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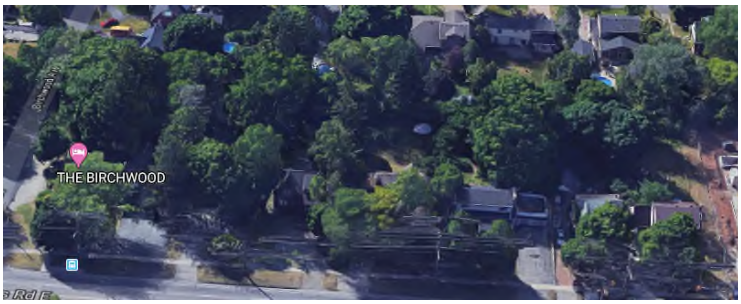
ENGINEERING

Professional Engineers Ontario

LABORATORY

CALA
Canadian Association for Laboratory Accreditation Inc.

GEOTECHNICAL INVESTIGATION



40-70 PLAINS ROAD EAST, BURLINGTON, ONTARIO

Prepared for:

Infinity Development Group

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Project No. FE-P 20-10328Geo.U

July 15, 2020; Updated April 16, 2021

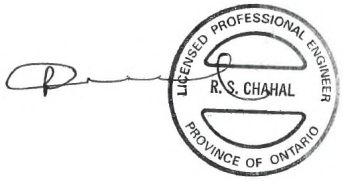
Issued to:	Infinity Development Group 2275 Upper Middle Road East Oakville, ON L6H 0C3
Contact:	Arjun Anand arjun.anand@infinitydevelopment.ca
Project Name:	Proposed New Development
Project Address:	40-70 Plains Road East, Burlington, ON.
Project Number:	FE-P 20-10328Geo.U
Issued on:	July 15, 2020; Updated April 16, 2021
Report Prepared by: **(Primary Contact)**	 Rajinder Chahal, P. Eng., Senior Projecst Engineer 647.227.8473 rajinder@fisherenvironmental.com
Project Manager:	 Sean Fisher, M.Sc. Eng., Project Manager, sean@fisherenvironmental.com
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TABLE OF CONTENTS

1. INTRODUCTION 1

2. SITE AND PROJECT DESCRIPTION 1

3. SCOPE OF GEOTECHNICAL WORK 2

4. METHOD OF INVESTIGATION 2

5. SUBSURFACE CONDITIONS 3

6. GROUNDWATER CONDITIONS 4

7. GEOTECHNICAL DISCUSSIONS AND RECOMMENDATIONS 4

7.1 General Discussion 4

7.2 Foundation Considerations 5

7.3 Earthquake Considerations 6

7.4 Underground Parking Garage 6

7.5 Excavation / Shoring 8

8. EXCAVATION / VIBRATION MONITORING 10

9. CHEMICAL ANALYSES 11

10. GENERAL CONSIDERATIONS 11

11. CLOSING 12

APPENDIX A – SITE PLAN ..... A

APPENDIX B – LOG OF BOREHOLES ..... B

APPENDIX C – MOISTURE CONTENT AND GRAIN SIZE ANALYSES RESULTS C

APPENDIX D – SITE PLAN & BOREHOLE LOGS PREPARED BY LANDTEK LIMITED ..... D

APPENDIX E – SHORING / ARCHITECTURAL PLAN PREPARED BY RAW DESIGN ..... E

1. INTRODUCTION

Fisher Engineering Limited was retained by Infinity Development Group to carry out a geotechnical subsurface investigation for the proposed new development at 40-70 Plains Road East in Burlington, Ontario.

The purpose of the geotechnical investigation was to determine the general subsurface conditions at the site and to provide geotechnical comments/recommendations for the design of the proposed development by means of six (6) boreholes.

This report presents the results of the tests performed in accordance with the general terms of reference outlined in the scope of work.

The report has been prepared specifically and solely for the proposed development in regards to geotechnical aspects of design & construction.

2. SITE AND PROJECT DESCRIPTION

The subject property is located on the south side of Plains Road East in the predominantly residential neighborhood south of Highway 403 and east of Waterdown Road in the City of Burlington.

Currently seven single family dwellings (nos. 40, 46, 50, 56, 62, 66 & 70) occupy the front portions of lots. A six-story building exists on the adjoining property on the west side. A single-story building was observed over the adjoining lot located at the corner of Birchwood Avenue & Plains Road East.

A large single-story Solid Gold Inn building was observed on the north side of Plains Road East.

Site grades drop slightly towards east direction in general. We were provided a previous report prepared by Landtek Limited. Five boreholes were drilled in the east portion of the site. However, the depth of exploration was limited to 8.2m and deeper boreholes were recommended. Borehole logs from this report along with site plan showing their locations are appended to this report.

