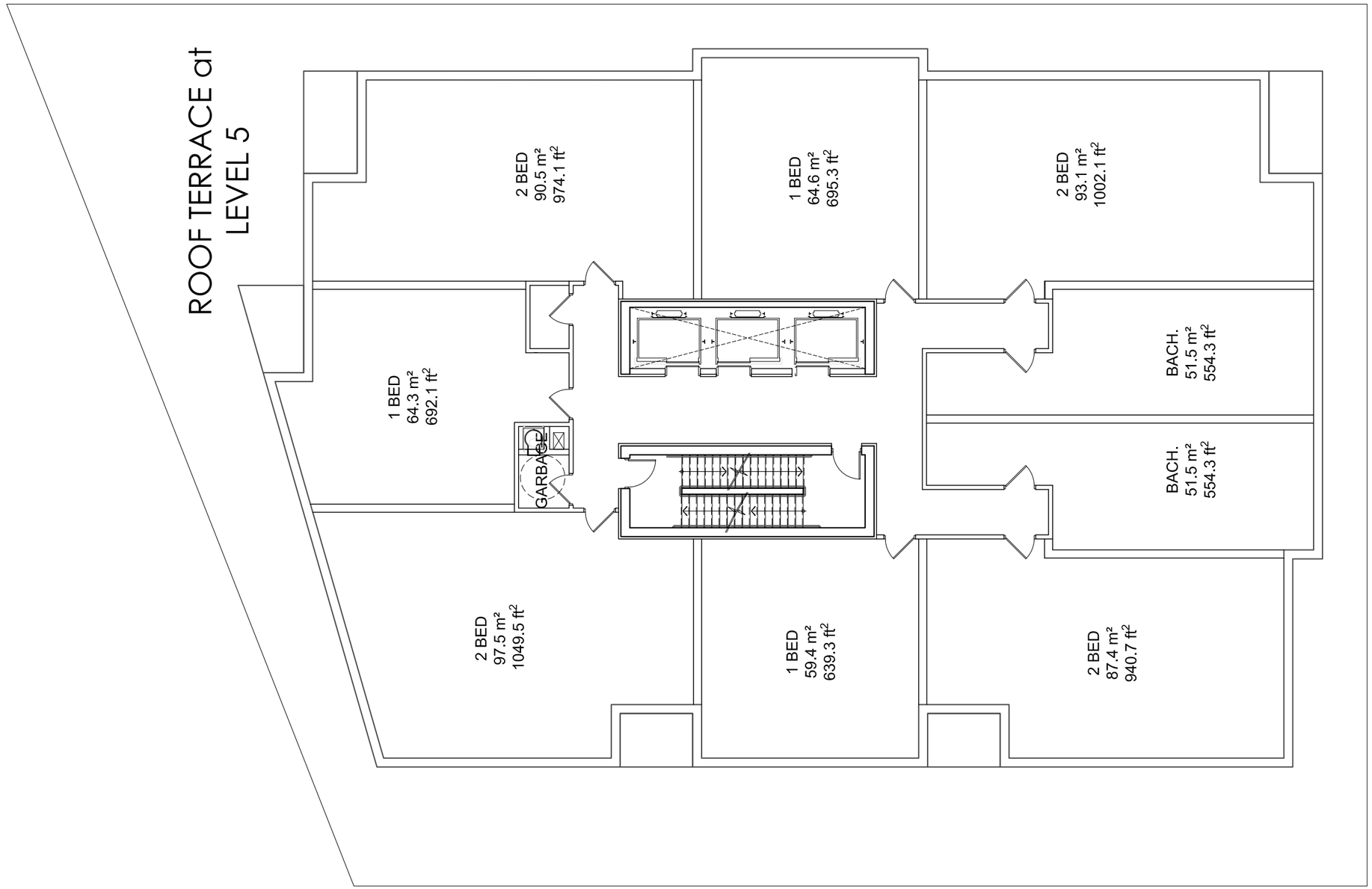
Typical Podium Level (Flr. 2-4)

