VALDOR ENGINEERING INC.
Municipal • Land Development • Water Resources
Site Development • Project Management • Contract Administration
Consulting Engineers – est. 1992

571 Chrislea Road, Unit 4, 2nd Floor
Vaughan, Ontario L4L 8A2
TEL (905) 264-0054
FAX (905) 264-0069
info@valdor-engineering.com
www.valdor-engineering.com

SOIL MANAGEMENT REPORT

Proposed High Rise Residential Development

10 Aspen Springs Drive
Community of Bowmanville
Municipality of Clarington
Region of Durham

May 2022

Prepared For: **Sunray Group**

File: **21164**

VALDOR WATER RESOURCES

S:\Projects\2021\21164\Report\Soil Management Report May 2022

Professional Engineers Ontario

Authorized by the Association of Professional Engineers of Ontario to offer professional engineering services.

TABLE OF CONTENTS

1.0 INTRODUCTION..... 3
1.1 Existing Conditions..... 3
1.2 Proposed Development..... 3
1.3 Purpose of Report..... 3
2.0 SOIL CONDITIONS..... 3
3.0 EARTHWORKS..... 4
4.0 HAUL ROUTE..... 4
5.0 MITIGATION MEASURES..... 4
5.1 Communications..... 4
5.2 Mud Tracking Control..... 4
5.3 Dust Control..... 5
5.4 Sediment Control..... 5
5.5 Noise Control..... 5
5.6 Pedestrian Movements..... 6
5.7 Housekeeping..... 6
6.0 SUMMARY..... 7
7.0 REFERENCES & BIBLIOGRAPHY..... 8

LIST OF FIGURES

Figure 1 Location Plan..... Follows Text
Figure 2 Haul Route..... Follows Text

LIST OF APPENDICES

Appendix “A” Architectural Plan
Appendix “B” Excerpts from Geotechnical Investigation

1.0 INTRODUCTION

Valdor Engineering Inc. has been retained by Sunray Group to provide consulting engineering services for the proposed development of their site located at the corner of Bowmanville Avenue and Aspen Springs Drive in the Community of Bowmanville, Municipality of Clarington, as indicated in **Figure 1**.

1.1 Existing Conditions

The site is approximately 0.952 hectares in size and is known municipally as 10 Aspen Springs Drive. The site is currently covered by gravel and landscape surfaces. The site is bound to the north and west by vacant lands, to the east by Bowmanville Avenue and to the south by Aspen Springs Drive. There are no watercourses or other natural features within or adjacent to the site.

1.2 Proposed Development

The proposed high rise residential development will consist of two 25 storey residential buildings with a 4 storey shared podium and a nine storey building all of which are above a 3 level underground parking garage. A copy of the architectural plans are included in **Appendix "A"**.

1.3 Purpose of Report

This Soil Management Report has been prepared in conjunction with the zoning by-law amendment and site plan applications. In accordance with the requirements of the Municipality of Clarington, this report is required given that site alteration works are necessary. This report has been prepared based on a review of the topographic survey, architectural plans and geotechnical investigation report.

Construction activity, especially operations involving high-rise type developments with underground parking structures, results in a substantial amount of soil export which can have an impact on area residents, local businesses, motorists and pedestrians. The purpose of this report is to assess the anticipated soil moving activities and provide recommendations that will minimize impacts.

The proposed development is in the very initial submission stage of the site plan application process and therefore detailed information related to the construction operation and construction schedule is not yet available and therefore this report should be updated prior to proceeding with construction.

2.0 SOIL CONDITIONS

Based on a Geotechnical Investigation Report prepared by Alston Geotechnical Consultants Inc. dated April 21, 2022, the site has a layer of silty clay fill material ranging to a depth of 1.8m underlain by sandy silt and silty clay. Excerpts from the Geotechnical Investigation Report are contained in **Appendix "B"**.

Based on the Phase One Environmental Site Assessment prepared by Watters Environmental Group Inc. dated April 2022, there are no potential contaminating activities from historical or current activities that would result in areas of potential areas of concern.

3.0 EARTHWORKS

The building will have 3 levels of underground parking which will require an excavation that will be approximately 10.0m deep using shoring. Based on a site area of 0.952 hectare, the anticipated volume of excavation is approximately 95,000 m^3. No import of fill is required.

Based on the volume it is anticipated that disposal operation will involve 9,500 triaxle dump truck trips over a 9 month period. Given the early stage of the development application, the schedule for the excavation operation has not yet been determined.

4.0 HAUL ROUTE

A review of potential haul routes has been completed with the intent of finding the shortest route with the least impact to municipal roads, traffic and residents. Although the destinations are not yet known, based on the location of the site, it is expected that trucks will be hauling to dump sites, landfill sites or waste transfer / recycling stations to the north.

Based on the above, the best haul route is northerly on Bowmanville Avenue as indicated in **Figure 2**. Bowmanville Avenue is an arterial road and therefore travel on local roads will be avoided. The daily haulage operation will extend from 7:00am to 5:00pm on Mondays to Fridays.

5.0 MITIGATION MEASURES

In order to minimize impact to the area residents, local businesses and the travelling public the following issues have been reviewed and measures are to be implemented:

5.1 Communications

A pre-construction meeting will be held prior to the start of construction on the site. The contents of this report will be discussed at this meeting.

The municipality as well as affected local residents and businesses will be notified in advance of the start of construction. In this regard letters will be hand delivered to the adjacent properties to notify of the start date and to provide contact information.

5.2 Mud Tracking Control

A mud mat is to be installed at the construction entrance prior to commencing earthworks to minimize the tracking of mud onto municipal roads. The mud mat will be installed at the frontage of the site.

Mud tracking from the tread of trucks tires onto the municipal road will be swept and / or washed as required. The contractor will have a pre-arranged program for street

sweeping and flushing operations. In addition, the contractor will have labourers available to perform miscellaneous clean up.

The detail for the mud mat is included on the Erosion & Sediment Control Plan as well as the requirements for maintenance of the mud mat.

5.3 Dust Control

The construction site will be kept clean of mud and dust to prevent airborne dust from being lifted and dispersed by wind. The following dust control program will be in effect for the duration of each construction phase:

- All trucks exporting material to the site are to be equipped with retractable tarp systems to fully cover the load to prevent wind blown dust.
- Minimize the free drop height of excavated material during earthworks operation such that by a back hoe to the extent possible
- Exposed ground surfaces during earthworks, soft and hard surfaces and any excavation face will be dampened as required, with the addition of calcium chloride or other recognized material as a dust suppressant, if required;

5.4 Sediment Control

Sediment controls will be implemented on the site to prevent silt laden runoff from leaving the site. The sediment controls are detailed and specified on the Erosion & Sediment Control Plan and include silt fence and catchbasin protection. Given the relatively small size of the site and the depth of excavation there are no runoff issues anticipated.

Inspections of the site will be required to ensure that impacts are minimized. Inspections should be undertaken with the following frequency:

- On a weekly basis even during periods of inactivity on the site.
- After every rainfall event
- Prior to the start of a new stage of construction

Records are to be kept for each inspection and maintenance operation during construction. Copies of the inspection reports will be provided at the regular construction meetings.

5.5 Noise Control

The emission of noise from the construction site must be managed and all construction activities shall be carried out in accordance with the provisions of the municipal noise by-law. In particular:

- Where possible, no truck associated with the work will be left standing with its engine operating.
- All vehicular movements to and from the site will only be made during the scheduled normal working hours.

5.6 Pedestrian Movements

Pedestrian traffic along the municipal sidewalks shall be maintained at all times. The Contractor shall maintain the sidewalks free of construction material and vehicles at all times.

Should a portion of the road allowance adjacent to the site be occupied temporarily during construction arrangements are to be made to maintain safe pedestrian access.

Special attention will be required at the construction site entrance to ensure that drivers watch for pedestrians crossing.

5.7 Housekeeping

It is the Contractor's responsibility to undertake proper housekeeping practices to ensure that the site and the surrounding area is kept in orderly fashion to prevent unnecessary safety hazards which can affect the operation of the site. It is important that the Contractor maintain a tidy work site, ensure that waste is not blown off the site onto the municipal road allowance of neighbouring properties.

6.0 SUMMARY

Based on the discussions contained herein, soil management can be summarized as follows:

- The soil conditions consist a layer of silty clay fill material ranging to a depth of 1.8m underlain by sandy silt and silty clay. Based on the Phase One Environmental Site Assessment, there are no potential contaminating activities from historical or current activities that would result in areas of potential areas of concern.
- Based on the proposed three levels of underground parking, the shored excavation will be approximately 10m deep resulting in an excavation volume of approximately 95,000 m^3. Based on the volume, it is anticipated that disposal operation will involve 9,500 triaxle dump truck trips over a 9 month period.
- It is anticipated that the haul route will be northerly along Bowmanville Avenue to a disposal site yet to be determined. Bowmanville Avenue is an arterial road and therefore travel on local roads will be avoided.
- Mitigation measures, as indicated in this report, are to be implemented to minimize impact on local residents.
- The proposed development is in the very initial submission stage of the site plan application process and therefore detailed information related to the construction operation and construction schedule is not yet available and therefore this report should be updated prior to proceeding with construction.

7.0 REFERENCES & BIBLIOGRAPHY

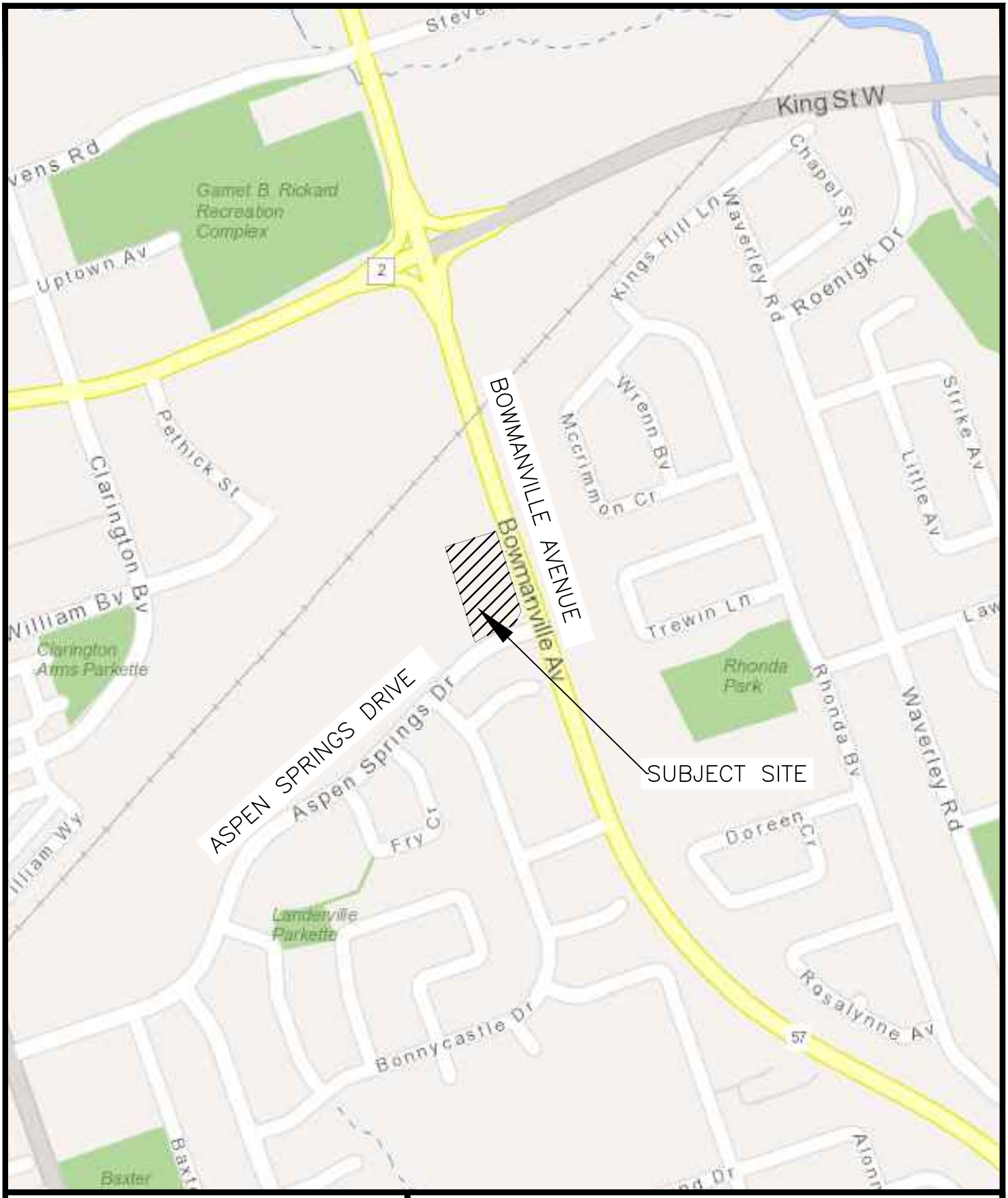
- Municipality of Clarington, **Design Guidelines & Standard Drawings**, 2010.
- Greater Golden Horseshoe Area Conservation Authorities, **Erosion & Sediment Control Guidelines for Urban Construction**, December 2006.
- Watters Environmental Group Inc., **Phase One Environmental Site Assessment**, April 2022.
- Alston Geotechnical Consultants Inc., **Geotechnical Investigation Report**, April 21, 2022.

