

FUNCTIONAL SERVICING & STORMWATER MANAGEMENT REPORT

7211 & 7233 AIRPORT RD PARTS 1,2, & 3 CITY OF MISSISSAUGA REGION OF PEEL

NOVEMBER 2019

PREPARED BY:

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1.0 INTRODUCTION

Design Fine Ltd. Was retained by Airstar Holdings Inc. to complete a Functional Servicing and Storm Water Management Report in support of an Official Plan and Zoning By-law amendment for the property at 7211 and 7233 Airport Road. The 8656 m² property is legally described as Part of Lot 12, Registered Plan 43R-23708, Pin # 13272-0613 (LT) and 13272-0614 (LT), City of Mississauga, Regional Municipality of Peel. The property is bounded by Airport Road to the south, Collett Road to the west, Residential area to the west and east, and Victory Park to the north. The site location is illustrated in Figure 1.

The proponent plans to construct a multi-unit senior's residence complex with a total of 128 units, as well 2 commercial units located on the main floor. A large underground parking structure will encompass the majority of the site area to support the proposed building.

2.0 SITE DESCRIPTION

The site is currently vacant. Access to the site is provided from one driveway onto Airport Road at the South limits of the property and another from Collett Road at the west limits of the property (refer to attached Drawing SP-100 for more detail). The site predominantly drains South-West to North-East overland towards Victory Park. The site is approximately 0.87 hectares in size.

3.0 SITE PROPOSAL

This site will be developed into a Senior's residence which will be comprised of 128 units in a total of five floors. Additionally, on the main floor 2 units will be commercial in nature. Parking will be provided underground for the residents and a separate parking area will be designated for commercial and employee. Detailed site statistics can be found in drawing SP-100.

4.0 STORMWATER MANAGEMENT & SITE DRAINGE

Management of storm water and site drainage for the proposed development policies and standards of various agencies including:

- City of Mississauga
- Ministry of Environment (MOE)
- Toronto Region Conservation Authority (TRCA)
- Region of Peel

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A description of the existing and proposed drainage conditions as well as proposed storm water quantity and quality controls are described in the sections to follow.

4.1 EXISTING DRAINGE CONDITIONS

The subject land is located at the North of the intersection of Airport Road and Victory Crescent. Land is presently vacant and consists of an undeveloped green field. An existing 600mm diameter storm service in the adjacent lot collects the drainage from the subject property. Subject land also drains towards Airport Road into roadside catch basin and a secondary roadside catch basin is located North on Airport Road. The slope for the subject land is about 1-2% is Existing.

4.2 PROPOSED DRAINAGE CONDITIONS

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The site will be developed into a residential/commercial structure in 'L' shape which will consist of one building, with the side perpendicular to Airport Road containing two floors. Building side parallel to Airport Road will contain a total of six floors, part of the first floor will be commercial and the rest residential.

Internal drainage within the proposed development will be collected in the driveway and parking lot areas with a series of drains and subsurface storm sewers sized to convey the 100-year event. This storm sewer will be connected to manhole and stormceptor; which will release the water to main storm sewer line with controlled flow located at airport road.

The preliminary grading of the site has been designed to direct all storm water generated onsite to the proposed internal drainage system. Driveway and parking lot sloped range from 1-2% in accordance with City of Mississauga standards. Low points at the drains have been graded such that the maximum depth of ponding will be 0.30 meters in the event of drain blockage.



4.3 STORMWATER QUANTITY CONTROL

Due to an increase in the site imperviousness as a result of the proposed development, peak flows from the site will increase. As such, an analysis of the required storage volume was completed in order to ensure post-development peak flows rates emanating from the site predevelopment levels (i.e. quantity control).

The storm water quantity storage requirements for the site were determined using the Modified Rational Method. Rainfall data was collected from the City of Mississauga IDF Standard 2111.010. Refer to Appendix B for detailed storm water management calculations.

Given that the peak flow has substantially increased due to the increase in site imperviousness and drainage area contribution, quantity control measures will be required for these outlets.

The total storage volume on-site to achieve the above-noted peak flow targets is a maximum of 142.07 m³

Drainage from parking areas will be collected in storage, after which it will pass through STC-4000 oil/grit separator before being released into the main storm sewer. The specification of the most suitable quantity control method(s) is provided in the Appendix C.

4.4 STORM QUALITY & EROSION CONTROL

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It will be easier to implement storm water management practices to address the water quality and erosion control requirements of the regulatory agencies. Since Lake Ontario is the ultimate receiver of drainage, the development will incorporate measure to provide "enhanced protection" per the MOE (2003) guidelines. "Enhanced" water quality protection involves the removal of at least 80% of suspend solids from 90% of the annual runoff volume.

Typical water quality and erosion controls for the treatment of runoff from area size feature a treatment oil/grit separators and infiltration galleries. Storm water quality objectives for can be achieved using a stormceptor STC-4000 oil/grit separator (or equivalent). The storm water can be collected through 3 drains located on the ground level in parking area and discharge to Airport Rd outlets through STC-4000.

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5.0 SANITARY SEWAGE SYSTEM

The trunk sanitary sewer is approximately 2m below road surface. We propose 300 mm dia. service connection will be made from the building to existing trunk sanitary sewer below Airport Rd. Due to the depth of the main, a maintenance hole drop structure complete with external assembly will be used. The proposed development consists of one Long-term facility with some commercial entities present on the main floor of the building. The combined floor area of 15,457 m² produces an estimated average day and peak sewage flow of 0.719 L/s and 3.59 L/s respectively.

6.0 WATER DISTRIBUTION SYSTEM

We propose one service connection be made of 200 mm dia. water main on the west side of Airport Rd. The service connection will be split inside the property to service each side of the building. The building services will include flow meters and connection requirements according to Region of Peel Standards.

Fire protection will be provided by a new hydrant, which will be located on the north side of the site so that it is less than 50m away from the building and provides easy access to each side of the building.

7.0 ROAD AND DRIVEWAY ACCESS

The development plan shows one right-in, right-out access from Airport Road.

8.0 EROSION & SEDIMENTATION CONTROL DURING CONSTRUCTION

Erosion and sediment controls will be implemented on-site prior to construction. The controls will consist of dams.

Slit Fencing

Slit fence will be installed were required to intercept sheet flow. It should be noted that additional silt fencing maybe added during construction based on field decisions by the Engineer and Owner prior to, during and following, the earth works.

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Topsoil Stockpiles

It will be necessary to strip topsoil prior to earth moving. Temporary topsoil stockpiles will be located such that sediment does not enter the adjacent roadside ditches.

Dust Suppression

During earthwork activities, the Contractor will ensure that measures for dust suppression are provided as required, such as the application of lime water.

A complete sediment and erosion control plan will be developed during the detailed design / approvals process.

8.1 CONSTRUCTION SEQUENCING

The following is the scheduling of construction activities with respect to sediment controls:

- Installation of all silt fences prior to any other activities on the site.
- Construct temporary mud mat for construction access.
- Demolish existing buildings and dispose of waste material off site.
- Excavate the site for the construction of the building foundations and
- dispose of surplus material off site.
- Install the site servicing and all underground utilities.
- Construct the building, underground Parking garage and buildings.
- Restore / re-vegetate all disturbed areas either with temporary measures
- such as mulch or seeding or with final landscape and paving materials.
- Upon stabilization of all disturbed areas, remove sediment controls.

8.2 INSPECTIONS & MAINTENANCE

To ensure that the sediment control measures operate effectively, they are to be regular monitored during construction. Inspections of all the erosion and sediment control measures on the construction site should be undertaken with the following frequency:

- On a weekly basis
- After every rainfall

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- · After significant snow melt
- Prior to forecasted rainfall events.



If damaged is found, the damage should be repaired or replaced within 48 hours. Site inspection staff and construction managers should refer to the Erosion and Sediment Control Inspection Guide (2008) prepared by the Greater Golden Horseshoe Area Conservation Authority. The guide provides information on inspection reporting, how to respond to variety of problems, and proper installation techniques.

9.0 UTILITIES

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As the surrounding area contains large number of commercial and residential properties access to all the major utilities including Enbridge Gas, Hydro One, Rogers, and Bell Canada.



10.0 CONCLUSIONS & RECOMMENDATIONS

We conclude that the proposed development of the subject lands can be readily serviced and meet the storm water management objectives of the regulatory agencies.

- 1. Access to the site will be provided from Northbound Airport Road adjacent to the site.
- 2. On-site storm water quantity control will be required. The total storage volume required will be 46.25 m³. This storage volume can be achieved utilizing any combination of storm water management facility storage, ponding around the drain in the parking.
- 3. On-site storm water quality controls are required and will be achieved using treatment train approach. MOE storm water quality objectives using a Stormceptor STC-4000 oil/grit separator. The final selection of preferred water quality treatment will be determined at the detailed design stage.
- 4. The expected average domestic water consumption will be approximately 3.64 L/sec.
- 5. The fire flow required for the site is estimated to be 228.45 L/sec.
- 6. Internal drainage for the development will convey storm event and emergency overland flows in accordance with City of Mississauga design standards.
- 7. One sanitary sewer connection will be made to the existing sewer via a proposed 300 mm Ø service lateral.
- 8. Domestic water for the commercial uses will be provided by a connection to the existing 200 mm Ø watermain on the west side of Airport Road.
- 9. Existing utility plants are located on Airport Road and can service the proposed site.

Therefore, we recommend approval of the planning applications for the subject lands from the perspective of site grading, storm water management, and engineering servicing requirements.

Regards,

Design Fine Ltd.



Aryan Sharma, P. Eng

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APPENDIX A

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STORMWATER MANAGEMENT CALCULATIONS

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RUNOFF COEFFCIENT

Pre-Development Peak Flows – As per City of Mississauga design requirements, a minimum runoff coefficient of 0.75 is to be used, where future industrial or commercial development is expected.

Post-Development Peak Flows

Land Use	Area(ha)	Runoff Coef.	AxC
Parks	0.36	0.25	0.009
Single & Semi-Detached	0.00	0.00	0.000
Multiple & Institutional	0.22	0.75	0.165
Commercial	0.05	0.90	0.045
Industrial	0.00	0.90	0.000
Roadways	0.24	0.90	0.216
<u>Total</u> :	0.87		0.435

Total Area (ha) = 0.87

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Average Runoff Coef. = (0.435/0.87) = 0.50



RATIONAL METHOD FLOWS

Sample Calculation (Post-Development) – 2 years

Intensity (10 years): $i = \frac{610}{\left(Tc + 4.6\right)^{0.78}}$ (As per City of Mississauga IDF Standard 2111.010)

Peak Flow: $Q_{post} = 0.0028 \times C_{post} \times i_{(T_d)} \times Area$

Factors:

T_c = 15 minutes as per City of Mississauga Design Criteria

 $C_{post} = 0.49$

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 $Q_{pre} = 0.109 \text{ m}^3/\text{s}$

 T_d = Time in minutes

Time Min (t)	Intensity Mm/hr. (I)	Max. Discharge m³/sec. Q(release)	Peak flow 100 yr. Event m³/sec Q(peak)	Inflow Volume m³ V(in)	Outflow Volume m ³ V(out)	Storage Required m³
<u>10</u>	<u>176.31</u>	<u>0.109</u>	0.2147	128.82	<u>82.57</u>	<u>46.25</u>
15	140.69	0.109	0.1714	154.26	110.41	43.85
20	118.12	0.109	0.1439	172.68	140.05	32.63
25	102.41	0.109	0.1247	187.05	168.69	18.36

The maximum storage volume required to control 100-year rainfall event for grade level area is 46.25 m³



STORAGE VOLUME PROVIDED

Storage for Storm Water Pipe and Catch Basins/Control Manhole:

The maximum storage volume required to control 100-year rainfall event for grade level area: 46.25 m³

The proposed storm water sewer system is shown on grading site plan. There is one catch basin.