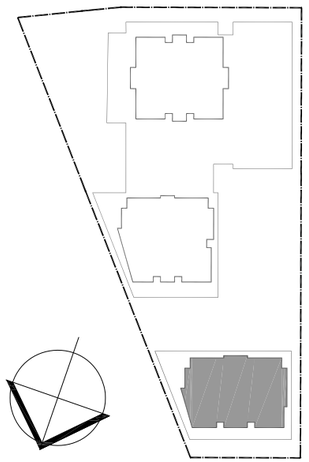
scale 1:150

TRINITY

LOWER FLOOR x 5 (Flr. 5-9)		
GFA	8,311 ft²	(772.2 m²)
NET RES.	7,110 ft²	(660.6 m²)
EFFICIENCY	85.5%	
UNITS	9	
Bachelor	2	
1 Bed	3	
2 Bed	4	

RES. TOWER 3 TOTALS (30 Flrs.)		
GFA	217,496 ft²	(20,206m²)
NET RES.	187,446 ft²	(17,414m²)
EFFICIENCY	86.2 %	
UNITS	192 (Total)	
Bachelor	10	(~5%)
1 Bed	36	(~19%)
2 Bed	104	(~54%)
3 Bed	42	(~22%)





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GLADSTONE + LORETTA

Residential Tower 3

Typical Level (Flr. 5-9)

scale 1:150

TRINITY

TYPICAL FLOOR x 16 (Flr. 10-25)		
GFA	8,311 ft²	(772.2 m²)
NET RES.	7,166 ft²	(665.7 m²)
EFFICIENCY	86.2%	
UNITS	7	
1 Bed	1	
2 Bed	4	
3 Bed	2	

RES. TOWER 3 TOTALS (30 Flrs.)		
GFA	217,496 ft²	(20,206m²)
NET RES.	187,446 ft²	(17,414m²)
EFFICIENCY	86.2 %	
UNITS	192 (Total)	
Bachelor	10	(~5%)
1 Bed	36	(~19%)
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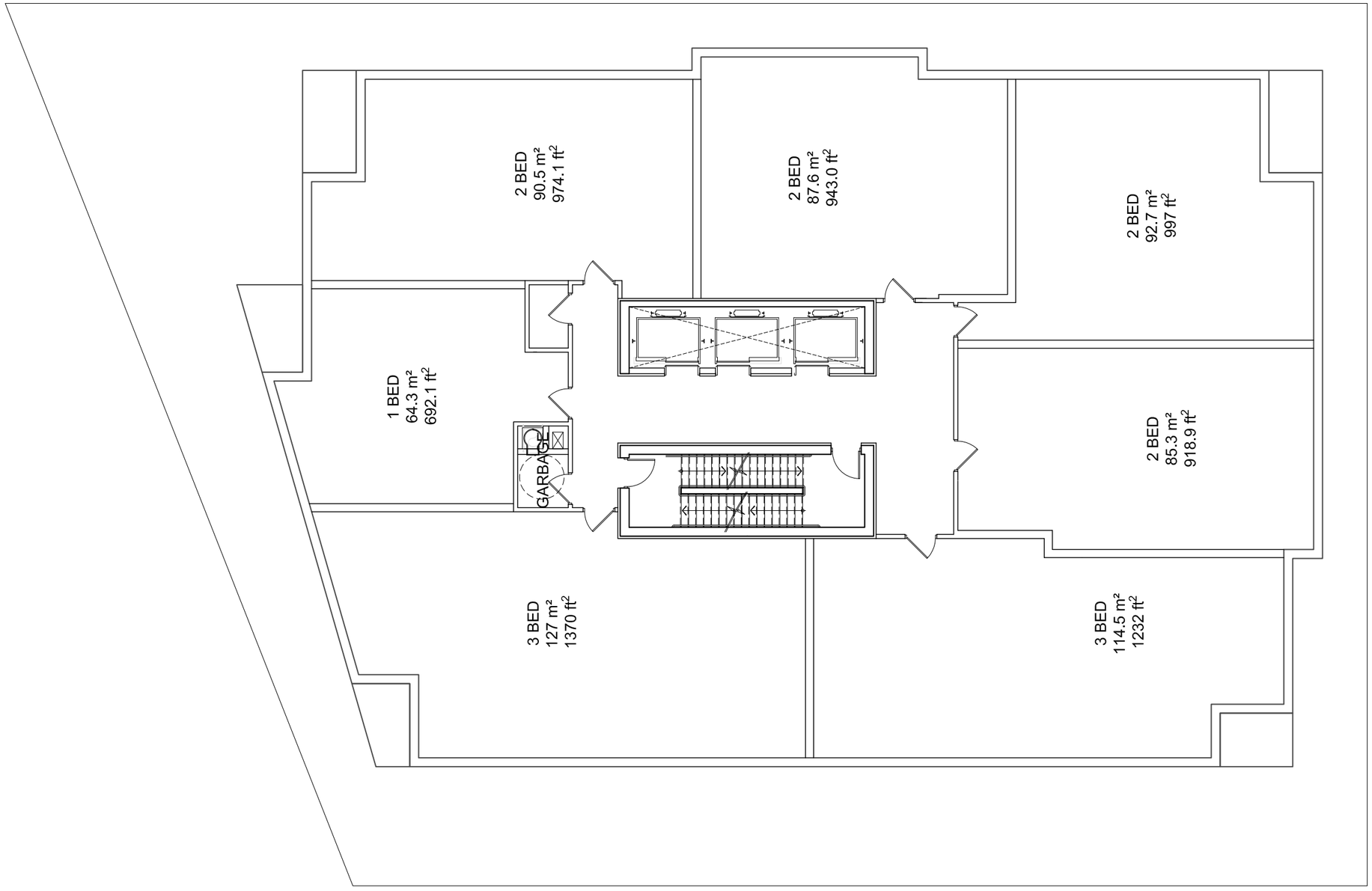