Respectfully Submitted,

VALDOR ENGINEERING INC.

David Giugovaz, P.Eng., LEED® AP
Senior Project Manager

905-264-0054 x 224
dgiugovaz@valdor-engineering.com

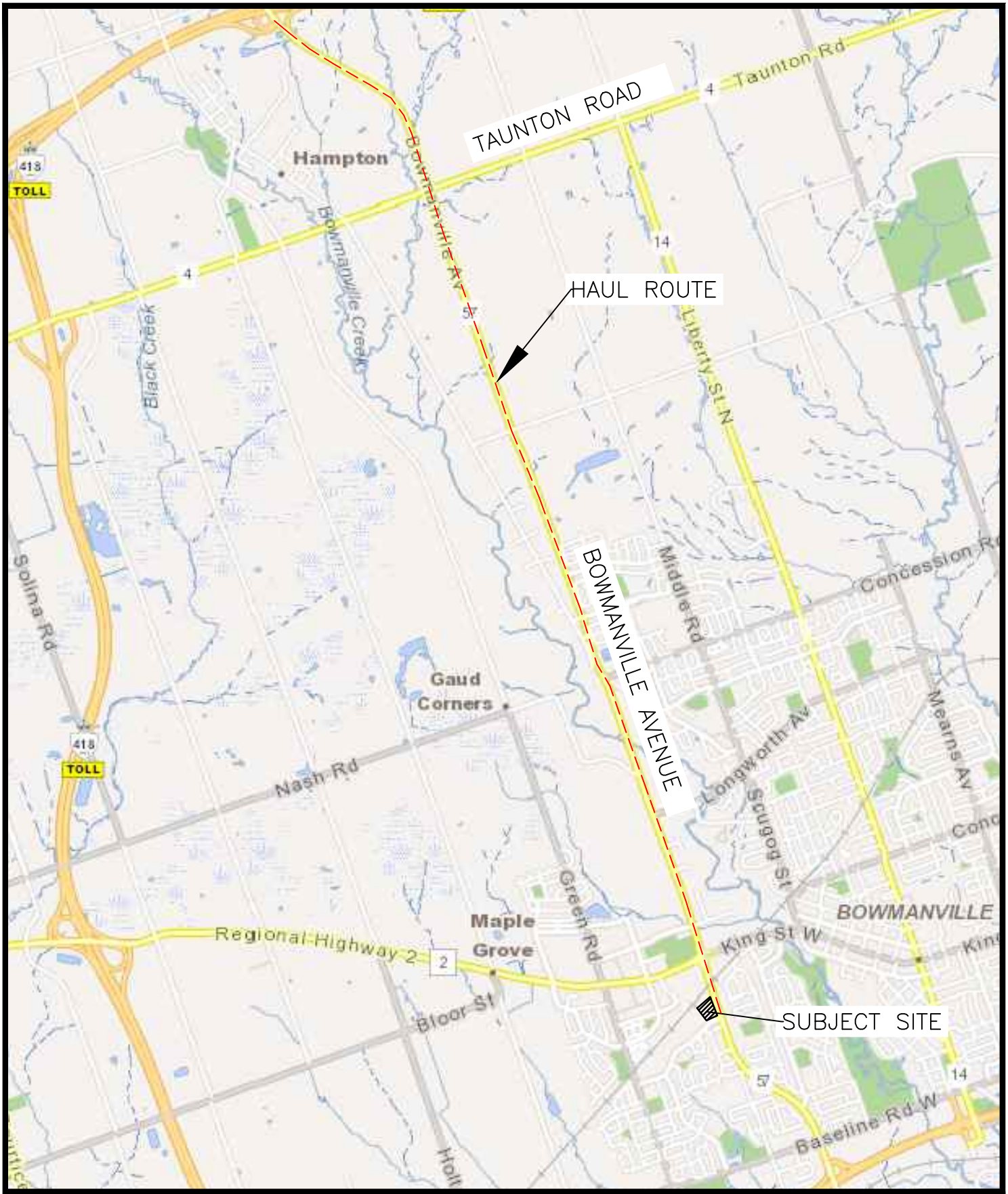


PROPOSED RESIDENTIAL DEVELOPMENT
10 ASPEN SPRINGS
COMMUNITY OF BOWMANVILLE
MUNICIPALITY OF CLARINGTON
REGION OF DURHAM

LOCATION PLAN

VALDOR ENGINEERING INC.
Consulting Engineers - Project Managers
571 CHRISLEA ROAD, UNIT 4, 2nd FLOOR WOODBRIDGE ONTARIO, L4L 8A2
TEL (905)264-0054, FAX (905)264-0069
E-MAIL: info@valdor-engineering.com
www.valdor-engineering.com

SCALE	N.T.S	CKD. BY	D.G.	DWG.	FIGURE 1
DATE	MAY 2022	DRAWN BY	T.Z.	PROJECT	21164



PROPOSED RESIDENTIAL DEVELOPMENT
10 ASPEN SPRINGS
COMMUNITY OF BOWMANVILLE
MUNICIPALITY OF CLARINGTON
REGION OF DURHAM

LOCATION PLAN

VALDOR ENGINEERING INC.
Consulting Engineers - Project Managers
571 CHRISLEA ROAD, UNIT 4, 2nd FLOOR WOODBRIDGE ONTARIO, L4L 8A2
TEL (905)264-0054, FAX (905)264-0069
E-MAIL: info@valdor-engineering.com
www.valdor-engineering.com

SCALE	N.T.S	CKD. BY	D.G.	DWG.	FIGURE 1
DATE	MAY 2022	DRAWN BY	T.Z.	PROJECT	21164

APPENDIX "A"

Architectural Plans

ARCHITECTURAL DRAWING LIST	
ASP-1	SITE STATISTIC
ASP-2	CONTEXT PLAN
ASP-3	SITE PLAN
A.201	PARKING LEVEL P3
A.202	PARKING LEVEL P2
A.203	PARKING LEVEL P1
A.204	OVERALL GROUND FLOOR PLAN
A.205	BUILDING 1 - GROUND FLOOR PLAN
A.206	BUILDING 1 - SECOND FLOOR PLAN
A.207	BUILDING 1 - THIRD AND FOURTH FLOOR PLAN
A.208	BUILDING 1 - FIFTH FLOOR PLAN
A.209	BUILDING 1 - TYPICAL FLOOR PLAN (6TH TO 23RD)
A.210	BUILDING 1 - 24TH TO 25TH FLOOR PLAN
A.211	BUILDING 1- ROOF PLAN
A.212	BUILDING 2 - GROUND AND SECOND FLOOR PLANS
A.213	BUILDING 2 - TYPICAL FLOOR PLANS
A.214	BUILDING 2 - ROOF PLAN
A.300	3D PERSPECTIVE 1
A.300A	3D PERSPECTIVE 2
A.301	BUILDING 1 - EAST ELEVATION
A.302	BUILDING 1 - WEST ELEVATION
A.303	BUILDING 1 - NORTH AND SOUTH ELEVATIONS
A.304	BUILDING 1 - TOWER ELEVATIONS
A.305	BUILDING 2 - NORTH, SOUTH, EAST AND WEST ELEVATIONS
A.307	EXTERIOR 3D VIEWS
A.308	EXTERIOR 3D VIEWS
A.401	SITE SECTION
A.402	SITE SECTION
A.403	SITE SECTION
SS.01	SOLAR STUDY - MARCH 21
SS.02	SOLAR STUDY - MARCH 21
SS.03	SOLAR STUDY - JUNE 21
SS.04	SOLAR STUDY - JUNE 21
SS.05	SOLAR STUDY - SEPTEMBER 21
SS.06	SOLAR STUDY - SEPTEMBER 21
SS.07	SOLAR STUDY - SEPTEMBER 21
SS.08	SOLAR STUDY - SEPTEMBER 21

OWNER:

SUNRAY GROUP
515 CONSUMERS RD. SUITE 701
TORONTO, ON M2J 4Z2
416.492.1200

ARCHITECT:

MATAJ ARCHITECTS INC.
418 IROQUOIS SHORE RD.
OAKVILLE ON L6H 0X7
905.281.4444

PLANNER:

GAGNON WALKER DOMES
21 QUEEN ST. E, SUITE 500
BRAMPTON, ON L6W 3P1
905.796.5790

CIVIL ENGINEER:

VALDOR ENGINEERING INC.
571 CHRISLEA RD. UNIT 4
VAUGHAN, ON L4L 8A2
905.264.0054

LANDSCAPE ARCHITECT:

COSBURN NAUBORIS
20 CROWN STEEL DR. SUITE 2
MARKHAM, ON L3R 9X9
905.940.4443

TRAFFIC ENGINEER:

TRANS-PLAN
785 DUNDAS ST. W
TORONTO, ON M6J 1V2
647.931.7383

MEP ENGINEER:

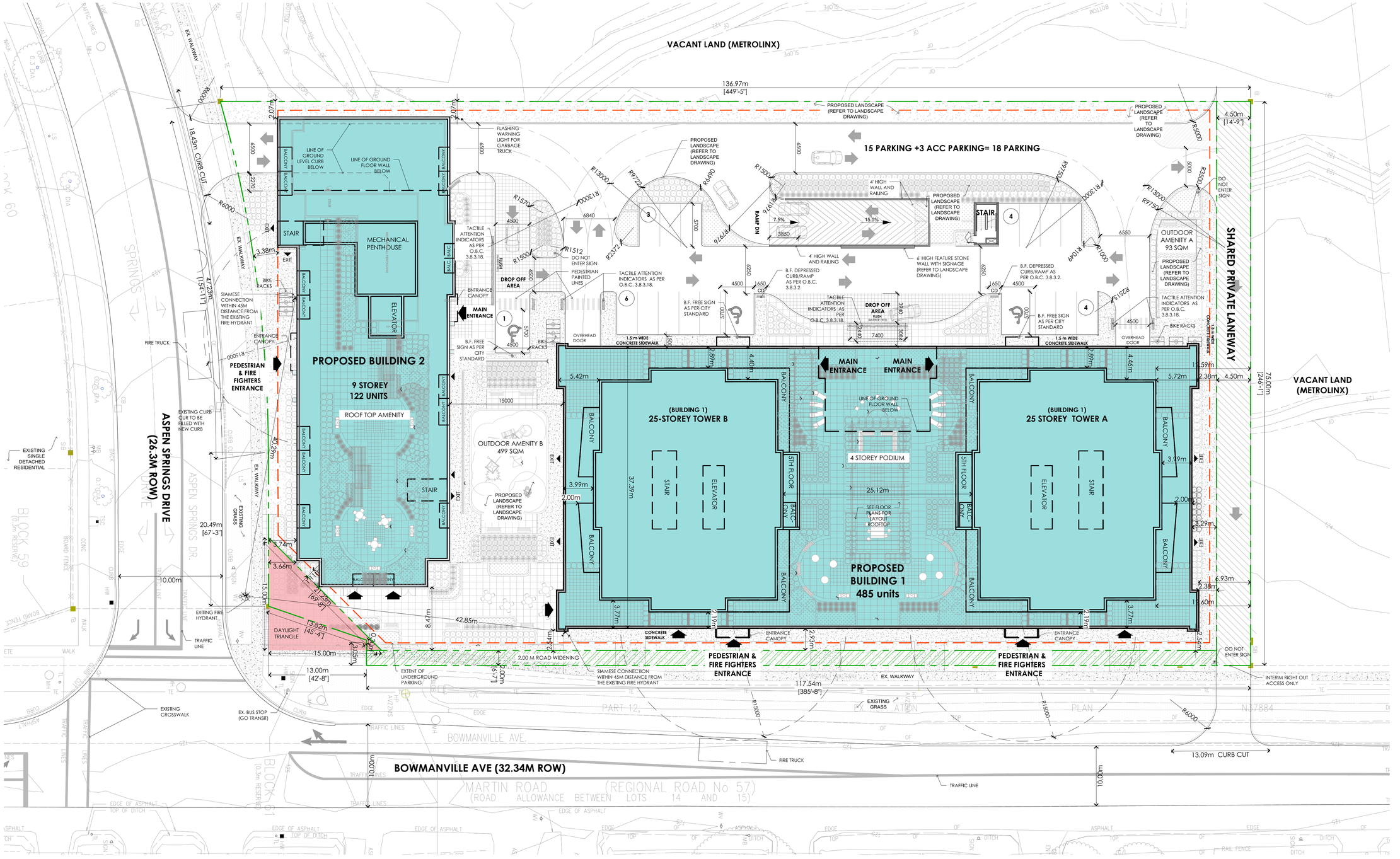
EJS ENGINEERING
810 NIPISSING RD. SUITE 212-214
MILTON, ON L9T 4Z9
647.945.8484

BOWMANVILLE MIXED-USE DEVELOPMENT

10 ASPEN SPRINGS DR, BOWMANVILLE, ON L1C 4W7

ISSUED FOR SITE PLAN APPLICATION:

COVER SHEET



PROPERTY LINE		OTHER ACCESS POINTS		HOSE BIB (REFER TO MECHANICAL DWGS)		WALL MOUNTED LIGHT FIXTURE -REFER TO ELECTRICAL DWGS
EXTENT OF UNDERGROUND PARKING		EXISTING TOWN HYDRANT		PAD MOUNTED HYDRO TRANSFORMER W/ STEEL BOLLARDS		LANDSCAPED AREA
CURB RAMP AS PER OBC 3.8.3.2		PROPOSED LOCATION OF NEW FIRE HYDRANT W/ STEEL BOLLARDS (REFER TO CIVIL DWGS)		SINGLE HEADED LIGHT FIXTURE ON CONCRETE BASE -REFER TO ELECTRICAL		DAYLIGHT TRIANGLE
PRINCIPLE ENTRANCE		FIRE DEPARTMENT CONNECTION		DOUBLE HEADED LIGHT FIXTURE ON CONCRETE BASE -REFER TO ELECTRICAL DWGS		

Project North: | True North:

Key Plan:

No.	Date:	Issue/Revision	By:
1	YY/MM/DD	Issued for	XX

Drawing Issues/Revisions:

Note:
ALL DIMENSIONS AND INFORMATION SHOWN ON THESE DRAWINGS MUST BE CHECKED AND VERIFIED ON SITE AND ANY DISCREPANCIES REPORTED TO THE ARCHITECT PRIOR TO CONSTRUCTION AND FABRICATION OF ITS COMPONENTS. SHOULD EXISTING CONDITIONS OR SERVICES BE FOUND TO VARY FROM THAT INDICATED ON THE DRAWINGS, THE ARCHITECT MUST BE NOTIFIED IMMEDIATELY.

FEATURES OF CONSTRUCTION NOT FULLY SHOWN ARE ASSUMED TO BE THE SAME CHARACTER AS THOSE NOTED FOR SIMILAR CONDITIONS.

UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS, NO PROVISION HAS BEEN MADE IN THE DESIGN FOR CONDITIONS OCCURRING DURING CONSTRUCTION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL NECESSARY BRACING, SHORINGS, SHEET PILING OR OTHER TEMPORARY SUPPORTS, TO SAFEGUARD ALL EXISTING OR ADJACENT STRUCTURES AFFECTED BY THIS WORK.

WORK IN PROGRESS

MATAJ ARCHITECTS INC

Architect's Stamp

MATAJ ARCHITECTS INCORPORATED

Project:
BOWMANVILLE

10 ASPEN SPRINGS DR, BOWMANVILLE, ON L1C 4W7

Sheet Title:
SITE PLAN

Design By:	Drawn By:	Approved By:
M.A	X.Z	EM
Scale: 1:250	Date: 22.03.10	Project No.: 21-019

Drawing No:
ASP-3
Of:

Drawing Series:

PARKING SCHEDULE - UNDERGROUND

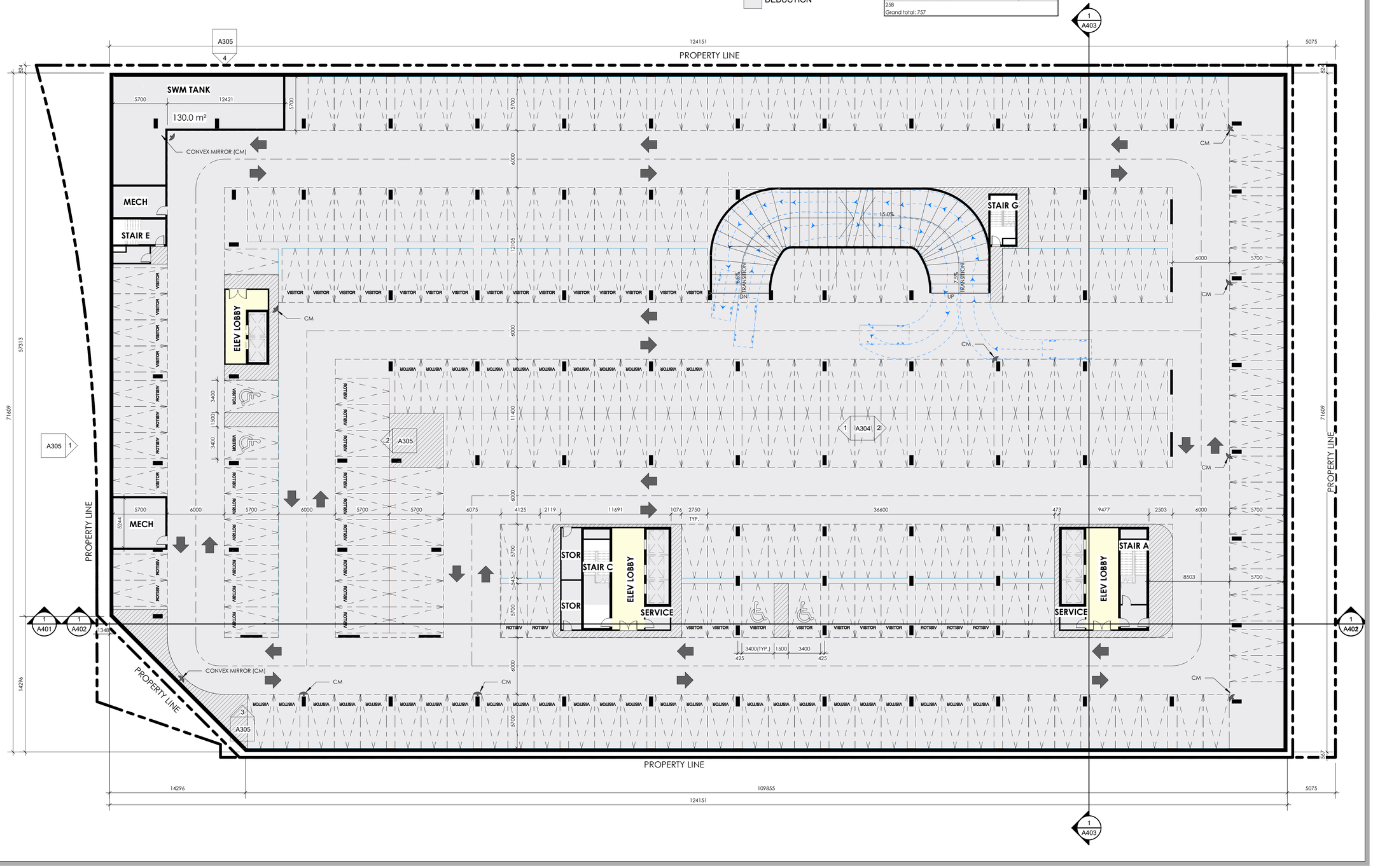
Type	Count
T/O P1	
2.75m x 5.7m	155
2.75m X 5.7m - VISITOR	87
3.4m x 5.7m ACC - VISITOR	4
246	
T/O P2	
2.75m x 5.7m	248
3.4m x 5.7m ACC - SHARED	4
4.5m x 5.7m ACC - SINGLE	1
253	
T/O P3	
2.75m x 5.7m	253
3.4m x 5.7m ACC - SHARED	4
4.5m x 5.7m ACC - SINGLE	1
258	
Grand total: 757	

GFA COLOR LEGEND

COMMON SPACES

DEDUCTION

Project North: True North:



SPA FILE NO. -

REV	DESCRIPTION	REV. DATE

Drawing Issues/Revisions:

Note:

ALL DIMENSIONS AND INFORMATION SHOWN ON THESE DRAWINGS MUST BE CHECKED AND VERIFIED ON SITE AND ANY DISCREPANCIES REPORTED TO THE ARCHITECT PRIOR TO CONSTRUCTION AND FABRICATION OF ITS COMPONENTS. SHOULD EXISTING CONDITIONS OR SERVICES BE FOUND TO VARY FROM THAT INDICATED ON THE DRAWINGS, THE ARCHITECT MUST BE NOTIFIED IMMEDIATELY.

FEATURES OF CONSTRUCTION NOT FULLY SHOWN ARE ASSUMED TO BE THE SAME CHARACTER AS THOSE NOTED FOR SIMILAR CONDITIONS.

UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS, NO PROVISION HAS BEEN MADE IN THE DESIGN FOR CONDITIONS OCCURRING DURING CONSTRUCTION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL NECESSARY BRACING, SHORINGS, SHEET PILING OR OTHER TEMPORARY SUPPORTS, TO SAFEGUARD ALL EXISTING OR ADJACENT STRUCTURES AFFECTED BY THIS WORK.