Volume of the Catch Basin:

$$= (L X W X D) = (0.61 X 0.61 X 1.9) = 0.71 m3$$

Where

L = Length of the catch basin W = Width of the catch basin

D = Average depth of the catch basin

Following pipes are used for storm water system for site.

Use 300 mm Ø SDR 35 pipe

Distances:

Drain # 1 to Drain # 2 = 23.74 meter Drain # 2 to Drain # 3 = 37.58 meter

Drain #3 to Catch basin = 12.75 meter

Catch basin to Manhole = 5.91 meter

Storm water pipe volume is calculated by using the formula = $\pi/4*D^2 \times L$ Where

D = Pipe diameter (0.30 m)

L = Pipe length (79.98 m)

Volume of total storm water pipe: = $(\pi/4*0.30^2x79.98)$

 $= 5.65 \text{ m}^3$



Volume of Manhole is calculated as follows:

$$= (L X W X D) = (0.61 X 0.61 X 1.9) = 0.71 m3$$

Total Value of Manhole, Cath basin and pipes = $0.71 \text{ m}^3 + 5.65 \text{ m}^3 + 0.71 \text{ m}^3 = 7.07 \text{ m}^3$

Pond Storage Required:

$$46.25 \text{ m}^3 - 7.07 \text{ m}^3 = 39.18 \text{ m}^3$$

Approximate combined pond storage area (Refer to Grading Plan) ~ 900 m²

Average height of ponding = 0.15 m

Ponding volume provided = $900 \text{ m}^2 \text{ x } 0.15 \text{ m} = 135 \text{ m}^3$

Total volume provided = $135 + 7.07 = 142.07 \text{ m}^3$

A combined pond area of approximately 900 m² is allocated in grade level as shown on site grading plan to collect the accumulate ponding area required for up to 100-year storms.

Quality control:

The discharge flow rate from the site will be controlled by installing an orifice plate at the upstream of the control catch basin.

Following formula is used to calculated the size of orifice plate.

$$Q = CA (2gH)^{1/2}$$

Where

C = coefficient of discharge (sharp orifice)

A = Orifice area (m²)

H = Head on orifice (m)

 $g = 9.81 \text{ m/sec}^2$

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Based on maximum allowable release rate from the site (0.109 m³/sec), the Calculations for orifice plate size are shown here:

 $Q = 0.109 \text{ m}^3/\text{sec}$

C = 0.84

 $H = 1.90 \, \text{m}$

Q = CA $(2gH)^{\frac{1}{2}}$

 $A = 0.0212 \text{ m}^2$

D = 164.50 mm

Therefore, a minimum orifice plate of 165 mm diameter shall be used in the control catch basin.

FIRE FLOW:

$$F = 220 C(A)^{0.5} = 220 \times 0.8 \times (7488.04)^{0.5} = 15,229.89 L/min$$

Where:

F = the required fire flow in liters per minute

C = Coefficient related to the type of construction

- = 1.5 for wood frame construction (structure essentially all combustible)
- = 1.0 for ordinary construction (brick or other masonry walls, combustible floor and interior)
- = 0.8 for non-combustible construction (unprotect metal structural components, masonry or metals walls)
- = 0.6 for fire-resistive construction (fully protected frames, floors, roof)

A = *Area in Square meters*

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Further reduction for non-combustible building – 25%

 $F = 15,229.89 L/min \times 0.75 = 11,422.42 L/min$

Further reduction of 20% not applicable as there is no automated sprinkler system

Increase in "F" value is considered for structures exposed within 45 meters as recommended by FUS (Fire Underwriters Survey)

Project Northwest exposure = 15% (10.1 m – 20 m)

Project Southeast exposure = 5% (30.1 m - 45 m)



Required fire flow = 11,422.42 x 1.20 = 13,706.90 L/min = 228.45 L/sec

WATER DEMANS CALCULATIONS

Building & site use

- Land Area = 0.87 ha
- Building Area = $15,457 \text{ m}^2$
 - o Commercial Use 119.4 m²
 - Long term facility Use 15,337.6 m²

Sewage flows

Ontario Building Code - Table 8.2.1.3.B

- Commercial Use = $75 \text{ L/Day / } 9.3 \text{ m}^2$ = $75 \text{L/Day x (} 119.4 \text{ m}^2/9.3 \text{ m}^2\text{)}$ = 962.90 L/Day
- Long term facility Use 450 L/Day
 - Total Beds in Entire Facility 138 Beds
 = 450 L/Day x 138 Beds = 61,200 L/Day

Subtotal average daily = 962.90 L/Day + 61,200 L/Day = 62,162.9 L/Day

Region of Peel – Standard for Commercial Use

50 p.p. ha x 0.87 ha =
$$43.5 \sim 43$$
 People avg. daily 302.8 L/C Day x 43 = $13,020$ L/Day

Long term facility Occupancy: 256 Residents Assume office Building = 963/302.8 = 3 People

Total = 256 People-peak

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Therefore, Daily Sewage flow = 62,162.9 L/Day => 0.719 L/sec

Peak flow based on 2 People 256 - 302.8 L/Day x 4.0 = 3.59 L/sec

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WATER DEMANDS

Peak Use = 256 People

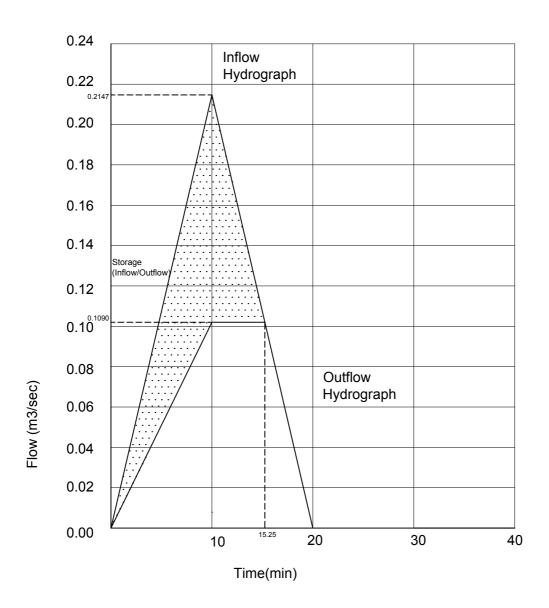
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Therefore, Total water demand = 62,162.9 L/Day

Maximum/Day = 256 x 409 x 2.0 = 209,408 L/Day => 2.42 L/sec

Peak hr. = 256 x 409 x 3.0 => 3.64 L/sec

Maximum storage volume occurs at 10 minutes



Storage Calculations for maximum storage at 10 minutes

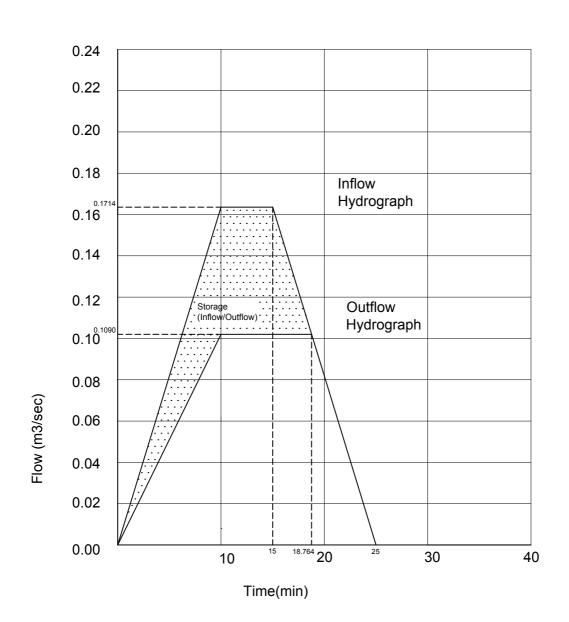
Q (peak) = $0.2147 \text{ m}^3/\text{sec.}$

Q (release) = $0.1090 \text{ m}^3/\text{sec}$

 $V (in) = (20/2) \times 0.2147 \times 60 = 128.82 \text{ m}^3$

V (out) = $(5.25 + 20)/2 \times 0.1090 \times 60 = 82.57 \text{ m}^3$

Storage = V(in) - V(out) = 46.25 m^3



Storage Calculations for maximum storage at 15 minutes

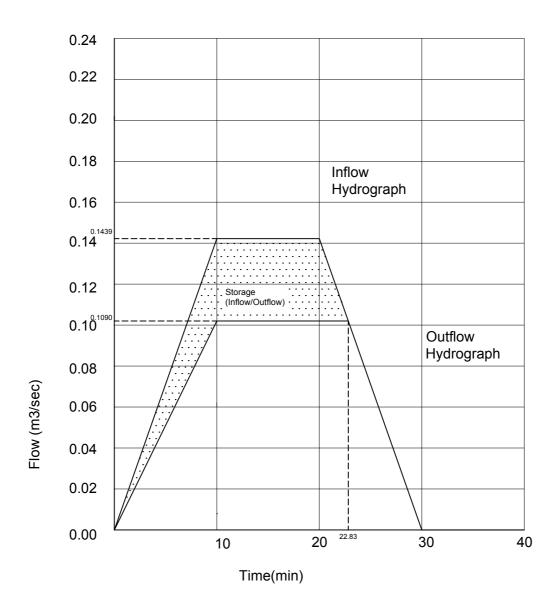
Q (peak) =
$$0.1714 \text{ m}^3/\text{sec.}$$