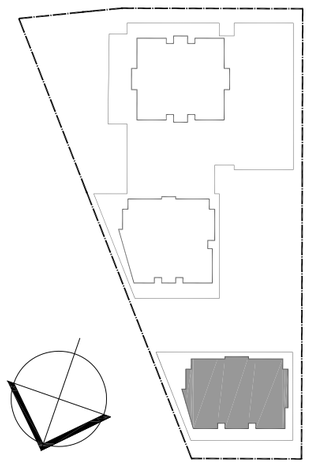

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GLADSTONE + LORETTA

Residential Tower 3

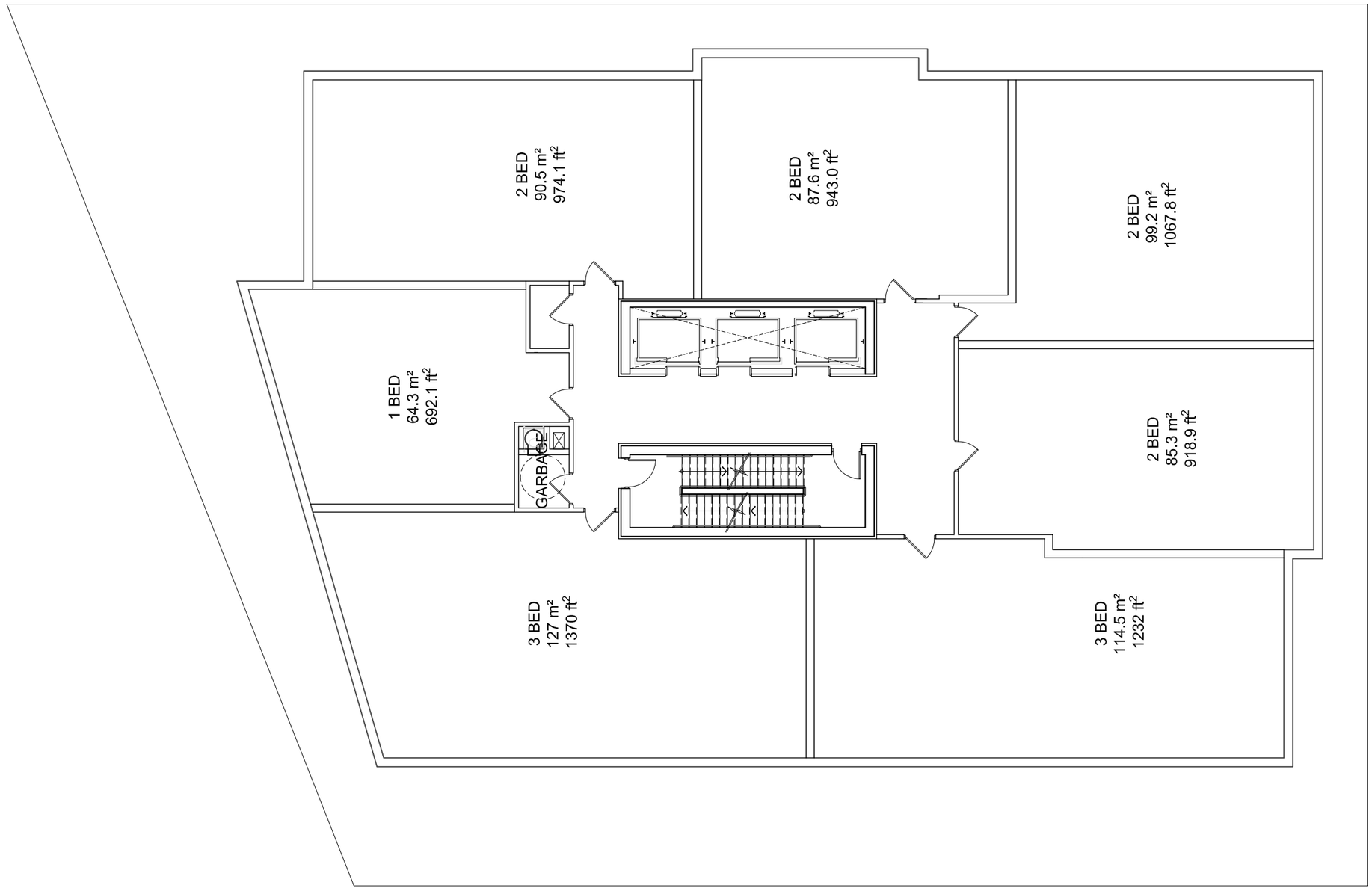
Typical Level (Flr. 10-25)

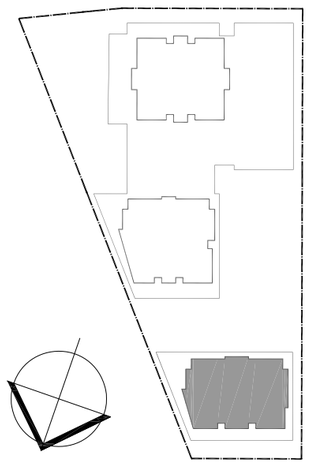
scale 1:150

TRINITY

UPPER FLOOR x 5 (Flr. 26-30)		
GFA	8,593 ft²	(798.4 m²)
NET RES.	7,448 ft²	(691.9 m²)
EFFICIENCY	86.6%	
UNITS	7	
1 Bed	1	
2 Bed	4	
3 Bed	2	

RES. TOWER 3 TOTALS (30 Flrs.)		
GFA	217,496 ft²	(20,206m²)
NET RES.	187,446 ft²	(17,414m²)
EFFICIENCY	86.2 %	
UNITS	192 (Total)	
Bachelor	10	(~5%)
1 Bed	36	(~19%)
2 Bed	104	(~54%)
3 Bed	42	(~22%)





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GLADSTONE + LORETTA
Residential Tower 3

Upper Residential Plan (Flr. 26-30)

scale 1:150

TRINITY

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
2011886

THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR
In accordance with Regulation 1026, Section 29(3)

SURVEYOR'S REAL PROPERTY REPORT
PART 1 - PLAN OF

LOTS 1, 2 & 3 (WEST CHAMPAGNE AVENUE)
BLOCK C AND
LOTS 1, 2 & 3 (EAST LORETTA AVENUE)
BLOCK C AND
LOTS 4, 5, 6, 7 & 8
BLOCK C AND
PART OF BLOCK C AND
PART OF CHAMPAGNE STREET
(CLOSED BY BY-LAW 4863)
REGISTERED PLAN 73
CITY OF OTTAWA

Scale 1:200
0 2 4 6 8 10 METRES

METRIC CONVERSION

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

BEARING NOTE

BEARINGS ARE ASTRONOMIC AND ARE REFERRED TO THE EASTERLY LIMIT OF LORETTA STREET NORTH AS SHOWN ON PLAN 4R-207, HAVING A BEARING OF N 23° 00' 15" W.