WORK IN PROGRESS

MATAJ ARCHITECTS INC

Architect's Stamp

MATAJ ARCHITECTS INCORPORATED
418 Iroquois Shore Road, Unit 206,
Oakville Ontario
L6H 0X7
T.905.281.4444

Project:

BOWMANVILLE

10 ASPEN SPRINGS DR.,
BOWMANVILLE, ON L1C 4W7

Sheet Title:

PARKING LEVEL P1

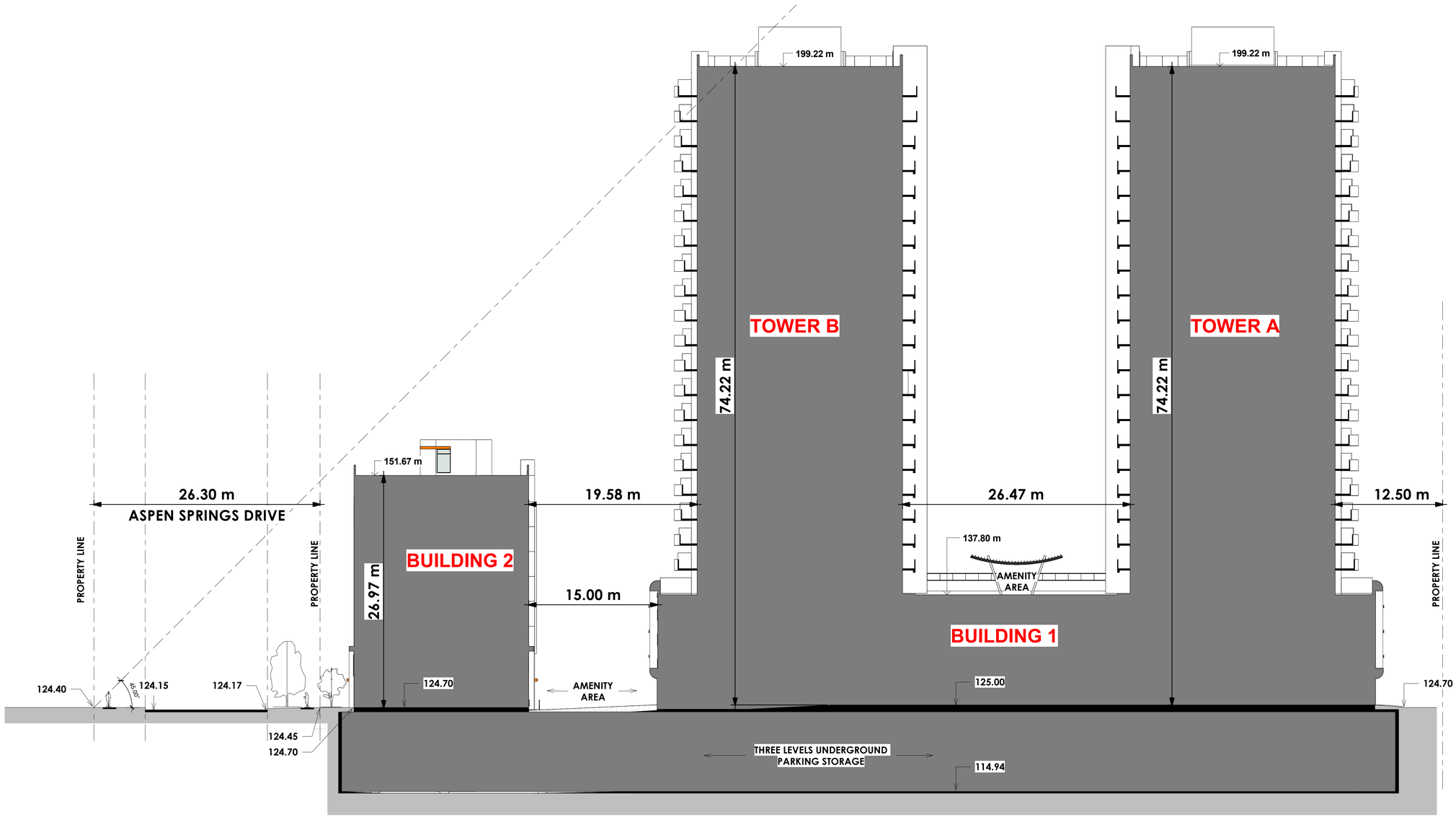
Design By:	Drawn By:	Approved By:
EM	BL	EM
Scale:	Date:	Project No.:
1 : 200	Issue Date	20-034

Drawing No:

A203 Of:

Drawing Series:

--



SPA FILE NO. -

REV	DESCRIPTION	REV. DATE

Drawing Issues/Revisions:

Note:

ALL DIMENSIONS AND INFORMATION SHOWN ON THESE DRAWINGS MUST BE CHECKED AND VERIFIED ON SITE AND ANY DISCREPANCIES REPORTED TO THE ARCHITECT PRIOR TO CONSTRUCTION AND FABRICATION OF ITS COMPONENTS. SHOULD EXISTING CONDITIONS OR SERVICES BE FOUND TO VARY FROM THAT INDICATED ON THE DRAWINGS, THE ARCHITECT MUST BE NOTIFIED IMMEDIATELY.

FEATURES OF CONSTRUCTION NOT FULLY SHOWN ARE ASSUMED TO BE THE SAME CHARACTER AS THOSE NOTED FOR SIMILAR CONDITIONS.

UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS, NO PROVISION HAS BEEN MADE IN THE DESIGN FOR CONDITIONS OCCURRING DURING CONSTRUCTION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL NECESSARY BRACING, SHORINGS, SHEET PILING OR OTHER TEMPORARY SUPPORTS, TO SAFEGUARD ALL EXISTING OR ADJACENT STRUCTURES AFFECTED BY THIS WORK.

WORK IN PROGRESS

MATAJ ARCHITECTS INC

Architect's Stamp

MATAJ ARCHITECTS
INCORPORATED
418 Iroquois Shore Road, Unit 206,
Oakville Ontario
L6H 0X7
T 905.281.4444

Project:

BOWMANVILLE

10 ASPEN SPRINGS DR.,
BOWMANVILLE, ON L1C 4W7

Sheet Title:

SITE SECTION

Design By:	Drawn By:	Approved By:
EM	BL	EM
Scale:	Date:	Project No.:
1 : 250	Issue Date	20-034

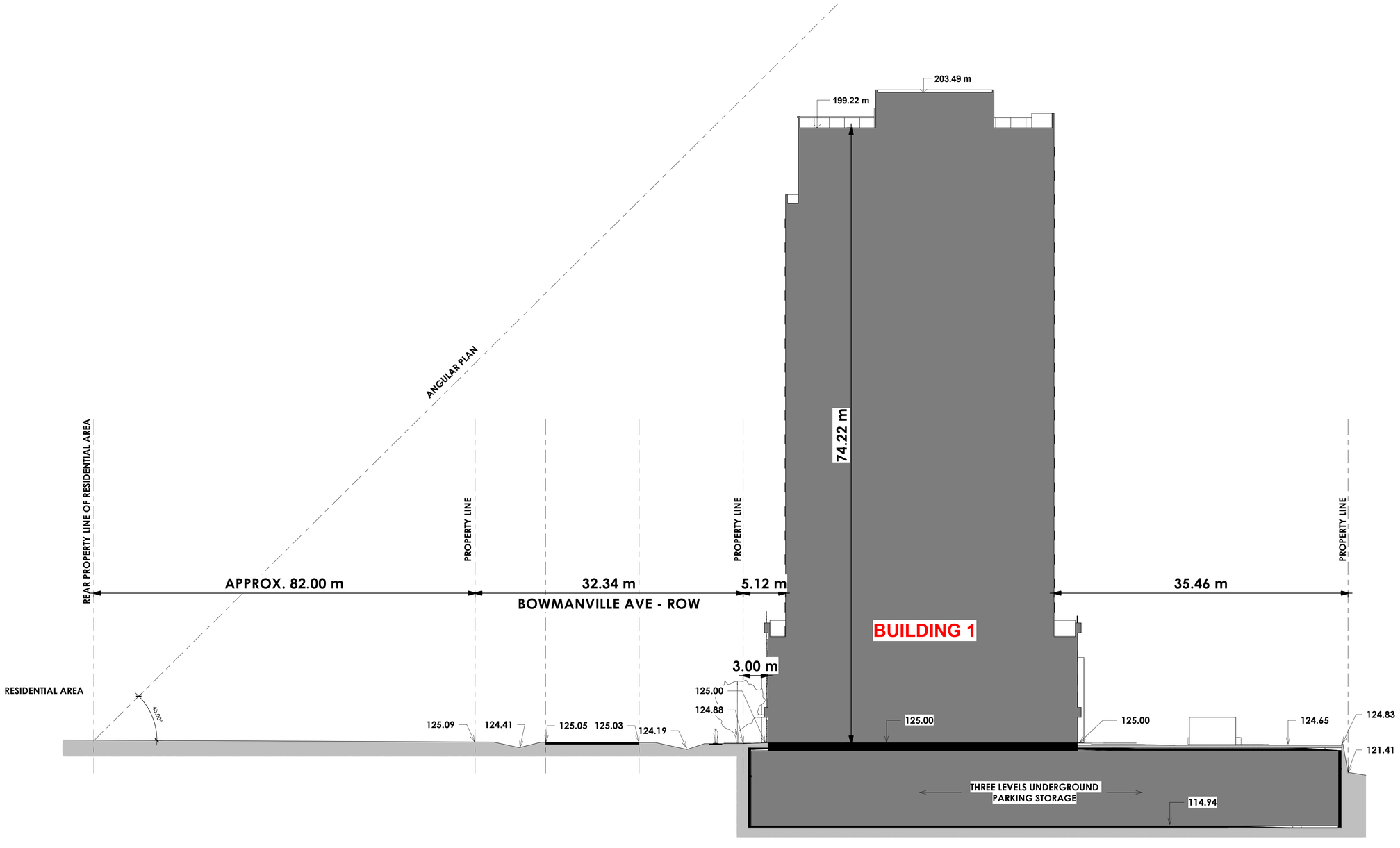
Drawing No:

A402

Of:

Drawing Series:

--



SPA FILE NO. -

REV	DESCRIPTION	REV. DATE

Drawing Issues/Revisions:

Note:

ALL DIMENSIONS AND INFORMATION SHOWN ON THESE DRAWINGS MUST BE CHECKED AND VERIFIED ON SITE AND ANY DISCREPANCIES REPORTED TO THE ARCHITECT PRIOR TO CONSTRUCTION AND FABRICATION OF ITS COMPONENTS. SHOULD EXISTING CONDITIONS OR SERVICES BE FOUND TO VARY FROM THAT INDICATED ON THE DRAWINGS, THE ARCHITECT MUST BE NOTIFIED IMMEDIATELY.

FEATURES OF CONSTRUCTION NOT FULLY SHOWN ARE ASSUMED TO BE THE SAME CHARACTER AS THOSE NOTED FOR SIMILAR CONDITIONS.

UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS, NO PROVISION HAS BEEN MADE IN THE DESIGN FOR CONDITIONS OCCURRING DURING CONSTRUCTION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL NECESSARY BRACING, SHORINGS, SHEET PILING OR OTHER TEMPORARY SUPPORTS, TO SAFEGUARD ALL EXISTING OR ADJACENT STRUCTURES AFFECTED BY THIS WORK.

USE LATEST REVISED DRAWINGS. DO NOT SCALE DRAWINGS.