Q (release) =
$$0.1090 \text{ m}^3/\text{sec}$$

V (in) =
$$(5+25)/2 \times 0.1714 \times 60$$
 = 154.26 m³

V (out) =
$$(8.764 + 25)/2 \times 0.1090 \times 60 = 110.41 \text{ m}^3$$

Storage =
$$V(in) - V(out)$$
 = 43.85 m³



Storage Calculations for maximum storage at 20 minutes

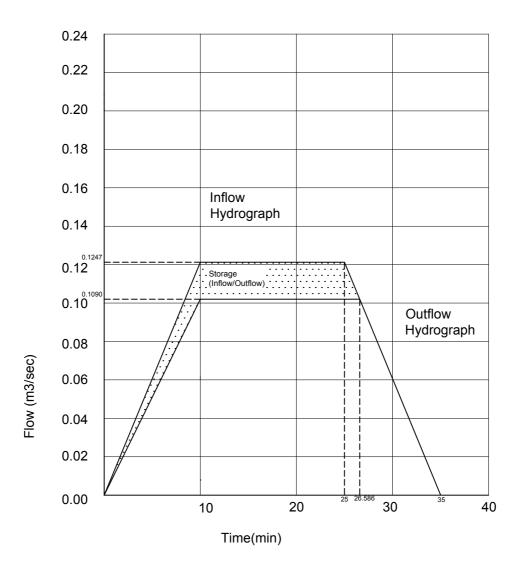
Q (peak) = $0.1439 \text{ m}^3/\text{sec.}$

Q (release) = $0.1090 \text{ m}^3/\text{sec}$

 $V (in) = (10+30)/2 \times 0.1439 \times 60 = 172.68 \text{ m}^3$

V (out) = $(12.83 + 30)/2 \times 0.1090 \times 60 = 140.05 \text{ m}^3$

Storage = V(in) - V(out) = 32.63 m³



Storage Calculations for maximum storage at 25 minutes

Q (peak) = $0.1247 \text{ m}^3/\text{sec.}$

Q (release) = $0.1090 \text{ m}^3/\text{sec}$

V (in) = $(15+35)/2 \times 0.1247 \times 60$ = 187.05 m^3

V (out) = $(16.586 + 35)/2 \times 0.1090 \times 60 = 168.69 \text{ m}^3$

Storage = V(in) - V(out) = 18.36 m³



APPENDIX B

FIGURES:

- 1. Site Location Plan
- 2. Site Survey

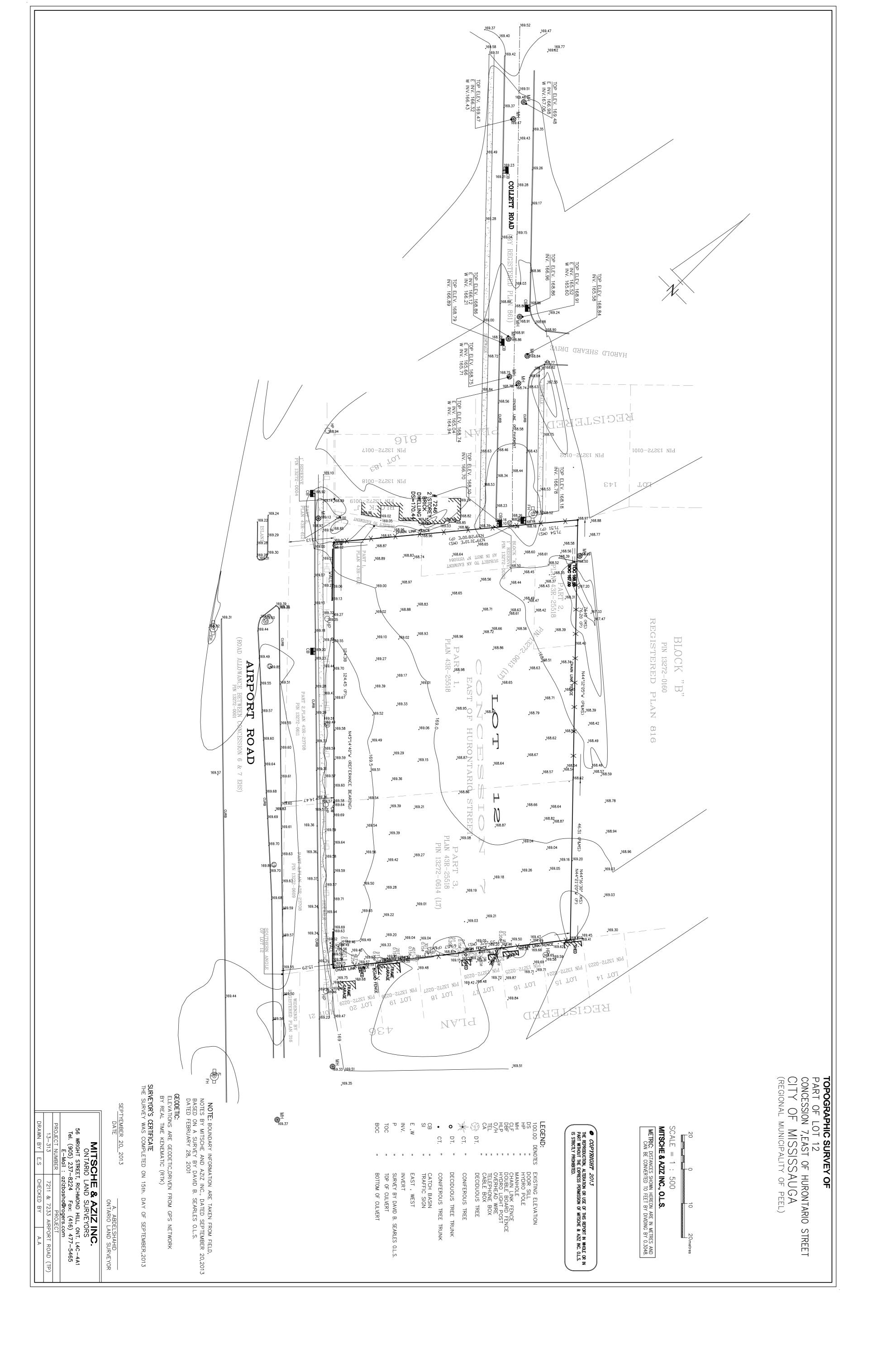
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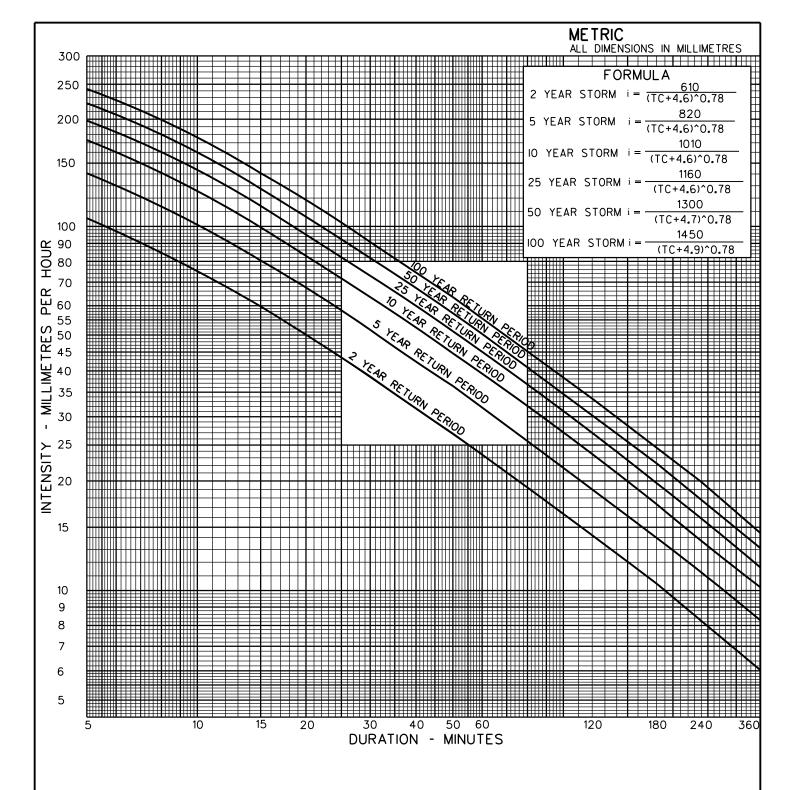
- 3. Mississauga IDF chart
- 4. Stormceptor Treatment Guideline
- 5. Site Plan (SP 100)
- 6. Proposed Servicing Plan (SP 100A)
- 7. Floor Plans & Elevations



Figure 1: SITE LOCATION PLAN







NOTES

- 1. ALL CALCULATIONS TO BE DONE ASSUMING FULL DEVELOPMENT AS SHOWN ON CITY OF MISSISSAUGA ZONING MAPS.
- 2. TO BE USED WITH RATIONAL FORMULA: $Q = \frac{CIA}{360}$ $Q = QUANTITY OF RUNOFF (M^3/S)$ C = RUNOFF COEFFICIENT A = AREA (ha)

I=RAINFALL INTENSITY (mm/hr)



STANDARD INTENSITY-DURATION-FREQUENCY RAINFALL CURVES

EFF. DATE		2002-01-01	SCALE	N.T.S
REV.		2016-07-22	STANDARD No.	2111.010





Detailed Stormceptor Sizing Report - 7211, 7233 Airport Rd

	Project Information & Location				
Project Name	7211, 7233 Airport Rd	Project Number	DFL/035/2013		
City	Mississauga	State/ Province	Ontario		
Country	Canada	Date	12/7/2016		
Designer Information		EOR Information (optional)			
Name	Aryan S	Name			
Company DesignFine		Company			
Phone #	905-452-8200	Phone #			
Email	aryan.s.eng@gmail.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	
Recommended Stormceptor Model	STC 4000
Target TSS Removal (%)	80.0
TSS Removal (%) Provided	100
PSD	Fine Distribution
Rainfall Station	TORONTO CENTRAL

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

Stormceptor Sizing Summary				
Stormceptor Model	% TSS Removal Provided	% Runoff Volume Captured Provided		
STC 300	97	78		
STC 750	99	82		
STC 1000	99	82		
STC 1500	99	82		
STC 2000	99	87		
STC 3000	99	87		
STC 4000	100	91		
STC 5000	100	91		
STC 6000	100	93		
STC 9000	100	95		
STC 10000	100	95		
STC 14000	100	97		
StormceptorMAX	Custom	Custom		





Stormceptor

The Stormceptor oil and sediment separator is sized to treat stormwater runoff by removing pollutants through gravity separation and flotation. Stormceptor's patented design generates positive TSS removal for each rainfall event, including large storms. Significant levels of pollutants such as heavy metals, free oils and nutrients are prevented from entering natural water resources and the re-suspension of previously captured sediment (scour) does not occur. Stormceptor provides a high level of TSS removal for small frequent storm events that represent the majority of annual rainfall volume and pollutant load. Positive treatment continues for large infrequent events, however, such events have little impact on the average annual TSS removal as they represent a small percentage of the total runoff volume and pollutant load.

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	3329
Rainfall Station Name	TORONTO CENTRAL	Total Rainfall (mm)	13189.2
Station ID #	0100	Average Annual Rainfall (mm)	732.7
Coordinates	45°30'N, 90°30'W	Total Evaporation (mm)	10.7
Elevation (ft)	328	Total Infiltration (mm)	13026.5
Years of Rainfall Data	18	Total Rainfall that is Runoff (mm)	152.0

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.