ELEVATION NOTE

POSITION OF SITE BENCHMARKS AS SHOWN HEREON.

ELEVATIONS SHOWN HEREON ARE GEODETIC (CGVD-1928:1978) AND ARE DERIVED FROM CITY OF OTTAWA VERTICAL CONTROL MONUMENTS No.'s 2011-0106 (ELEV=62.968m) AND 2011-0107 (ELEV=55.863m).

UTILITY NOTE

LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE AND ARE PER THE CITY OF OTTAWA SHEET No.'s__ AND__ AND MUST BE VERIFIED PRIOR TO CONSTRUCTION.

NOTE

- THIS PLAN OF SURVEY IS TO BE READ IN CONJUNCTION WITH THE REPORT SUMMARY NOTED AS PART 2 HEREON.
- THIS REPORT CAN ONLY BE UPDATED BY THIS OFFICE. NO ADDITIONAL PRINTS OF THIS ORIGINAL REPORT WILL BE ISSUED SUBSEQUENT TO THE DATE OF CERTIFICATION.
- ALL TIES ARE MINIMUM UNLESS OTHERWISE NOTED.
- ALL TIES TO CURVED BOUNDARY ARE RADIAL TO ARC.
- RISK OF UNDERGROUND SERVICES. MONUMENTATION PLANTED ACCORDINGLY.

PART 2

This Report was prepared for _____ and the undersigned accepts no responsibility for the use by other parties.

1. REGISTERED RIGHTS-OF-WAY/EASEMENTS
No rights-of-way or easements were found to be registered against the subject properties.
2. PROPERTY IMPROVEMENTS

3. COMPLIANCE WITH MUNICIPAL ZONING BYLAWS
Compliance is not certified by this report.
4. ADDITIONAL REMARKS

LEGEND (IF APPLICABLE)

■	DENOTES	FOUND MONUMENTS
□	-	SET MONUMENTS
IB	-	IRON BAR
IB#	-	ROUND IRON BAR
SIB	-	STANDARD IRON BAR
SSIB	-	SHORT STANDARD IRON BAR
CC	-	CUT CROSS
CP	-	CONCRETE PIN
WIT	-	WITNESS
PIN	-	PROPERTY IDENTIFICATION NUMBER
MEAS	-	MEASURED
PROP	-	PROPORTIONED
OU	-	ORIGIN UNKNOWN
SG	-	STANTEC GEOMATICS LTD.
P	-	REGISTERED PLAN 73
P1	-	PLAN BY 725 DATED AUGUST 23, 1967
P2	-	PLAN BY 857 DATED AUGUST 10, 1979
P3	-	PLAN BY GCM DATED AUGUST 10, 1951
P4	-	PLAN BY 857 DATED JUNE 21, 2001
P5	-	PLAN BY A&M DATED NOVEMBER 6, 1963
P6	-	PLAN 4R-207
P7	-	PLAN 4R-22151