WORK IN PROGRESS

MATAJ ARCHITECTS INC

Architect's Stamp

MATAJ ARCHITECTS INCORPORATED
418 Iroquois Shore Road, Unit 206,
Oakville Ontario
L6H 0X7
T.905.281.4444

Project:

BOWMANVILLE

10 ASPEN SPRINGS DR.,
BOWMANVILLE, ON L1C 4W7

Sheet Title:

SITE SECTION

Design By:	Drawn By:	Approved By:
EM	BL	EM
Scale:	Date:	Project No.:
1 : 250	Issue Date	20-034

Drawing No:

A403 Of:

Drawing Series:

--

APPENDIX "B"

Excerpts from Geotechnical Investigation

ALSTON GEOTECHNICAL CONSULTANTS INC.

DRAFT
Geotechnical Investigation Report
Proposed Building Development
10 Aspen Springs Drive
Bowmanville, Ontario

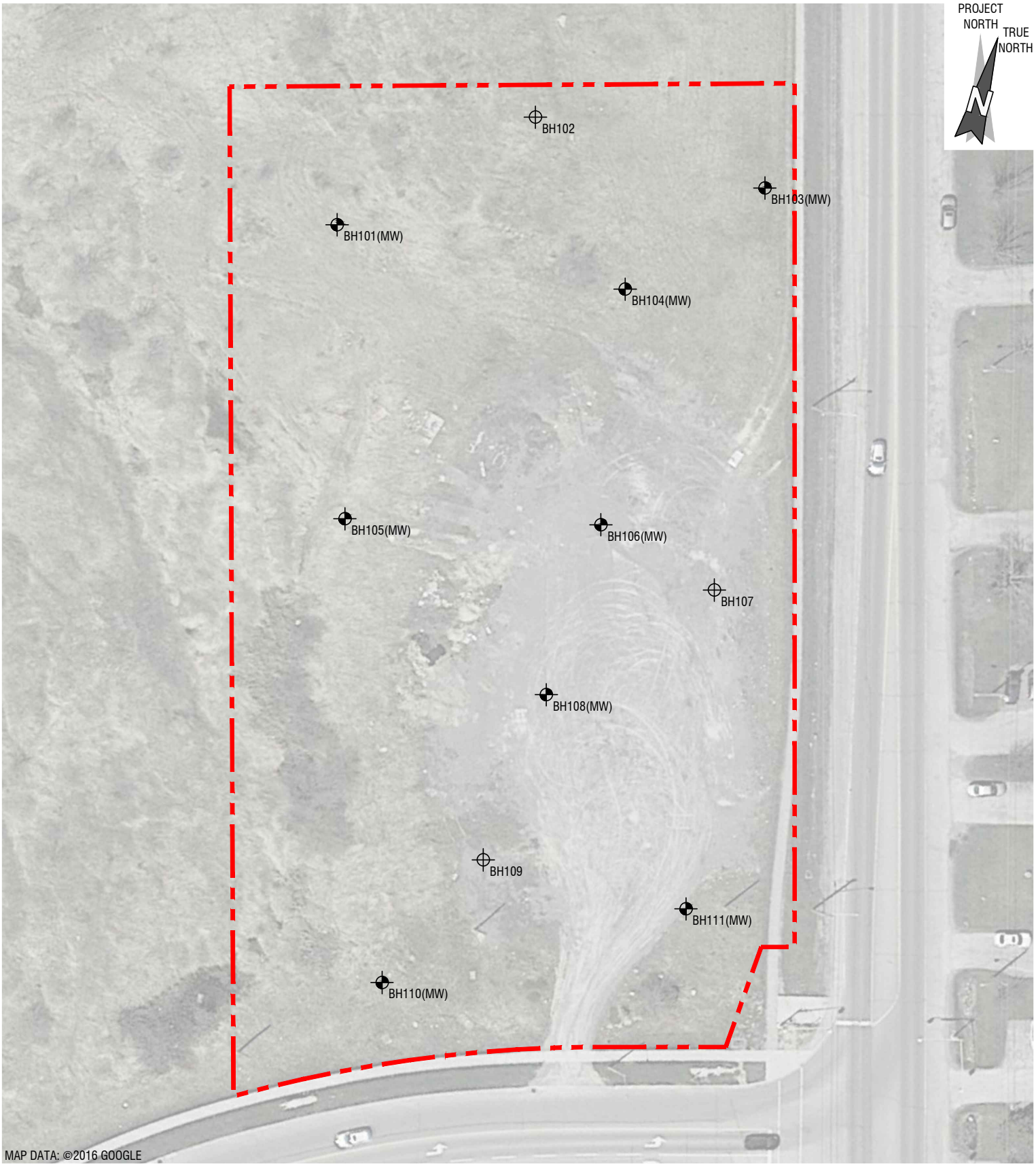
Project No. 22.003
21 April, 2022

Prepared For:

Watters Environmental Group Inc.
9135 Keele Street
Unit A1
Vaughan, Ontario
L4K 0J4

1 Copy - Watters Environmental Group Inc.
1 Copy - Alston Geotechnical Consultants Inc.

102 Senator Reesor's Drive, Markham, Ontario, L3P 3E5 ○ Tel. 905 209 9993 ○ Email: colin_agc@bellnet.ca



LEGEND:

APPROXIMATE EXTENT OF THE SITE

BOREHOLE LOCATION

MONITORING WELL LOCATION

CONFIDENTIAL

0m 40m

APPROXIMATE SCALE

DRAWN: B. CALDERONE

CHECKED: T. ALSTON

DATE: APRIL 2022

CLIENT: SUNRAY GROUP OF HOTELS

SITE ADDRESS: 10 ASPEN SPRINGS DRIVE BOWMANVILLE, ONTARIO

REPORT NAME: GEOTECHNICAL AND HYDROGEOLOGICAL INVESTIGATION

FIGURE NAME: BOREHOLE LOCATION PLAN

PROJECT No: 21-0136.03

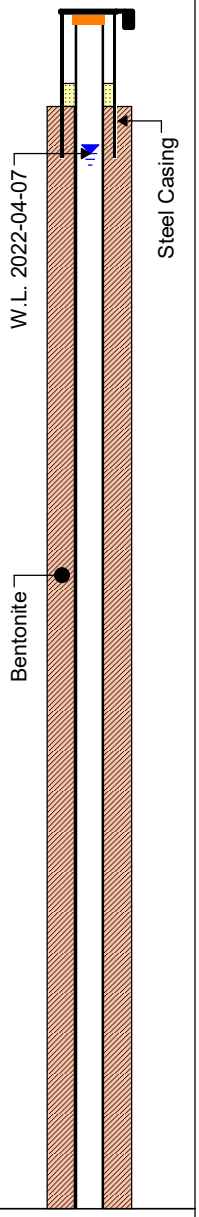
FIGURE No: 1

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH101(MW)

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L.
Logged By: T.A.
Total Depth: 15.3 m
Elevation: Approximate 121.6

SUBSURFACE PROFILE				SAMPLE							
Depth (ft / m)	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	Well Completion Data
0 / 0		Ground Surface	121.6								
		220 mm Topsoil	0.0	1	SS	4	0				
2		comapct moist brown SILT and fine SAND trace to some gravel		2	SS	33	100				
4 / 2				3	SS	14	75				
6				4	SS	29	75				
8											
10			118.2	5A	SS	44	100				
		moist brown	3.4	5B	SS						
12		moist grey									
14 / 4		very dense SANDY SILT trace to some gravel trace clay occasional cobble weakly plastic (Till-like)		6	SS	41	100				
16				7	SS	76	100				
18											
20 / 6			115.2	8A	SS	88	75				
			6.4	8B	SS						
22		hard grey SILTY SANDY CLAY some gravel (Till-like)									
24											
26 / 8				9	SS	50 for 100 mm	75				
28											



Drilled By: Davis Drilling Ltd. CME 55
Drill Method: Split Spoon Sampling and Hollow Augers
Drill Date: 2022-03-21
Hole Size: 170 mm/100 mm
Screening Tool:
Sheet: 1 of 2

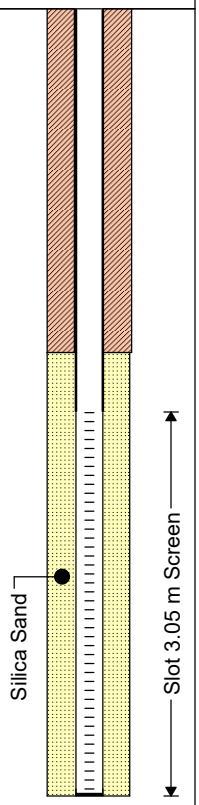
WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH101(MW)

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L.
Logged By: T.A.
Total Depth: 15.3 m
Elevation: Approximate 121.6

SUBSURFACE PROFILE				SAMPLE							Well Completion Data
Depth	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	
30											
32				10	SS	62	100				
34		hard grey SILTY SANDY CLAY trace to some gravel (Till-like)		11	SS	50 for 150 mm	75				
36											
38											
40				12	SS	82 for 275 mm	100				
42											
44											
46				13	SS	50 for 75 mm	100				
48											
50			106.3	14	SS	50 for 100 mm	100				
52		End of Borehole	15.3								
54											
56											
58											
60											

10 12 14 16 18



Drilled By: Davis Drilling Ltd. CME 55
Drill Method: Split Spoon Sampling and Hollow Augers
Drill Date: 2022-03-21
Hole Size: 170 mm/100 mm
Screening Tool:
Sheet: 2 of 2

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH102

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L. **Total Depth:** 28.0 m
Logged By: T.A. **Elevation:** Approximate 124.4

SUBSURFACE PROFILE				SAMPLE							Well Completion Data
Depth (ft / m)	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	
0 / 0		Ground Surface	124.4								
		50 mm Topsoil	0.0	1	SS	4	100				
2		grey silty clay Possible FILL									
4				2	SS	6	50				
6 / 2			122.6 1.8	3	SS	16	100				
8		SANDY SILT trace to some gravel trace gravel (Till - like)		4	SS	70	75				
10				5	SS	50 for 75 mm	10				
12 / 4		damp brown occasional fissures, oxidized faces		6	SS	38	100				
14											
16		grey moist		7	SS	50 for 150 mm	100				
18											
20 / 6			118.3 6.1	8	SS	50 for 100 mm	50				
22		hard grey SILTY SANDY CLAY some gravel occasional cobbles									
24											
26 / 8				9	SS	50 for 125 mm	100				
28											
30											

Drilled By: Davis Drilling Ltd. CME 55
Drill Method: Split Spoon Sampling, Hollow Augers and Mud Rotary Drilling
Drill Date: 2022-03-17 & 18

Hole Size: 170 mm and 100 mm
Screening Tool:
Sheet: 1 of 3

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH102

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L. **Total Depth:** 28.0 m
Logged By: T.A. **Elevation:** Approximate 124.4

SUBSURFACE PROFILE				SAMPLE							Well Completion Data
Depth	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	
32		hard grey SANDY SILTY CL:AY trace to some gravel occasional cobble (Till - like)		10	SS	50 for 50 mm	90				
34	10										
36				11	SS	50 for 125 mm	100				
38											
40	12			12	SS	50 for 140 mm	90				
42											
44											
46	14			13	SS	50 for 125 mm	100				
48											
50				14	SS	50 for 100 mm	100				
52	16										
54											
56				15	SS	50 for 75 mm	50				
58											
60	18			16	SS	50 for 75 mm	30				

Drilled By: Davis Drilling Ltd. CME 55
Drill Method: Split Spoon Sampling, Hollow Augers and Mud Rotary Drilling
Drill Date: 2022-03-17 & 18

Hole Size: 170 mm and 100 mm
Screening Tool:
Sheet: 2 of 3

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH102

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L. **Total Depth:** 28.0 m
Logged By: T.A. **Elevation:** Approximate 124.4