Discharge (cms)

Drainage Area		
Total Area (ha)	0.9	
Imperviousness %	0.9	
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)		

0.044	0.	003	
Up Stream	Flow Diversi	on	
Max. Flow to Stormce	otor (cms)		
Design Details			
Stormceptor Inlet Inve	rt Elev (m)		
Stormceptor Outlet Invert Elev (m)			
Stormceptor Rim Elev (m)			
Normal Water Level Elevation (m)			
Pipe Diameter (r	Pipe Diameter (mm)		
Pipe Material			
Multiple Inlets (Y/N) No			
Grate Inlet (Y/I	N)	No	

Up Stream Storage

Storage (ha-m)

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			
Site Details			
Drainage Area		Infiltration Parameters	
Total Area (ha)	0.9	Horton's equation is used to estimate infiltration	
Imperviousness %	0.9	Max. Infiltration Rate (mm/hr) 61.98	
Surface Characteristics	;	Min. Infiltration Rate (mm/hr) 10.16	
Width (m)	190.00	Decay Rate (1/sec) 0.00055	
Slope %	2	Regeneration Rate (1/sec) 0.01	
Impervious Depression Storage (mm)	0.508	Evaporation	
Pervious Depression Storage (mm)	5.08	Daily Evaporation Rate (mm/day) 2.54	
Impervious Manning's n	0.015	Dry Weather Flow	
Pervious Manning's n	0.25	Dry Weather Flow (lps) 0	
Maintenance Frequency	y	Winter Months	
Maintenance Frequency (months) >	12	Winter Infiltration 0	
	TSS Loading	g Parameters	
TSS Loading Function			
Buildup/Wash-off Parame	eters	TSS Availability Parameters	
Target Event Mean Conc. (EMC) mg/L		Availability Constant A	
Exponential Buildup Power		Availability Factor B	
Exponential Washoff Exponent		Availability Exponent C	
		Min. Particle Size Affected by Availability (micron)	

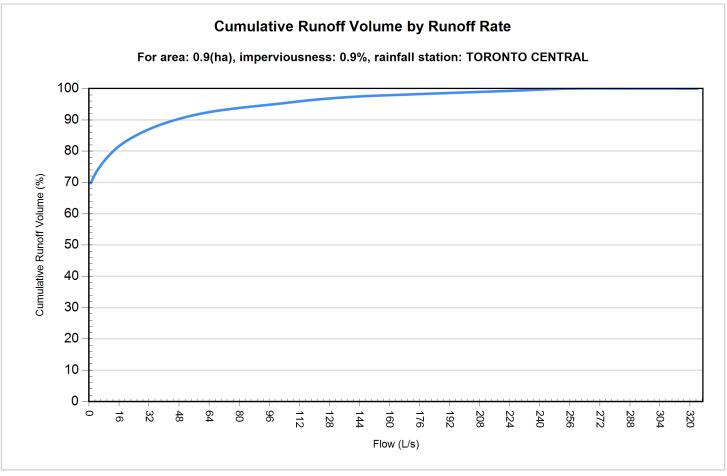




Cumulative Runoff Volume by Runoff Rate						
Runoff Rate (L/s)	Runoff Volume (m³)	Volume Over (m³)	Cumulative Runoff Volume (%)			
1	980	424	69.8			
4	1030	373	73.4			
9	1088	315	77.5			
16	1146	258	81.6			
25	1194	210	85.0			
36	1235	169	88.0			
49	1271	133	90.5			
64	1299	105	92.5			
81	1318	85	93.9			
100	1335	68	95.1			
121	1354	49	96.5			
144	1369	35	97.5			
169	1377	27	98.1			
196	1385	18	98.7			
225	1394	10	99.3			
256	1403	0	100.0			
289	1404	0	100.0			
324	1404	0	100.0			



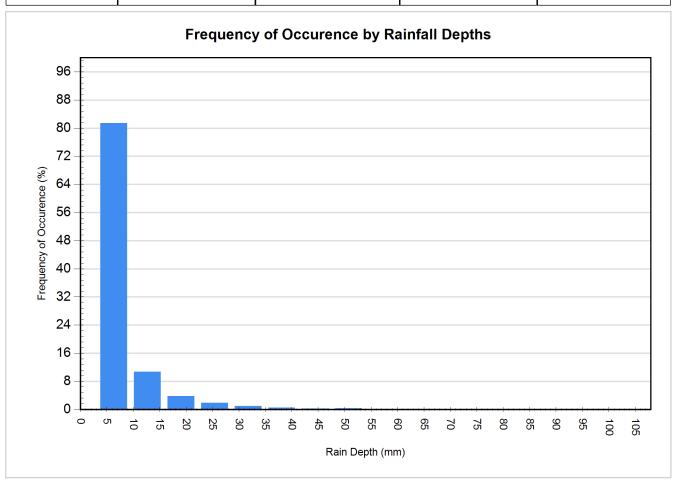








Rainfall Event Analysis						
Rainfall Depth (mm)	No. of Events	Percentage of Total Events (%)	Total Volume (mm)	Percentage of Annual Volume (%)		
6.35	2711	81.4	3900	29.6		
12.70	356	10.7	3266	24.8		
19.05	127	3.8	1991	15.1		
25.40	62	1.9	1346	10.2		
31.75	32	1.0	905	6.9		
38.10	16	0.5	541	4.1		
44.45	8	0.2	334	2.5		
50.80	11	0.3	519	3.9		
57.15	2	0.1	106	0.8		
63.50	2	0.1	120	0.9		
69.85	0	0.0	0	0.0		
76.20	0	0.0	0	0.0		
82.55	1	0.0	77	0.6		
88.90	1	0.0	85	0.6		
95.25	0	0.0	0	0.0		
101.60	0	0.0	0	0.0		

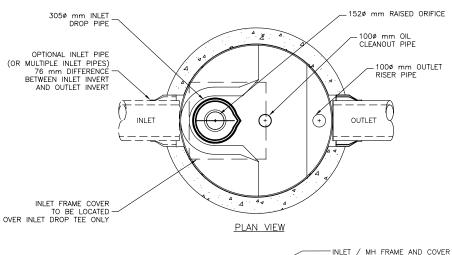


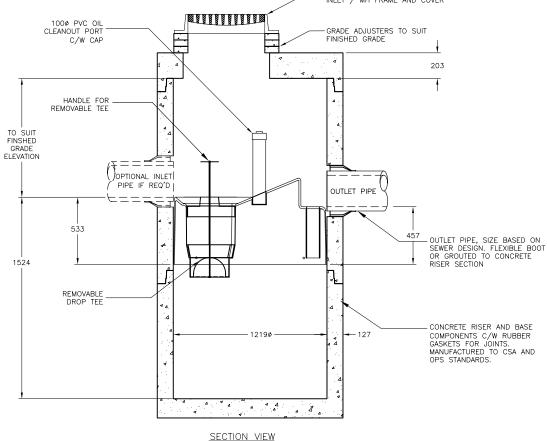




For Stormceptor Specifications and Drawings Please Visit: http://www.imbriumsystems.com/technical-specifications

DRAWING NOT TO BE USED FOR CONSTRUCTION





THE STORMCEPTOR SYSTEM IS PROTECTED BY ONE OR MORE OF THE FOLLOWING PATENTS

Australia Patent No. 693,164 • 707,133 • 729,096 • 779401 | Austrian Patent No. 289,647 |

Canadian Patent No. 2,009,280 • 2,137,942 • 2,175,277 • 2,180,305 • 2,180,383 • 2,206,338 • 2,327,768 (Pending)

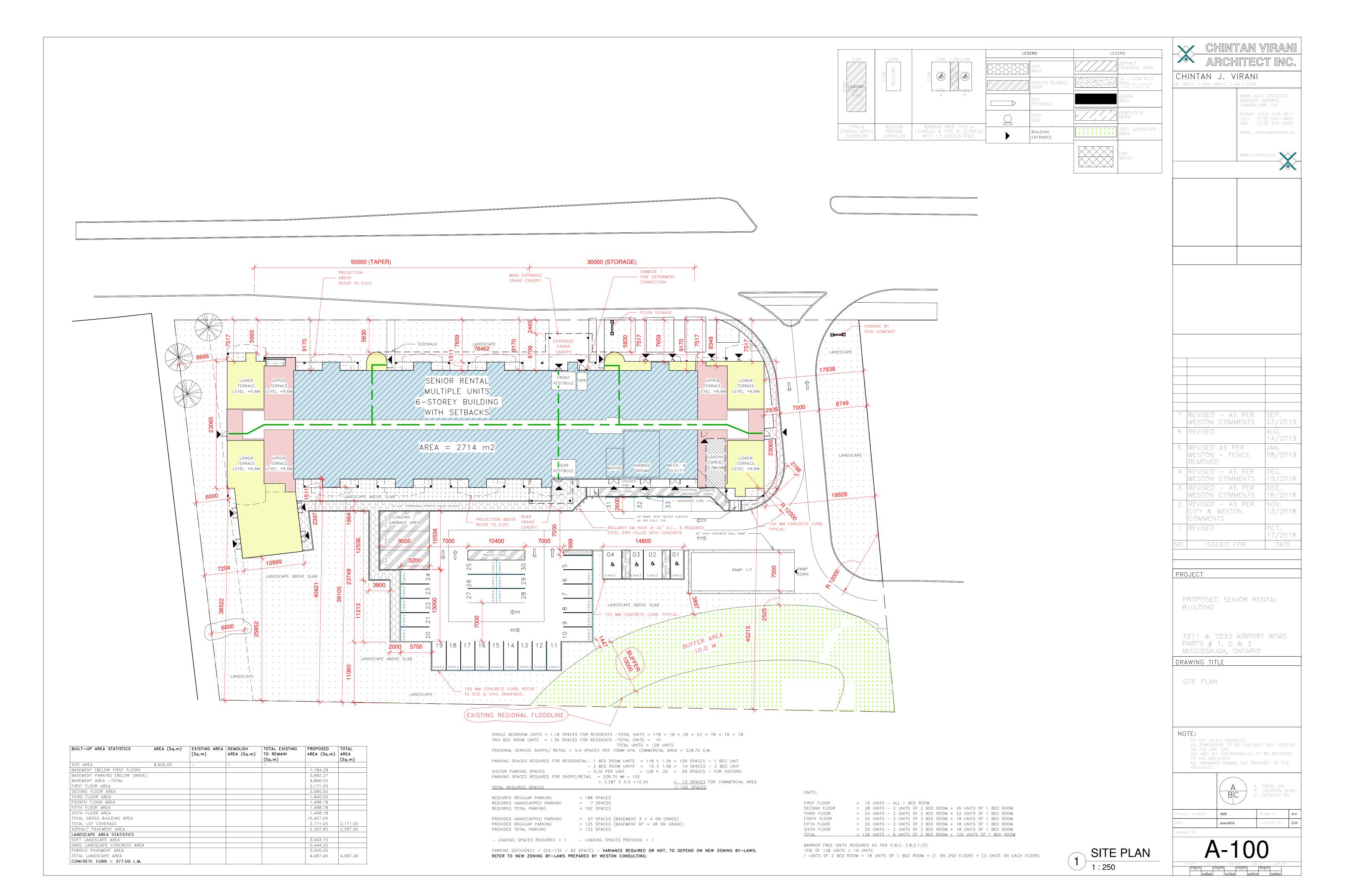
China Patent No. 1,168,439 | Denmark DK 711,879 | German DE 69,534,021 | Indonesian Patent No 16,688 | Japan Patent No. 9-11476 (Pending) | Korea Patent No. 10-2000-0026101 (Pending) | Malaysia Patent No. P19701737 (Pending) | New Zealand Patent No. 314646 |