ACU	-	AIR CONDITIONING UNIT
AN	-	ANCHOR
AP	-	AIR PUMP
ANT	-	ANTENNA
BH	-	BOREHOLE
BIB	-	HOSE BIB
BIKP	-	BIKE RACK
BENCH	-	BENCH
BOL	-	BOLLARD
BOUL	-	BOULDER
CB	-	CATCH BASIN
DCB	-	DOUBLE CB
CBMH	-	CB MANHOLE
DCBMH	-	DOUBLE CB MANHOLE
CBSI	-	SIDE INLET CB
CHIM	-	CHIMNEY
CSV	-	VALVE CURB STOP
DRN	-	DRAIN
EPOST	-	ELECTRICAL OUTLET
FP	-	FLAG POLE
FL	-	FLOOD LIGHT
FTF	-	FUEL TANK FILLER CAP
GC	-	GARBAGE CAN
GFL	-	PIPE FLANGE (GAS)
GFP	-	GAS FUEL PUMP
GP	-	POLE GUYWIRE
GSR	-	GAS SERVICE REGULATOR
GV	-	GAS VALVE
HIC	-	HICKENBOTTOM
HDS	-	HEADSTONE
HLS	-	LIGHT STANDARD HYDRO
HM	-	HYDRO METER
HTR	-	HYDRO TRANSFORMER
HW	-	HAND WELL
HYD	-	FIRE HYDRANT
JBX	-	JUNCTION BOX
MB	-	MAILBOX
MP	-	MONITORING PIN
MH	-	MAINTENANCE HOLE UNIDENTIFIED
MHB	-	MAINTENANCE HOLE BELL
MHF	-	MAINTENANCE HOLE FIBRE OPTIC
MHH	-	MAINTENANCE HOLE HYDRO
MHI	-	MAINTENANCE HOLE INVERT
MHSA	-	MAINTENANCE HOLE SANITARY
MHST	-	MAINTENANCE HOLE STORM
MHT	-	MAINTENANCE HOLE TRAFFIC
MW	-	MONITORING WELL
NPB	-	NEWS PAPER BOX
OLP	-	LIGHT STANDARD ORNAMENTAL
OHW	-	OVERHEAD UTILITY WIRES
PKM	-	PARKING METER
PLBX	-	PULL BOX
PLQ	-	PLAQUE
PLR	-	PILLAR
PZ	-	PIEZOMETER
RLC	-	RED LIGHT CAMERA
RWSL	-	RAILWAY SIGNAL LIGHT
RWSS	-	RAILWAY SWITCH STAND
SAT	-	SATELLITE DISH
SCLP	-	SCULPTURE
SCP	-	SUMP/CATCH PIT
SCV	-	SPRINKLER CONTROL VALVE
SH	-	SPRINKLER HEAD
SIA	-	SIAMESE CONNECTION
SN	-	SIGN
SPAN	-	SOLAR PANEL
SPT	-	SEPTIC TANK LID
TBL	-	TABLE
TB BELL	-	TERMINAL BOX - BELL
TB CATV	-	TERMINAL BOX - CABLE
TCP	-	TRAFFIC CONTROL BOX
TPIT	-	TEST PIT
TSL	-	TRAFFIC SIGNAL LIGHT
UMB	-	MARKER BELL UNDERGROUND
UMC	-	MARKER CABLE UNDERGROUND
UMG	-	MARKER GAS UNDERGROUND
UMO	-	MARKER OIL UNDERGROUND
UP	-	UTILITY POLE
VB	-	VALVE BOX
VC	-	VALVE CHAMBER
WV	-	WATER VALVE

SURVEYOR'S CERTIFICATE

I CERTIFY THAT :
1. THE SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE _ DAY OF _, 2017.

DATE

BRIAN J. WEBSTER
ONTARIO LAND SURVEYOR

SRO MAP COORDS: X= 366205, Y= 5029655

Stantec Geomatics Ltd.
CANADA LAND SURVEYORS
ONTARIO LAND SURVEYORS
1331 CLYDE AVENUE, SUITE 400
OTTAWA, ONTARIO, K2C 3G4
TEL. 613.722.4420 FAX. 613.722.2799
stantec.com

DRAWN: ME | CHECKED: * | PM: BW | FIELD: ES | PROJECT No.: 161613694-110

DETAIL
SCALE = 1:100 m

PART 1 4R-207

PART OF LOT 38 CONCESSION 1 (NEPEAN)
(OTTAWA FRONT)
N44°31'50"W (P6&MEAS) N45°40'50"W (P2,P7) 75.63 (P6&MEAS) 75.78 (P7)
PIN 04107 - 0020
PART 35 4R-402
3.85 (P7&SET)