SUBSURFACE PROFILE				SAMPLE							Well Completion Data
Depth	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	
62											
64		hard grey SILTY CLAY trace sand trace gravel									
66	20			17	SS	50 for 100 mm	75				
68											
70			103.1								
72	22		21.3	18	SS	90 for 275 mm	30				
74		hard grey SILTY CLAY trace sand trace to some gravel									
76				19	SS	90 for 290 mm	100				
78	24										
80				20	SS	72	100				
82											
84											
86	26			21	SS	85	100				
88											
90											
92	28			22	SS	51	100				
		End of Borehole	96.4 28.0								

Drilled By: Davis Drilling Ltd. CME 55
Drill Method: Split Spoon Sampling, Hollow Augers and Mud Rotary Drilling
Drill Date: 2022-03-17 & 18

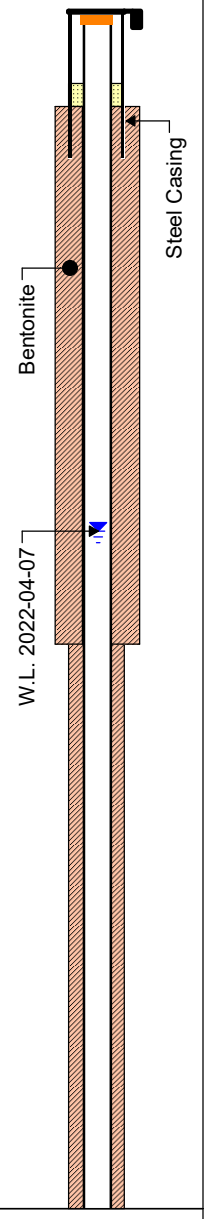
Hole Size: 170 mm and 100 mm
Screening Tool:
Sheet: 3 of 3

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH103(MW)

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L.
Logged By: T.A.
Total Depth: 21.6 m
Elevation: Approximate 124.8

SUBSURFACE PROFILE				SAMPLE							Well Completion Data
Depth (ft / m)	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	
0 / 0		Ground Surface	124.8								
		TOPSOIL, trace rootlets	0.0	1	SS	11	100				
2			124.1								
		stiff to very stiff brown SILTY SANDY CLAY trace to some gravel occasional fissure	0.7	2	SS	15	100				
4			123.3								
			1.5	3	SS	43	100				
6 / 2		dense									
8		very dense		4	SS	72	75				
		damp SILT and fine SAND some gravel, occasional cobble (Till - like)		5	SS	50 for 150 mm	100				
10											
12 / 4				6	SS	72	100				
14		damp brown									
		moist grey		7	SS	82 for 275 mm	100				
16											
18											
20 / 6			118.7								
			6.1	8	SS	50 for 100 mm	50				
22		hard grey SILTY SANDY CLAY trace to some gravel occasional sand lenses (Till-like)									
24											
26 / 8				9	SS	50 for 125 mm	0				
28											



Drilled By: Davis Drilling Ltd.
Drill Method: Split Spoon Sampling, Hollow Augers and Mud Rotary Drilling
Drill Date: 2022-03-04
Hole Size: 170 mm/100 mm
Screening Tool:
Sheet: 1 of 3

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH103(MW)

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L.
Logged By: T.A.
Total Depth: 21.6 m
Elevation: Approximate 124.8

SUBSURFACE PROFILE				SAMPLE							Well Completion Data
Depth	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	
30											
32	10	hard grey SILTY SANDY CLAY trace some gravel occasional sand lenses (Till - like)		10	SS	50 for 150 mm	100				
34											
36				11	SS	32	100				
38											
40	12			12	SS	82	75				
42											
44											
46	14			13	SS	50 for 150 mm	100				
48											
50			109.6 15.2								
52	16	hard grey SILTY CLAY trace to some gravel trace sand		14	SS	68	100				
54											
56				15	SS	50 for 75 mm	75				
58											
60	18			16	SS	50 for 75 mm	75				

Slot 3.05 m Screen

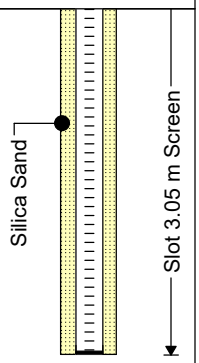
Drilled By: Davis Drilling Ltd.
Drill Method: Split Spoon Sampling, Hollow Augers and Mud Rotary Drilling
Drill Date: 2022-03-04
Hole Size: 170 mm/100 mm
Screening Tool:
Sheet: 2 of 3

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH103(MW)

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L.
Logged By: T.A.
Total Depth: 21.6 m
Elevation: Approximate 124.8

SUBSURFACE PROFILE				SAMPLE							
Depth	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	Well Completion Data
62		hard grey SILTY CLAY trace to some gravel trace sand									
64											
66	20			17	SS	50 for 150 mm	100				
68											
70			103.2	18	SS	50 for 150 mm	100				
72	22	End of Borehole	21.6								
74											
76											
78	24										
80											
82											
84											
86	26										
88											
90											
92	28										



Drilled By: Davis Drilling Ltd.
Drill Method: Split Spoon Sampling, Hollow Augers and Mud Rotary Drilling
Drill Date: 2022-03-04
Hole Size: 170 mm/100 mm
Screening Tool:
Sheet: 3 of 3

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH104

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L.
Logged By: T.A.
Total Depth: 21.4 m
Elevation: Approximate 125.0

SUBSURFACE PROFILE				SAMPLE							Well Completion Data
Depth (ft / m)	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	
0 / 0		Ground Surface	125.0								
		70 mm Topsoil	0.0	1A	SS	8	80				
		grey to brown silty clay trace rootlets trace gravel FILL		1B	SS						
2				2A	SS	6	90				
4		Topsoil	123.8 1.2	2B	SS						
6 / 2				3	SS	27	100				
8		compact damp brown very dense SILT and fine SAND some gravel occassional cobble occasional fissure oxidized faces occasional sand seam		4	SS	72	100				
10				5	SS	50 for 150 mm	100				
12 / 4				6	SS	75 for 275 mm	100				
14											
16				7A	SS	79	100				
				7B	SS						
18											
20 / 6			118.9 6.1	8	SS	50 for 50 mm	20				
22		hard grey SILTY SANDY CLAY some gravel occasional cobbles (Till-like)									
24											
26 / 8				9	SS	50 for 100 mm	75				
28											
30											

Drilled By: Davis Drilling Ltd.
Drill Method: Split Spoon Sampling, Hollow Augers and Mud Rotary Drilling
Drill Date: 2022-03-17
Hole Size: 170 mm & 100 mm
Screening Tool:
Sheet: 1 of 3

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH104

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L.
Logged By: T.A.
Total Depth: 21.4 m
Elevation: Approximate 125.0

SUBSURFACE PROFILE				SAMPLE							Well Completion Data
Depth	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	
32		hard grey SILTY SANDY CLAY some gravel occasional cobble (TILL-like)		10	SS	79	60				
34	10										
36				11	SS	97	75				
38											
40	12			12	SS	50 for 100 mm	10				
42											
44											
46	14			13	SS	90 for 275 mm	100				
48											
50				14	SS	79	80				
52	16										
54											
56				15	SS	50 for 150 mm	75				
58											
60	18			16	SS	50 for 75 mm	75				

Drilled By: Davis Drilling Ltd.
Drill Method: Split Spoon Sampling, Hollow Augers and Mud Rotary Drilling
Drill Date: 2022-03-17
Hole Size: 170 mm & 100 mm
Screening Tool:
Sheet: 2 of 3

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH104

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L.
Logged By: T.A.
Total Depth: 21.4 m
Elevation: Approximate 125.0

SUBSURFACE PROFILE				SAMPLE							Well Completion Data
Depth	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	
62											
64		hard grey SILTY SANDY CLAY some gravel occasional cobbles (Till-like)									
66 – 20				17	SS	50 for 75 mm	25				
68											
70			103.6	18	SS	50 for 100 mm	75				
72 – 22		End of Borehole	21.4								
74											
76											
78 – 24											
80											
82											
84 – 26											
86											
88											
90											
92 – 28											

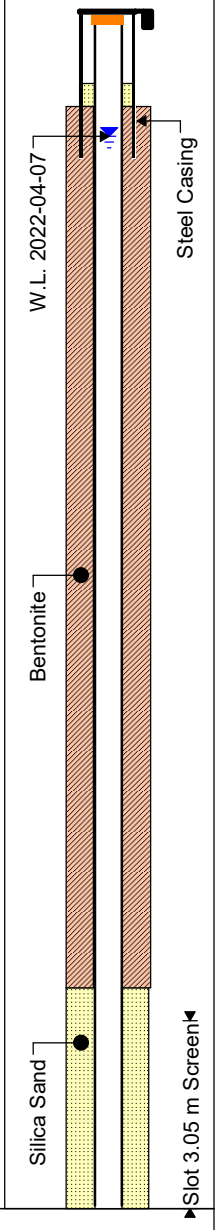
Drilled By: Davis Drilling Ltd.
Drill Method: Split Spoon Sampling, Hollow Augers and Mud Rotary Drilling
Drill Date: 2022-03-17
Hole Size: 170 mm & 100 mm
Screening Tool:
Sheet: 3 of 3

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH105(MW)

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L.
Logged By: T.A.
Total Depth: 10.9 m
Elevation: Approximate 121.2

Depth (ft)	Depth (m)	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)
		Ground Surface	121.2							
		Topsoil	0.0							
		loose brown SILT and fine SAND trace rootlets	120.4	1	SS	1	50			
			0.8	2	SS	26	60			
		compact		3	SS	51	100			
		very dense								
		SILT and fine SAND trace to some gravel occasional fissure oxidized faces occassional sand pocket		4	SS	81	100			
				5	SS	50 for 125 mm	60			
		damp brown		6	SS	50 for 125 mm	100			
		moist grey		7	SS	50 for 100 mm	100			
			114.8	8A	SS	54	100			
			6.4	8B	SS		100			
		hard grey SILTY SANDY CLAY some gravel occasional cobble occasional wet sand seam (Till-like)		9	SS	65	80			



Drilled By: Davis Drilling Ltd. CME 55
Drill Method: Split Spoon Sampling and Hollow Augers
Drill Date: 2022-03-21
Hole Size: 200 mm
Screening Tool:
Sheet: 1 of 2

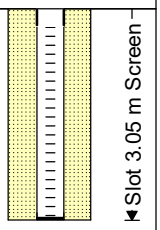
WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH105(MW)

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L.
Logged By: T.A.
Total Depth: 10.9 m
Elevation: Approximate 121.2

SUBSURFACE PROFILE				SAMPLE							Well Completion Data
Depth	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	
30											
32		hard grey SILTY CLAY some gravel, occasional cobble occasional wet sand seam (Till-Like)		10	SS	38	100				
34			110.8								
		hard grey SILTY CLAY trace sand trace gravel	10.4								
36			110.3	11	SS	50 for 100 mm	100				
		End of Borehole	10.9								
38											
40											
42											
44											
46											
48											
50											
52											
54											
56											
58											
60											

10
12
14
16
18



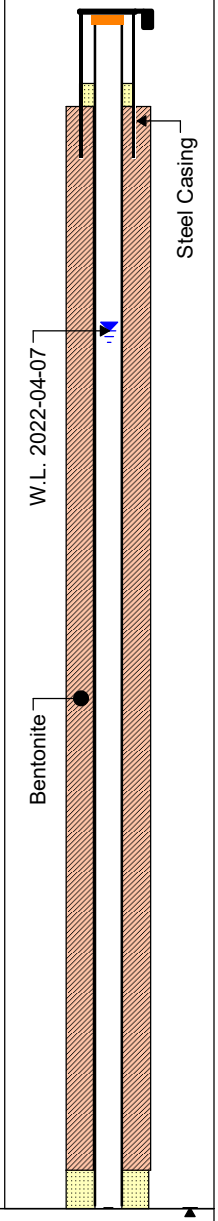
Drilled By: Davis Drilling Ltd. CME 55
Drill Method: Split Spoon Sampling and Hollow Augers
Drill Date: 2022-03-21
Hole Size: 200 mm
Screening Tool:
Sheet: 2 of 2