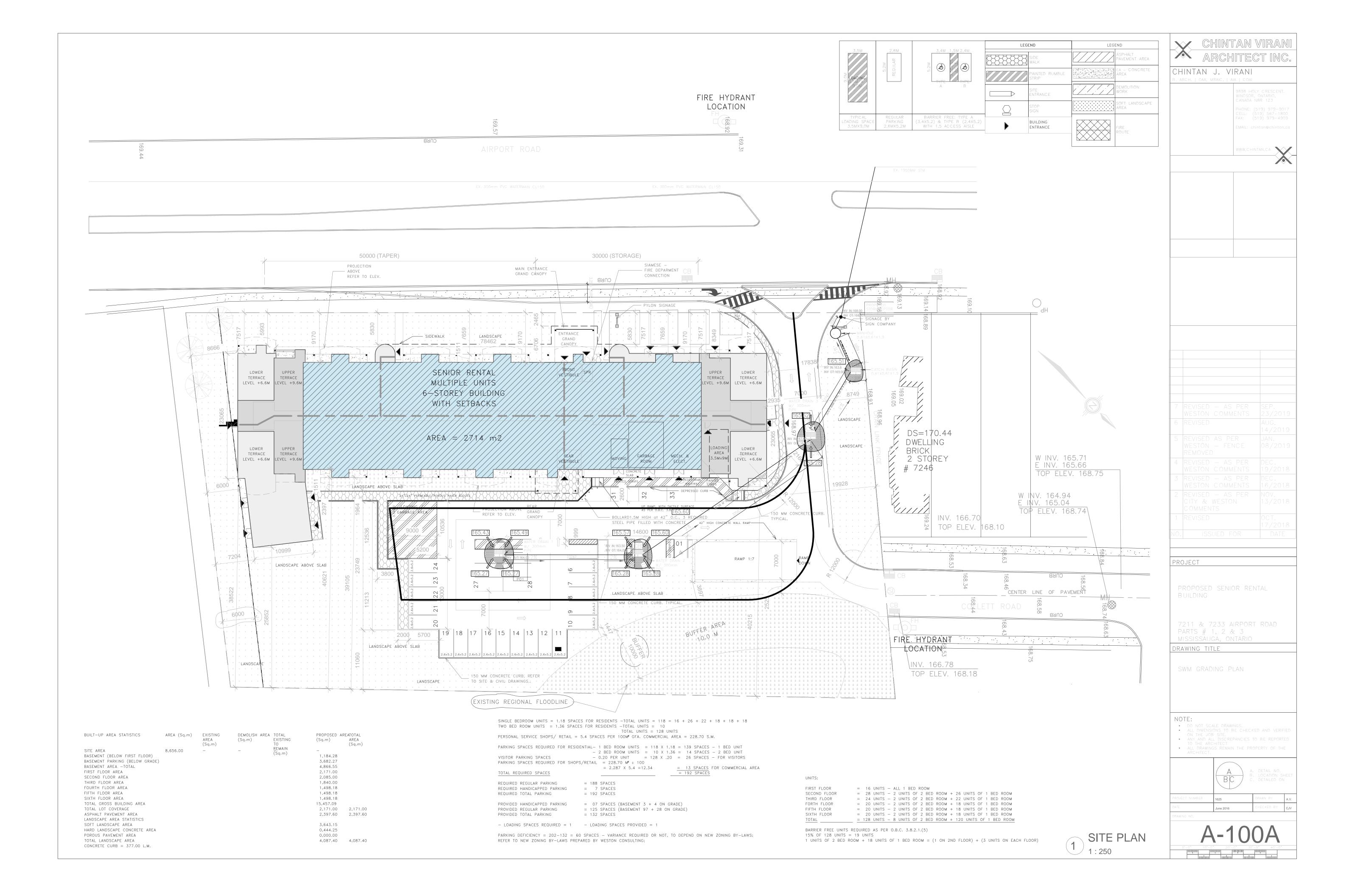
United States Patent No. 4,985,148 • 5,498,331 • 5,725,760; 5,753,115 • 5,849,181 • 6,068,765 • 6,371,690

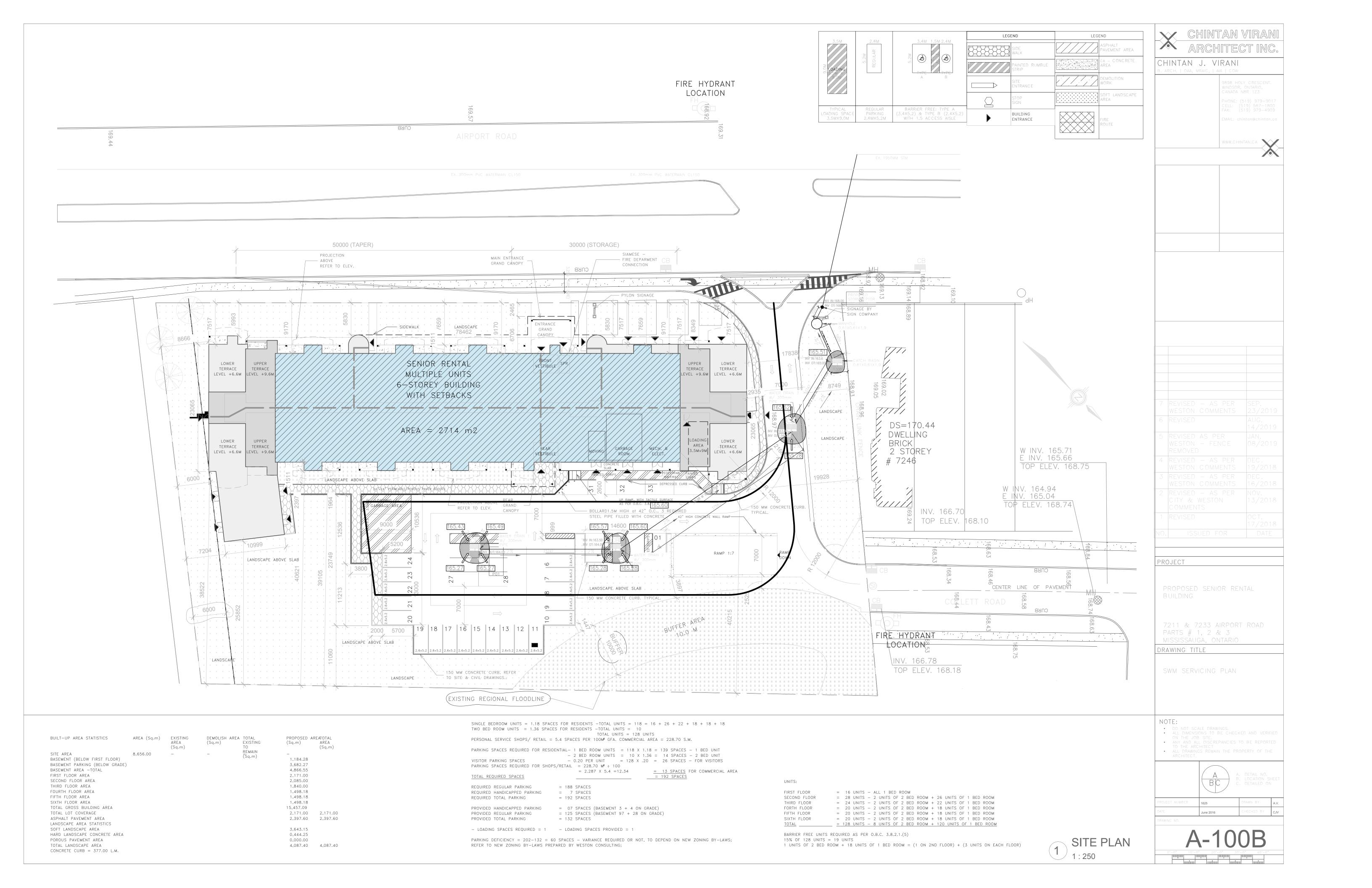
STORMCEPTOR STC				
INLET MODEL				
STC 300i				