BLOCK C

73

PLAN

CHAMPAGNE AVENUE
(CLOSED BY BY-LAW 4863)
(FORMERLY FIRST AVENUE)

N61°05'10"E 21.89 (MEAS) N61°05'10"E 21.87 (P7)
PART 1 4R-22151
PIN 04107-0225
35.99 (P7&SET)

PIN 04107 - 0276

N28°54'50"W (SET)
N28°52'40"W (P7)
1.53 (P7&SET)

N61°05'10"E (MEAS) N61°01'35"E (P7) 96.53 (P7&SET)

WEST CHAMPAGNE AVENUE

LOT 1

BLOCK C

N28°54'50"W (SET)
N28°52'40"W (P7)
1.53 (P7&SET)

N61°05'10"E (MEAS) N61°01'35"E (P7) 96.53 (P7&SET)

N07°00'00"E (P6&MEAS) N07°01'35"E (P7) 96.76 (P7)

REGISTERED

GLADSTONE AVENUE (FORMERLY WILLOW STREET)
PIN 04107-0019

PART OF LOT 38 CONCESSION 1 (OTTAWA FRONT) (NEPEAN)
PART 6 4R-207
PIN 04107-0020
PART 2 4R-207
PART 1 4R-207
PART 35 4R-402
PART 34 4R-402
PART 1 4R-22151 PIN 04107-0225
SEE DETAIL
BLOCK C
CHAMPAGNE AVENUE (CLOSED BY BY-LAW 4863) (FORMERLY FIRST AVENUE)
N44°31'50"W (P6&MEAS) 75.63 (P6&MEAS) 75.78 (P7)
N45°40'50"W (P2,P7)
SITE BENCHMARK 2
TOP OF SPINDLE ON FIRE HYDRANT
ELEV=85.35m
No. 949
3 STOREY BRICK, CONCRETE BLOCK & STUCCO SIDED COMMERCIAL BUILDING
No. 951
1 STOREY STUCCO & METAL SIDED COMMERCIAL BUILDING
PIN 04107 - 0276
No. 145
2 STOREY BRICK, METAL & STUCCO SIDED COMMERCIAL BUILDING
No. 155
2 STOREY BRICK SIDED COMMERCIAL BUILDING
PLAN
WEST CHAMPAGNE AVENUE
LOT 3 LOT 2 LOT 1
EAST LORETTA AVENUE
LOT 8 LOT 7 LOT 6 LOT 5 LOT 4 LOT 3 LOT 2 LOT 1
LOT 9 LOT 10
PIN 04107-0014
PIN 04107-0013
2 BAY GARAGE (FOUNDATION NOTED)
METAL SIDING
BLOCK
LAUREL STREET
LORETTA AVENUE NORTH (FORMERLY SECOND AVENUE)
PIN 04107-0018
PIN 04107-0019
REGISTERED
N44°36'20"W 112.98 (MEAS) N44°38'15"W (P2,P4,P6) 112.965 (P6)
86.59 (P2&MEAS) 86.61 (P,P4)
N47°32'20"W 39.40 (P6&MEAS)
60.35 (P1,P6&SET)
180°00' (SET)
80.47 (P6,P7&MEAS)
N 23° 00' 15" W (REFERENCE BEARING)
211.23 (P1,P6)
70.41 (P1,P6,P7&SET)
SITE BENCHMARK 1
TOP OF SPINDLE ON FIRE HYDRANT
ELEV=85.36m
CHAIN LINK FENCE
STEEL GUARD RAIL
CONCRETE WALL
EDGE/ASPHALT
CURB
ASPHALT
GRASS & TREES
CONCRETE SIDEWALK
APPROXIMATE CROWN OF ASPHALT
INTERLOCK STONE SIDEWALK
CONCRETE STEPS & LANDING
GARAGE DOOR
RAMP
PARKING PAINT LINES
ENTRANCE
GATE
FENCE 0.4 WIDE
FENCE 0.15 WIDE
SIB (SET)
SSIB WIT (SET)
BRICK CORNER 0.08 EAST (MEAS) WALL JUST CLEAR (P1)
BRICK CORNER 0.11 EAST (MEAS)