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH106(MW)

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L. **Total Depth:** 12.8 m
Logged By: T.A. **Elevation:** Approximate 124.3

SUBSURFACE PROFILE				SAMPLE							
Depth (ft / m)	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	Well Completion Data
0 / 0		Ground Surface	124.3								
		brown silty clay, some gravel some sand FILL	0.0	1	SS	12	100				
			123.7								
2		stiff dark brown SILTY SANDY CLAY some gravel (possible Fill)	0.7	2	SS	16	100				
4				3A	SS	14	100				
6 / 2			122.5	3B	SS						
		hard brown SILTY SANDY CLAY trace to some gravel occasional wet sand lense and seam	1.8	4	SS	58	75				
8											
10				5A	SS	75	100				
12			120.5	5B	SS						
		very dense SILT and fine SAND trace to some gravel trace clay occasional sand lense and seam (Till - like)	3.8	6	SS	88 for 275 mm	100				
14 / 4											
16				7	SS	50 for 125 mm	100				
18		damp brown occasional fissure oxidized face									
20 / 6				8	SS	50 for 125 mm	50				
22		moist grey									
24											
26 / 8				9	SS	50 for 150 mm	75				
28			115.2								



Drilled By: Davis Drilling Ltd. CME 75
Drill Method: Split Spoon Sampling and Hollow Augers
Drill Date: 2022-03-02 & 03

Hole Size: 170 mm/100 mm
Screening Tool:
Sheet: 1 of 2

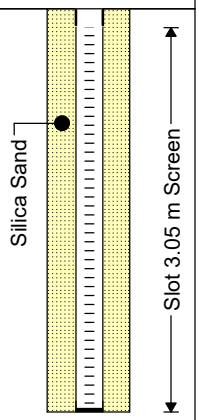
WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH106(MW)

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L.
Logged By: T.A.
Total Depth: 12.8 m
Elevation: Approximate 124.3

SUBSURFACE PROFILE				SAMPLE							Well Completion Data
Depth	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	
30											
32		hard grey SILTY SANDY CLAY trace to some gravel occasional cobble occasional sand seam (Till-like)		10	SS	38	100				
34											
36				11	SS	85	100				
38											
40				12	SS	50	100				
42		End of Borehole	111.5 12.8								
44											
46											
48											
50											
52											
54											
56											
58											
60											

10
12
14
16
18



Drilled By: Davis Drilling Ltd. CME 75
Drill Method: Split Spoon Sampling and Hollow Augers
Drill Date: 2022-03-02 & 03
Hole Size: 170 mm/100 mm
Screening Tool:
Sheet: 2 of 2

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH107

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L.
Logged By: T.A.
Total Depth: 28.0 m
Elevation: Approximate 124.3

SUBSURFACE PROFILE				SAMPLE							
Depth (ft / m)	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	Well Completion Data
0 / 0		Ground Surface	124.3								
		450 mm brown sandy silt, trace gravel FILL	0.0	1	SS	38	100				
2		300 mm grey sand and angular gravel FILL	123.5								
		hard brown SILTY SANDY CLAY trace gravel occasional fissure oxidized faces	0.8	2	SS	34	50				
4 / 2				3	SS	58	100				
6			122.0								
8		very dense damp SILT and fine SAND some gravel (Till - like)	2.3	4	SS	50 for 150 mm	100				
10				5	SS	72	100				
12 / 4				6	SS	75	100				
14											
16				7	SS	50 for 100 mm	100				
18		damp brown									
20 / 6		grey moist		8	SS	50 for 150 mm	75				
22											
24											
26 / 8		moist to wet occasional sand seams and lenses		9	SS	50 for 125 mm	75				
28											
30											

Drilled By: Davis Drilling Ltd.
Drill Method: Split Spoon Sampling, Hollow Augers and Mud Rotary Drilling
Drill Date: 2022-02-28
Hole Size: 170 mm and 100 mm
Screening Tool:
Sheet: 1 of 3

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH107

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L.
Logged By: T.A.
Total Depth: 28.0 m
Elevation: Approximate 124.3

SUBSURFACE PROFILE				SAMPLE							Well Completion Data
Depth	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	
32		very dense SILT and fine SAND some gravel (Till - like)		10	SS	50 for 100 mm	75				
34	10										
36				11	SS	50 for 125 mm	100				
38			112.4								
40	12	hard grey SILTY SANDY CLAY some gravel occasional cobbles	11.9	12	SS	39	75				
42											
44											
46	14			13	SS	56	100				
48											
50				14	SS	50 for 100 mm	100				
52	16										
54											
56				15	SS	50 for 100 mm	60				
58											
60	18			16	SS	50 for 100 mm	75				

Drilled By: Davis Drilling Ltd.
Drill Method: Split Spoon Sampling, Hollow Augers and Mud Rotary Drilling
Drill Date: 2022-02-28
Hole Size: 170 mm and 100 mm
Screening Tool:
Sheet: 2 of 3

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH107

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L.
Logged By: T.A.
Total Depth: 28.0 m
Elevation: Approximate 124.3

SUBSURFACE PROFILE				SAMPLE							Well Completion Data
Depth	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	
62											
64											
66 — 20		hard grey SILTY SANDY CLAY some gravel occasional cobbles		17	SS	50 for 100 mm	75				
68											
70				18	SS	50 for 75 mm	30				
72 — 22											
74				19	SS	50 for 150 mm	100				
76											
78 — 24											
80				20	SS	50 for 150 mm	100				
82											
84			98.4								
86 — 26		hard grey SILTY CLAY trace sand trace gravel	25.9	21	SS	50 for 100 mm	100				
88											
90				22	SS	80	100				
92 — 28		End of Borehole	96.3 28.0								

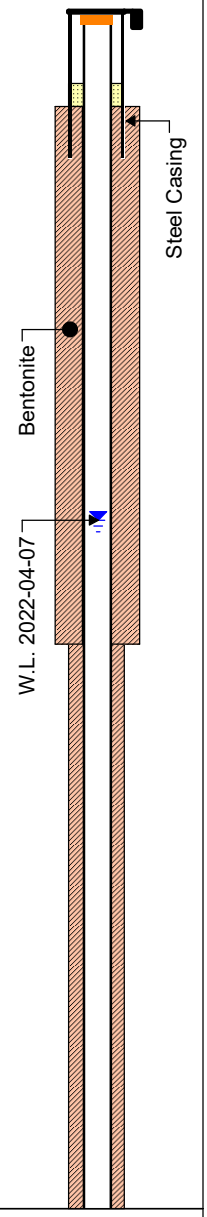
Drilled By: Davis Drilling Ltd.
Drill Method: Split Spoon Sampling, Hollow Augers and Mud Rotary Drilling
Drill Date: 2022-02-28
Hole Size: 170 mm and 100 mm
Screening Tool:
Sheet: 3 of 3

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH108(MW)

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L. **Total Depth:** 21.4 m
Logged By: T.A. **Elevation:** Approximate 124.9

SUBSURFACE PROFILE				SAMPLE							
Depth (ft / m)	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	Well Completion Data
0 / 0		Ground Surface	124.9								
		brown some grey silty clay, some gravel, trace organics FILL	0.0 / 124.5	1	SS	23	100				
2			0.5								
		very stiff SILTY SANDY CLAY trace to some gravel		2	SS	35	100				
4 / 2				3	SS	17	100				
6			122.6								
8		loose	2.3	4A	SS	7	100				
				4B	SS						
10		compact									
		very dense		5	SS	48	100				
12 / 4		damp SILT and fine SAND some gravel, occasional cobble (Till - like)		6A	SS	90 for 250 mm	100				
14				6B	SS						
16		occasional fissure oxidized faces		7A	SS	77	100				
				7B	SS						
18											
20 / 6				8	SS	50 for 125	100				
22											
24		damp to moist brown									
26 / 8		grey wet		9	SS	93 for 275 mm	100				
28											



Drilled By: Davis Drilling Ltd.
Drill Method: Split Spoon Sampling, Hollow Augers and Mud Rotary Drilling
Drill Date: 2022-03-02

Hole Size: 170 mm/100 mm
Screening Tool:
Sheet: 1 of 3

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH108(MW)

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L.
Logged By: T.A.
Total Depth: 21.4 m
Elevation: Approximate 124.9

SUBSURFACE PROFILE				SAMPLE							Well Completion Data
Depth	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	
30											
				10	SS	50 for 125 mm	100				
32											
10		SILT and fine SAND some gravel occasional cobble (Till - like)									
34											
				11	SS	47	100				
36											
38											
12											
40											
				12	SS	33	75				
42											
44			111.2								
			13.7								
46				13	SS	43	100				
14		hard grey SILTY SANDY CLAY trace to some gravel occasional sand pocket occasional cobbles (Till-like)									
48											
50				14	SS	76	100				
52											
16											
54											
				15	SS	50 for 125 mm	60				
56											
58											
18											
60				16	SS	50 for 125 mm	75				

Slot 3.05 m Screen

Drilled By: Davis Drilling Ltd.
Drill Method: Split Spoon Sampling, Hollow Augers and Mud Rotary Drilling
Drill Date: 2022-03-02
Hole Size: 170 mm/100 mm
Screening Tool:
Sheet: 2 of 3

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH108(MW)

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L.
Logged By: T.A.
Total Depth: 21.4 m
Elevation: Approximate 124.9

SUBSURFACE PROFILE				SAMPLE							Well Completion Data
Depth	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	
62		hard grey SILTY SANDY CLAY trace to some gravel occasional sand pocket occasional cobbles (Till-like)									Silica Sand; Slot 3.05 m Screen
64											
20 66				17	SS	50 for 125 mm	100				
68											
70			103.5	18	SS	50 for 125 mm	30				
72		End of Borehole	21.4								
22 74											
76											
78											
24 80											
82											
84											
26 86											
88											
90											
28 92											

Drilled By: Davis Drilling Ltd.
Drill Method: Split Spoon Sampling, Hollow Augers and Mud Rotary Drilling
Drill Date: 2022-03-02
Hole Size: 170 mm/100 mm
Screening Tool:
Sheet: 3 of 3

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH109

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L.
Logged By: T.A.
Total Depth: 21.4 m
Elevation: Approximate 125.1

SUBSURFACE PROFILE				SAMPLE							
Depth (ft / m)	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	Well Completion Data
0 / 0		Ground Surface	125.1								
		brown siltyclay some sand, some gravle occasional topsoil pocket FILL	0.0	1	SS	6	100				
2			124.3 0.8								
		damp brown SANDY SILT some gravel		2	SS	43	50				
4 / 2				3	SS	22	100				
6		compact		4	SS	11	100				
8		loose		5A	SS	8	100				
10				5B	SS						
12 / 4		dense		6A	SS	26	100				
14		grey trace clay weaklty plastic occassional sand seam		6B	SS						
16				7	SS	67	100				
18											
20 / 6			119.0 6.1	8	SS	50 for 125 mm	100				
22		damp brown									
24		moist grey very dense SANDY SILT some grave occasional cobble trace clay weakly plastic (Till - like)									
26 / 8				9	SS	40	75				
28											
30											

Drilled By: Davis Drilling Ltd.
Drill Method: Split Spoon Sampling, Hollow Augers and Mud Rotary Drilling
Drill Date: 2022-03-02 & 03
Hole Size: 170 mm and 100 mm
Screening Tool:
Sheet: 1 of 3