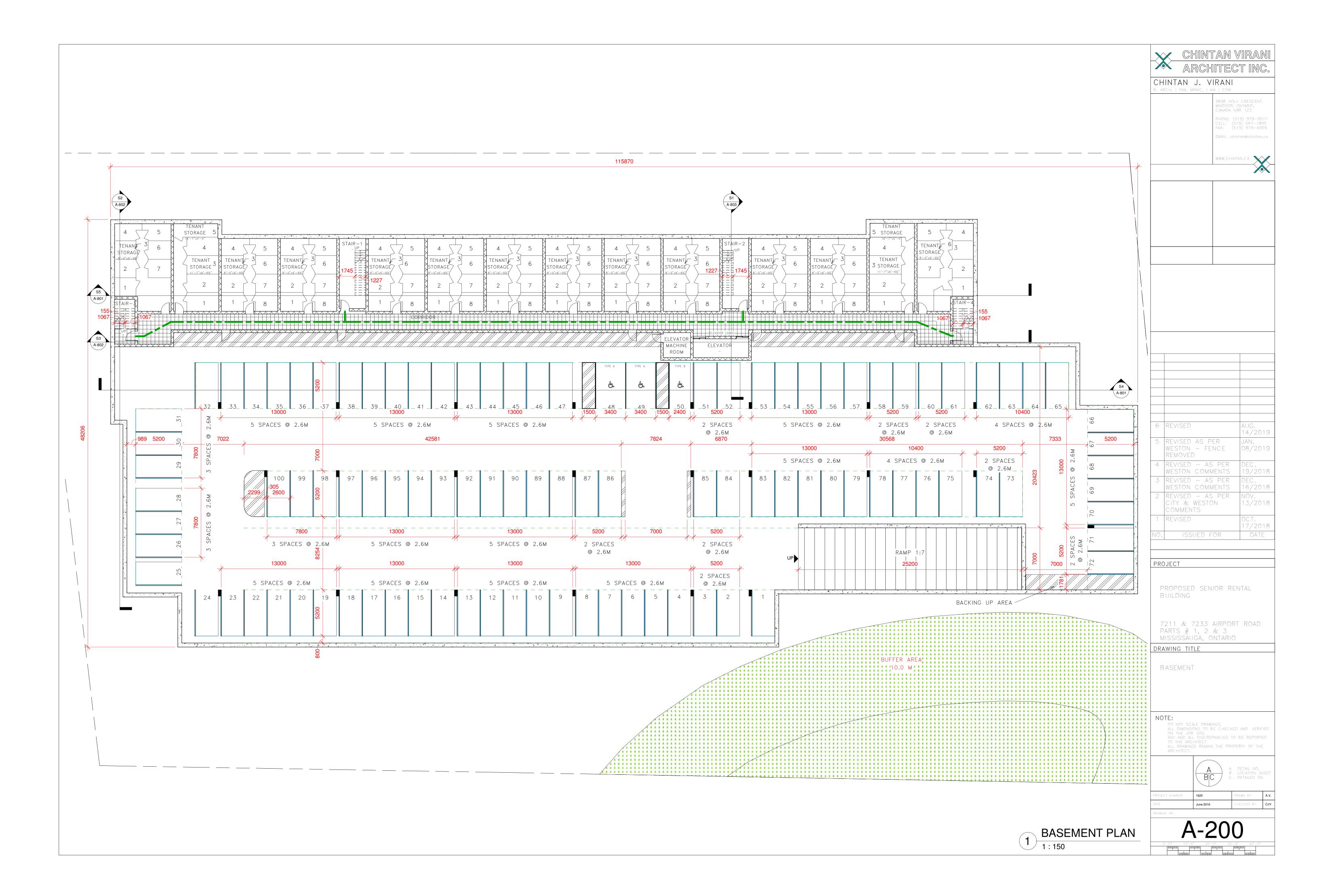


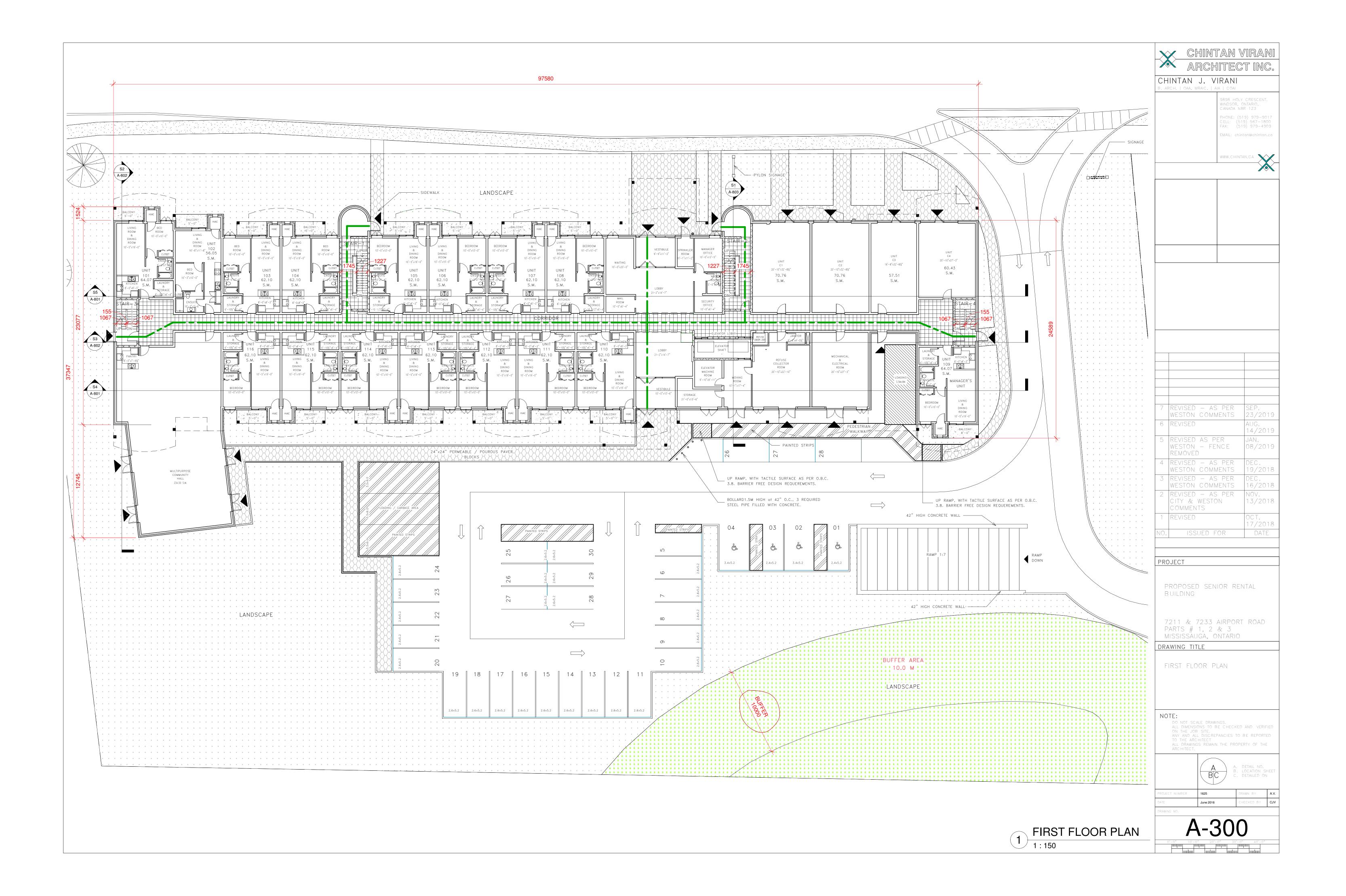
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							DRAWN BY: B.L.	
							DATE: 15 Aug 07	1 OF 1
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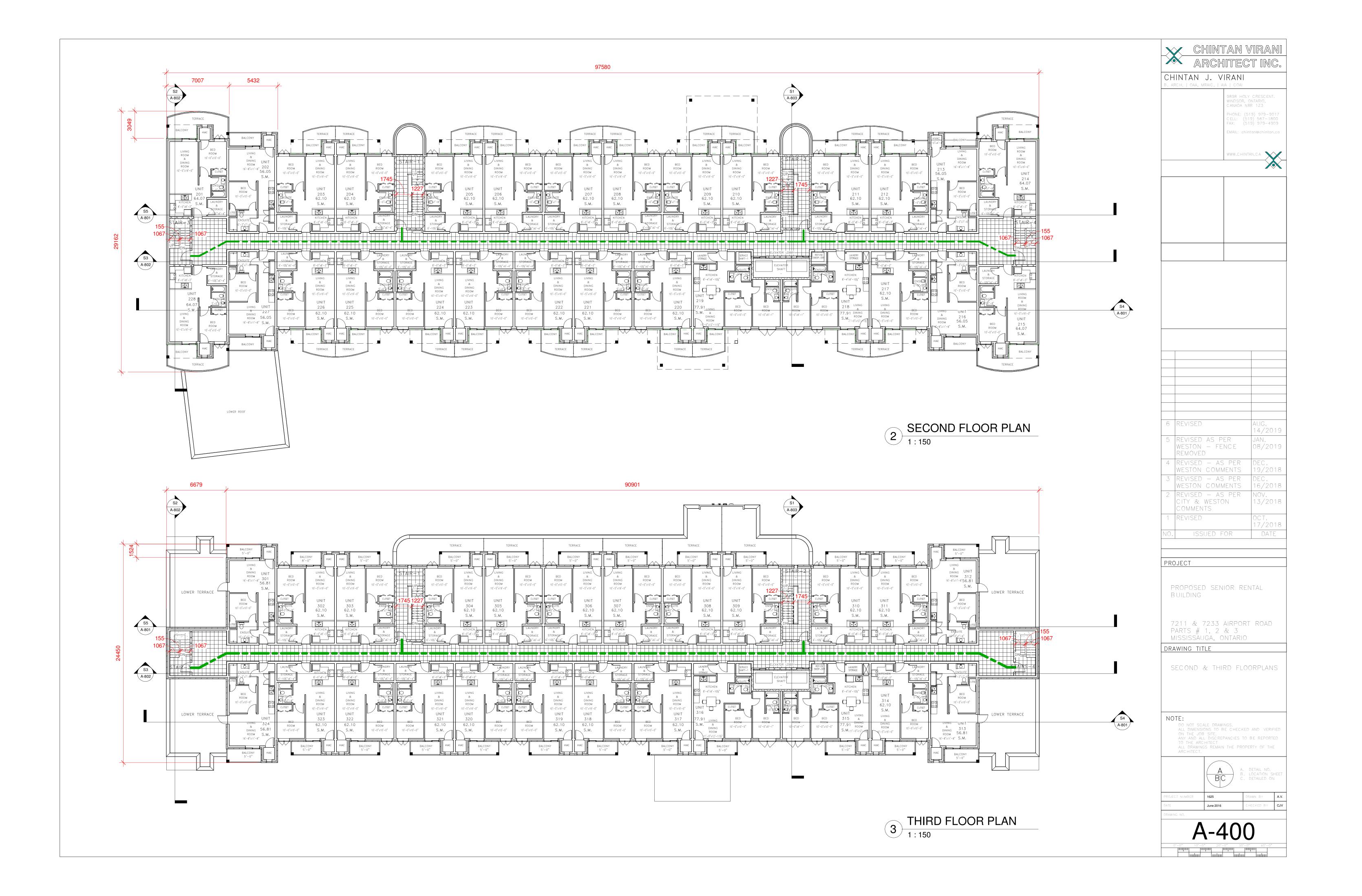


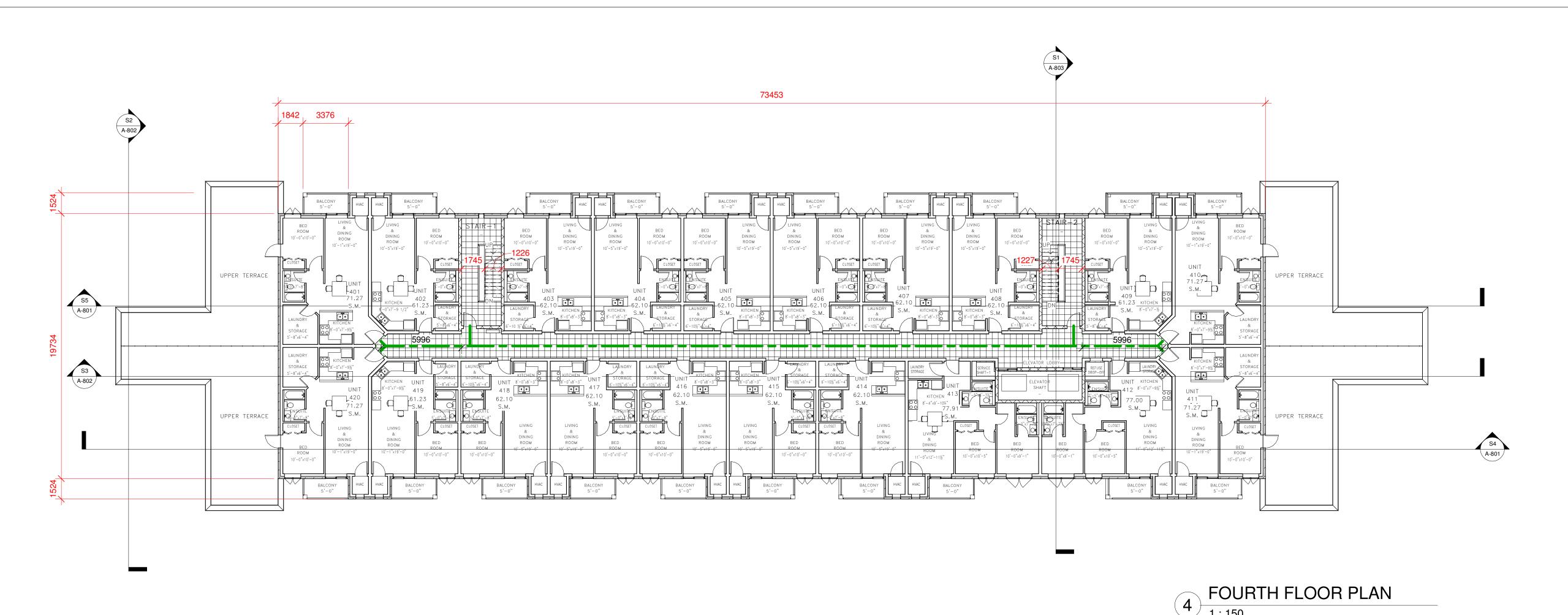




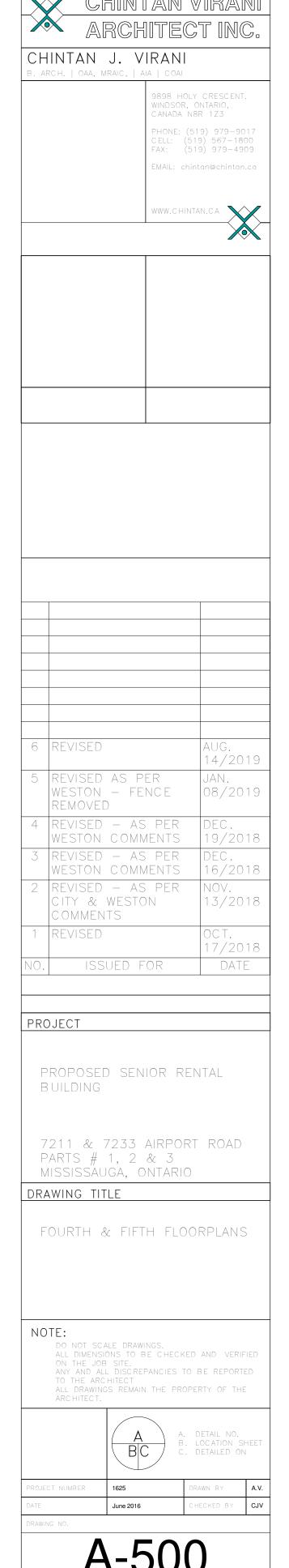


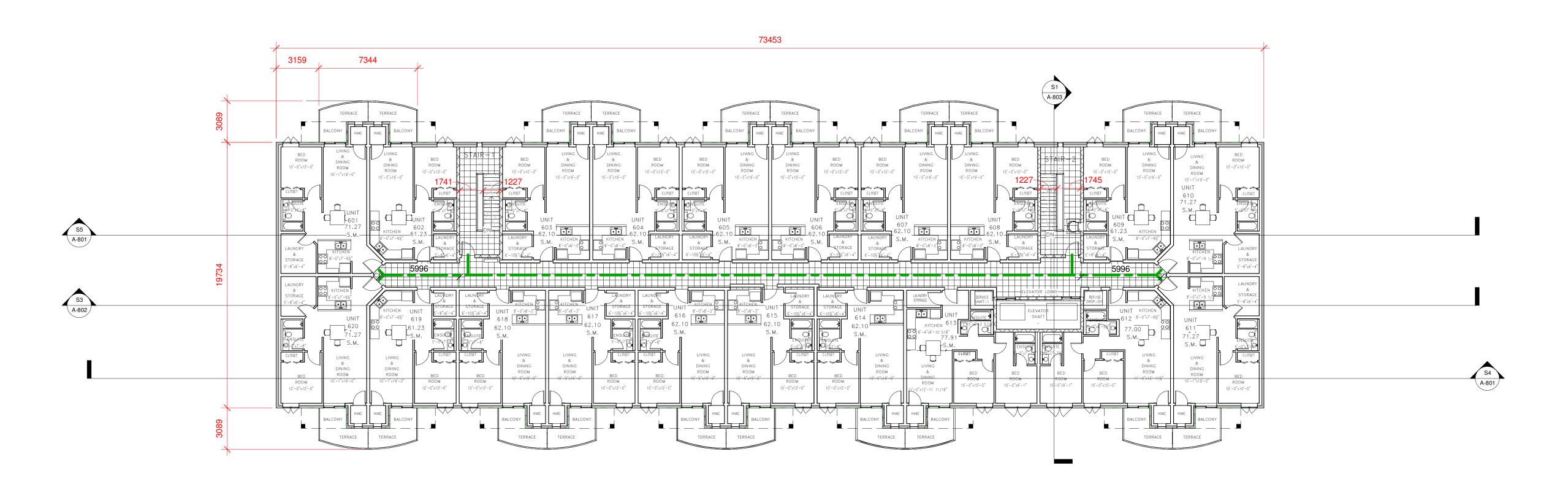


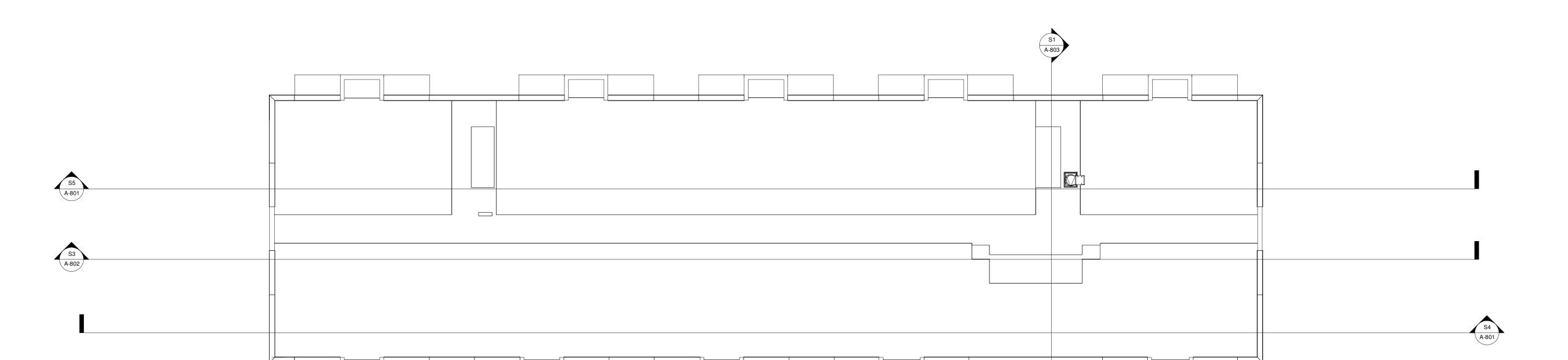






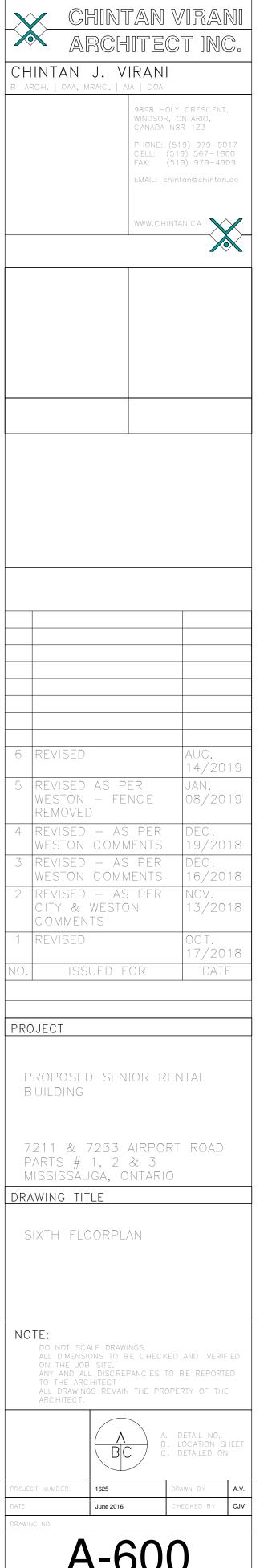


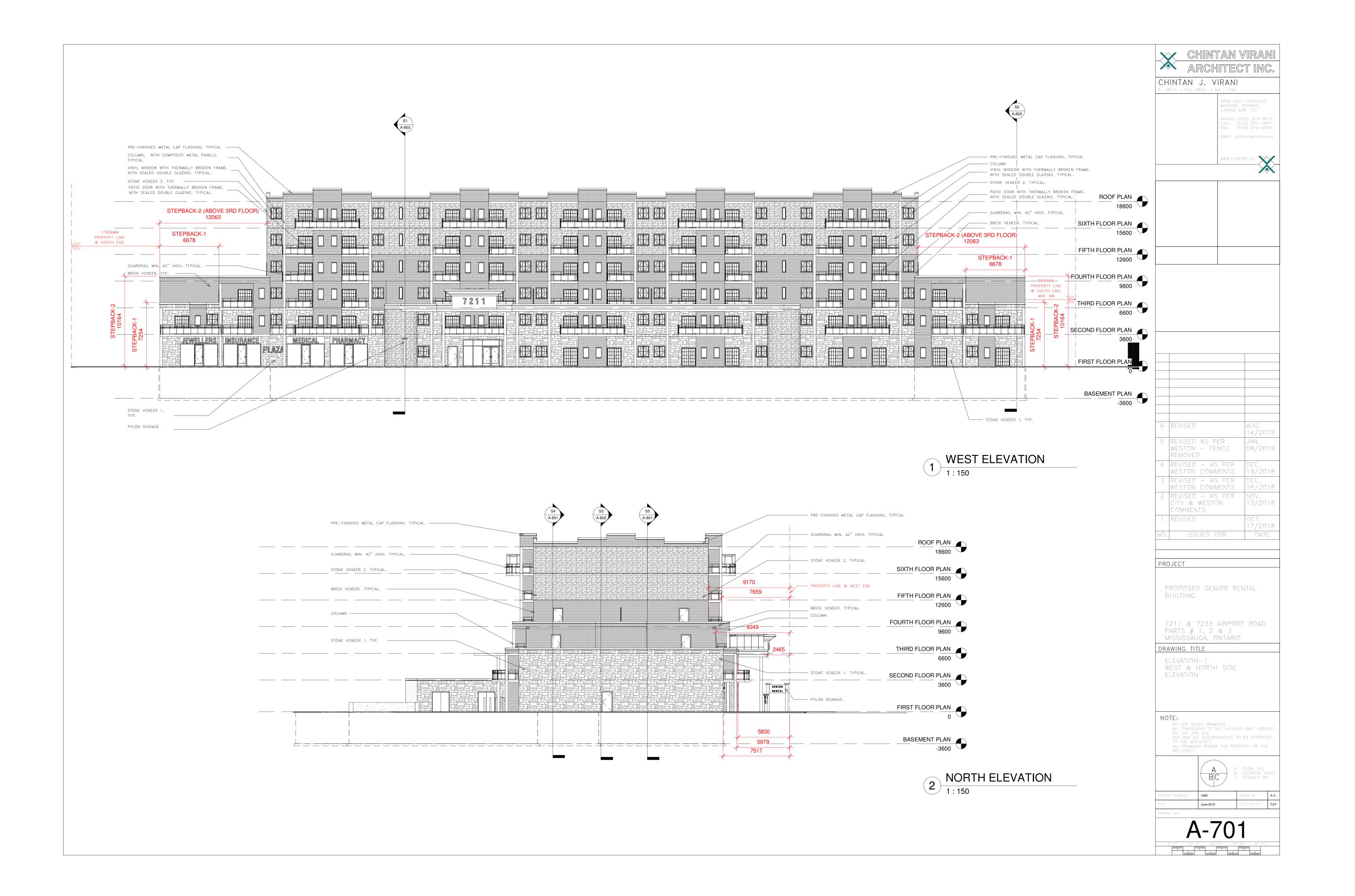


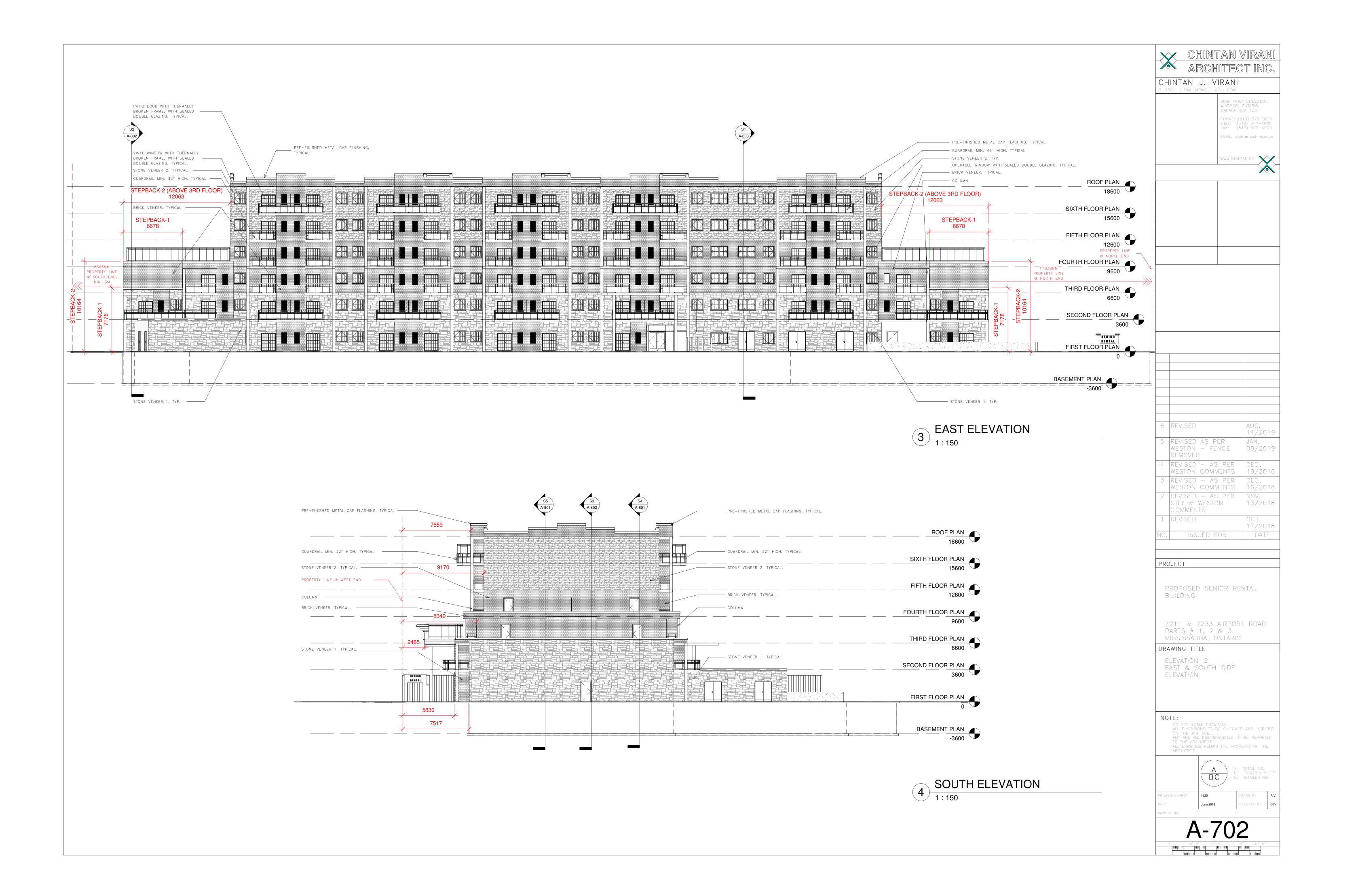


7 ROOF PLAN
1:150

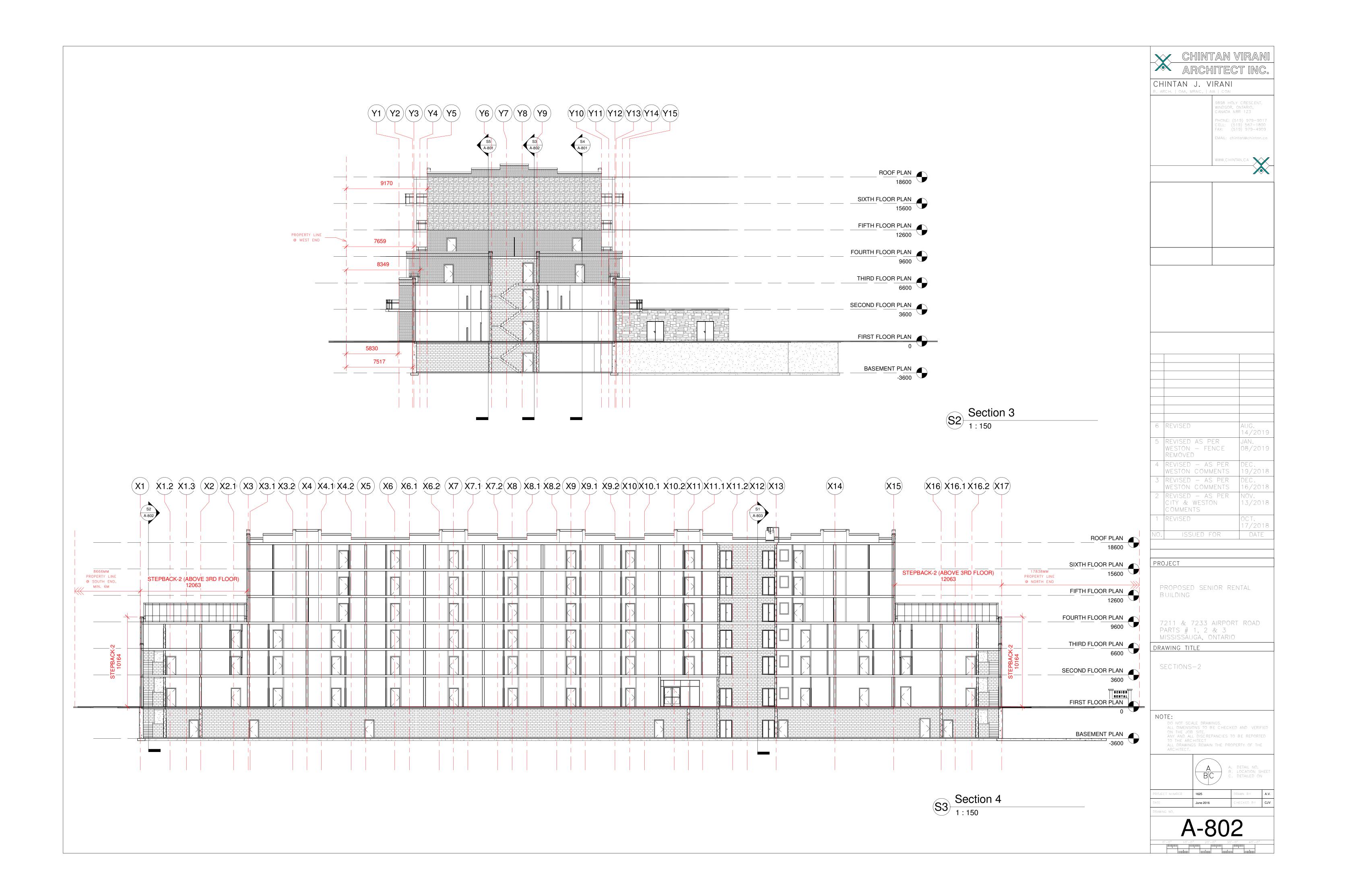
6 SIXTH FLOOR PLAN
1:150

















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Front - Center view



6	REVISED	AUG. 14/2019
5	REVISED AS PER WESTON — FENCE REMOVED	JAN. 08/2019
4	REVISED — AS PER WESTON COMMENTS	DEC. 19/2018
3	REVISED — AS PER WESTON COMMENTS	DEC. 16/2018
2	REVISED — AS PER CITY & WESTON COMMENTS	NOV. 13/2018
1	REVISED	OCT. 17/2018
NO.	ISSUED FOR	DATE

PROJECT

PROPOSED SENIOR RENTAL BUILDING

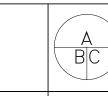
7211 & 7233 AIRPORT ROAD PARTS # 1, 2 & 3 MISSISSAUGA, ONTARIO

DRAWING TITLE

FRONT PERSPECTIVE

NOTE:

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



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

 June 2016
 DRAWN BY
 A.V.

 CHECKED BY
 CJV

A-901

Front - Top viev





Back - Bottom view



CHINTAN J. VIRANI B. ARCH. | OAA, MRAIC, | AIA | COAI

3 REVISED REVISED AS PER WESTON — FENCE REMOVED 4 REVISED — AS PER WESTON COMMENTS

3 REVISED — AS PER WESTON COMMENTS REVISED — AS PER CITY & WESTON COMMENTS

REVISED 13/2018 17/2018 DATE ISSUED FOR

PROJECT

PROPOSED SENIOR RENTAL BUILDING

7211 & 7233 AIRPORT ROAD PARTS # 1, 2 & 3 MISSISSAUGA, ONTARIO

DRAWING TITLE

REAR PERSPECTIVE

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