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH109

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L.
Logged By: T.A.
Total Depth: 21.4 m
Elevation: Approximate 125.1

SUBSURFACE PROFILE				SAMPLE							
Depth	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	Well Completion Data
32		very dense SANDY SILT some gravel occasional cobble trace clay, weakly plastic (Till - like)		10	SS	80	75				
34	10										
36				11	SS	50 for 125 mm	25				
38											
40	12		112.9								
42		hard grey SILTY SANDY CLAY some gravel (Till-Like)	12.2	12	SS	33	75				
44											
46	14			13	SS	50 for 125 mm	100				
48											
50				14	SS	56	80				
52	16										
54											
56				15	SS	50 for 125 mm	60				
58											
60	18			16	SS	50 for 100 mm	75				

Drilled By: Davis Drilling Ltd.
Drill Method: Split Spoon Sampling, Hollow Augers and Mud Rotary Drilling
Drill Date: 2022-03-02 & 03
Hole Size: 170 mm and 100 mm
Screening Tool:
Sheet: 2 of 3

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH109

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L.
Logged By: T.A.
Total Depth: 21.4 m
Elevation: Approximate 125.1

SUBSURFACE PROFILE				SAMPLE							Well Completion Data
Depth	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	
62		hard grey SILTY SANDY CLAY some gravel (Till-like)									
64											
66 – 20				17	SS	50 for 100 mm	75				
68											
70			103.7	18	SS	50 for 100 mm	30				
72 – 22		End of Borehole	21.4								
74											
76											
78 – 24											
80											
82											
84 – 26											
86											
88											
90											
92 – 28											

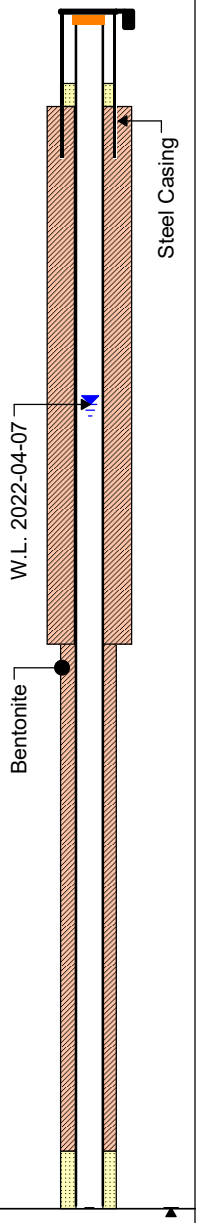
Drilled By: Davis Drilling Ltd.
Drill Method: Split Spoon Sampling, Hollow Augers and Mud Rotary Drilling
Drill Date: 2022-03-02 & 03
Hole Size: 170 mm and 100 mm
Screening Tool:
Sheet: 3 of 3

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH110(MW)

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L. **Total Depth:** 21.6 m
Logged By: T.A. **Elevation:** Approximate 122.0

SUBSURFACE PROFILE				SAMPLE							
Depth (ft / m)	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	Well Completion Data
		Ground Surface	122.0								
0 / 0		TOPSOIL trace gravel trace rootlets	0.0 121.1	1	SS	11	10				
2			0.9	2A	SS	10	50				
4				2B	SS		50				
6 / 2		compact very dense		3	SS	57	50				
8		SILT and fine SAND some gravel occassional fissure oxidized face		4	SS	65	100				
10				5	SS	50 for 140 mm	100				
12		damp brown									
14 / 4		damp brown to grey		6	SS	65	100				
16				7	SS	50 for 150 mm	100				
18											
20 / 6		trace to some clay weakly plastic		8	SS	50 for75 mm	50				
22											
24											
26 / 8			114.1	9A	SS	90 for 275 mm	75				
28		hard grey SILTY CLAY trace sand	7.9 112.9	9B	SS		75				



Drilled By: Davis Drilling Ltd.
Drill Method: Split Spoon Sampling, Hollow Augers and Mud Rotary Drilling
Drill Date: 2022-03-22

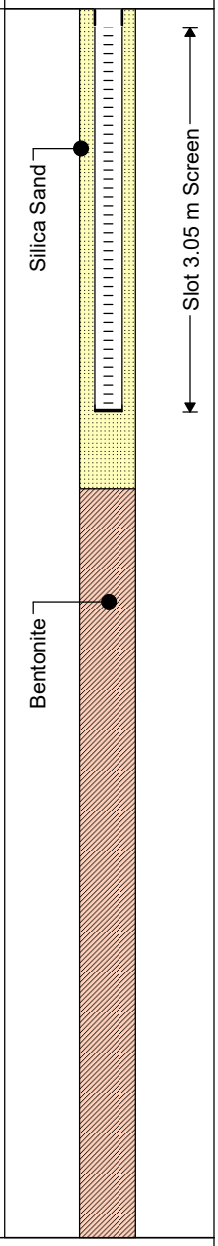
Hole Size: 170 mm/100 mm
Screening Tool:
Sheet: 1 of 3

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH110(MW)

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L.
Logged By: T.A.
Total Depth: 21.6 m
Elevation: Approximate 122.0

SUBSURFACE PROFILE				SAMPLE							Well Completion Data
Depth	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	
30											
32	10	hard grey SILTY SANDY CLAY some gravel occasional cobbles		10	SS	48	100				
34			111.3 10.7								
36				11	SS	41	100				
38	12	hard grey SILTY CLAY trace sand trace gravel occassional thin silt and sand seam occasional gravel lense faintly laminated									
40				12	SS	59	100				
42											
44											
46	14			13	SS	26	100				
48											
50				14	SS	50 for 125 mm	75				
52	16										
54											
56				15	SS	50 for 100 mm	50				
58	18										
60				16	SS	50 for 25 mm	50				



Drilled By: Davis Drilling Ltd.
Drill Method: Split Spoon Sampling, Hollow Augers and Mud Rotary Drilling
Drill Date: 2022-03-22
Hole Size: 170 mm/100 mm
Screening Tool:
Sheet: 2 of 3

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH110(MW)

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L.
Logged By: T.A.
Total Depth: 21.6 m
Elevation: Approximate 122.0

SUBSURFACE PROFILE				SAMPLE							Well Completion Data
Depth	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	
62											
64		hard grey SILTY CLAY trace sand trace gravel occasional thin silt and sand seam occasional gravel lense faintly laminated									
66 20				17	SS	50 for 75 mm	100				
68											
70				18	SS	50 for 110 mm	100				
72 22		End of Borehole	100.4 21.6								
74											
76											
78 24											
80											
82											
84											
86 26											
88											
90											
92 28											

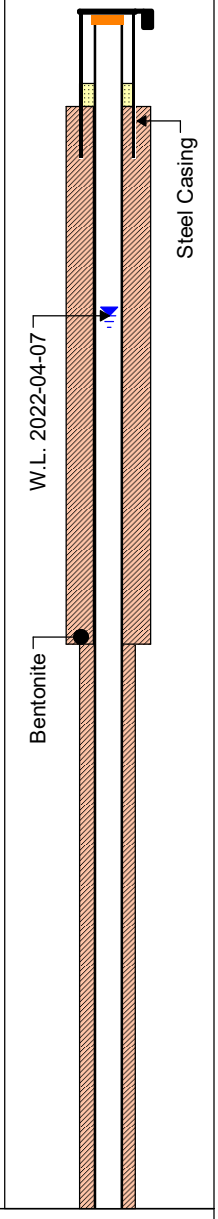
Drilled By: Davis Drilling Ltd.
Drill Method: Split Spoon Sampling, Hollow Augers and Mud Rotary Drilling
Drill Date: 2022-03-22
Hole Size: 170 mm/100 mm
Screening Tool:
Sheet: 3 of 3

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH111(MW)

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L.
Logged By: T.A.
Total Depth: 21.7 m
Elevation: Approximate 124.6

SUBSURFACE PROFILE				SAMPLE							
Depth (ft / m)	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	Well Completion Data
0 / 0		Ground Surface	124.6								
		grey sand and angular gravel FILL	0.0	1	SS	50 for 75 mm	100				
2		compact brown weakly plastic SANDY SILT trace clay trace gravel occasional silt parting		2	SS	18	50				
4				3A	SS	26	100				
6 / 2			122.6	3B	SS						
			2.0								
8				4	SS	50 for 125 mm	100				
10		very dense SILT and fine SAND some gravel occasional cobble (Till - like)		5	SS	50 for 150 mm	100				
12 / 4				6	SS	80	100				
14				7	SS	50 for 125 mm	100				
16											
18		damp brown									
20 / 6		moist grey		8	SS	50 for 100 mm	75				
22											
24											
26 / 8				9	SS	50 for 100 mm	75				
28											



Drilled By: Davis Drilling Ltd.
Drill Method: Split Spoon Sampling, Hollow Augers and Mud Rotary Drilling
Drill Date: 2022-03-01
Hole Size: 170 mm/100 mm
Screening Tool:
Sheet: 1 of 3

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH111(MW)

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L. **Total Depth:** 21.7 m
Logged By: T.A. **Elevation:** Approximate 124.6

SUBSURFACE PROFILE				SAMPLE							
Depth	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	Well Completion Data
30											
				10	SS	50 for 125 mm	75				
32		very dense SILT and fine SAND some gravel occasional cobble (Till - like)									
34	10		113.9								
			10.7	11	SS	50 for 75 mm	75				
36		hard grey SILTY SANDY CLAY some gravel occasional cobbles (Till-like)									
38											
	12			12	SS	50 for 100 mm	75				
40											
42											
44											
				13	SS	50 for 50 mm	75				
46	14										
48											
50				14	SS	50 for 100 mm	100				
52											
	16										
54											
56				15	SS	50 for 75 mm	75				
58											
	18										
60				16	SS	50 for 75 mm	75				

Slot 3.05 m Screen

Drilled By: Davis Drilling Ltd.
Drill Method: Split Spoon Sampling, Hollow Augers and Mud Rotary Drilling
Drill Date: 2022-03-01

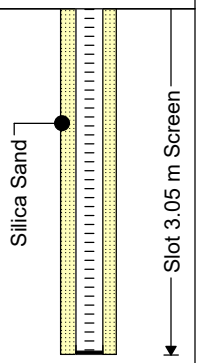
Hole Size: 170 mm/100 mm
Screening Tool:
Sheet: 2 of 3

WATTERS ENVIRONMENTAL GROUP INC.®
9135 Keele Street, Unit A1
Concord, Ontario L4K 0J4
www.wattersenvironmental.com
416-361-2407

Borehole No: BH111(MW)

Project No.: 21-0136.03
Client: Sunray Group of Hotels
Location: 10 Aspen Springs Dr,. Bowmanville, Ontario
Project Manager: T.L.
Logged By: T.A.
Total Depth: 21.7 m
Elevation: Approximate 124.6

SUBSURFACE PROFILE				SAMPLE							
Depth	Symbol	Description	Depth/Elev. (m)	Number	Type	N-Value	Recovery %	Shear (kPa)	Lab Submitted	Mositure (%)	Well Completion Data
62											
64		hard grey SILTY SANDY CLAY some gravel occasional cobbles (Till-like)									
66 – 20				17	SS	50 for 75 mm	100				
68											
70				18	SS	81 for 250 mm	100				
72 – 22		End of Borehole	102.9 21.7								
74											
76											
78 – 24											
80											
82											
84 – 26											
86											
88											
90											
92 – 28											



Drilled By: Davis Drilling Ltd.
Drill Method: Split Spoon Sampling, Hollow Augers and Mud Rotary Drilling
Drill Date: 2022-03-01
Hole Size: 170 mm/100 mm
Screening Tool:
Sheet: 3 of 3