The proposed development calls for a 10-story building with two levels underground parking. Details of the proposed development such as finished ground/lowest parking floor levels, finished grades, footing founding levels etc. were not available at the time of our investigation. We were recently provided with updated architectural drawings containing proposed P2 floor levels. This report has been updated to include the comments based on current/recent information available/provided.

3. SCOPE OF GEOTECHNICAL WORK

The geotechnical scope of work includes the following:

- Investigation of the subsurface conditions at the site by advancing boreholes, soil sampling and visual evaluation.

- Prepare a geotechnical report with comments and recommendations regarding:
  - Appropriate foundation depth, type and bearing capacity, and seismic classification.
  - Underground parking garage design/construction.
  - Excavation & shoring design parameters etc.

4. METHOD OF INVESTIGATION

The field work for this investigation was carried out on May 26, June 4, 5 & 18, 2020, in which a total of six (6) boreholes (BH1 – BH6), were drilled to approximate depths ranging between 6.25m & 13.56m below the prevailing grades. The approximate locations of the boreholes and elevations are shown on the attached Borehole Location Plan in Appendix A.

The ground surface elevation at each borehole was established by interpolation from the topographic survey plan provided.

All boreholes were advanced using hollow stem auguring. The subsurface strata were sampled at regular intervals of depth using a split-spoon sampler following the procedure as detailed in the ASTM Standard specification D1586 for the Standard Penetration Test. Field tests to determine the engineering parameters of the soil were carried out during drilling, which included Standard Penetration Tests (SPT).

Water level observations were made in each borehole upon its completion. Monitoring wells were installed in all boreholes for groundwater observations, water sampling and/or slug/pump testing purposes.

All soil samples were taken to our accredited laboratory for final visual assessment, classification and selected moisture content testing & grain size analyses. The samples were tested and classified in general accordance with the Unified Soil Classification System, ASTM D 2487, and Standard Practice for Classification of Soil for Engineering Purposes.

Soil Description and test results are given in the borehole Records attached to this report.

The soil samples recovered during the investigation will be stored in our laboratory for a period of 30 days after which they will be discarded unless further instructions are received.

5. SUBSURFACE CONDITIONS

The subsurface conditions encountered in the boreholes are shown on the Borehole Log Sheets provided in Appendix B.

The boreholes logs include soil stratification at the borehole locations along with detailed soil descriptions. Variations in the soil stratification may occur and should be expected between borehole locations and elsewhere on the site.

FILL

Fill soils were found below the above surficial layer of all boreholes.

Fill extended to the following approximate depths below the prevailing grades.

BH No.	1	2	3	4	5	6
Depth of Fill, m	0.76	1.52	1.37	0.76	1.52	1.98

The fill generally consisted of dark brown to brown silty sand with some to trace of topsoil/roots and trace of gravel.

Reddish Brown/Brown/Greyish Brown Sand/Silty Sand/Gravelly Sand/Gravel & Sand

Native soils of brown to reddish/greyish brown sand/silty sand/sand & gravel/gravelly sand were found underlying the fill soils. Frequent cobbles/boulders were encountered in the sand & gravel/gravelly sand deposit. Relative density of these soils generally varied from compact to very dense, occasionally loose. Boreholes 1 and 3 were terminated in these soils at the respective depths of 10.67m & 12.65m. Borehole 5 was terminated in the sand and gravel deposit at the depth of 6.25m because of refusal to auguring possibly due to boulder.

Greyish Brown/Grey Sand/Silty Sand

Greyish brown to grey sand/silty sand were found below the gravelly sand/sand & gravel of boreholes 2, 4 & 6. Relative density of these sandy layers varied from compact to dense. We consider that lower 'N' values indicating lower relative density may be due to the disturbance because of auguring and/or hydrostatic pressure.

6. GROUNDWATER CONDITIONS

Boreholes were advanced using dry auguring.

Monitoring wells were installed in all boreholes to monitor groundwater levels/water sampling.

Groundwater depths/elevations as measured on completion of boreholes and from the monitoring wells are summarized in the following table.

No.	Elev. at Ground (m)	Depth of Well, m bgs	On Completion		24-Jun-20		08-Jul-20		22-Jul-20	
			GW level, m bgs	GW Ele, m asl	GW level, m bgs	GW Ele, m asl	GW level, m bgs	GW Ele, m asl	GW level, m bgs	GW Ele, m asl
MW1	101.35	10.06	8.08	93.27	8.60	92.75	8.59	92.76	8.60	92.75
MW2	100.80	12.80	7.77	93.03	7.86	92.94	8.05	92.75	8.03	92.77
MW3	100.81	12.19	Dry	-	8.23	92.58	8.23	92.58	8.25	92.56
MW4	100.85	9.14	7.77	93.08	7.82	93.03	7.91	92.94	7.96	92.89
MW5	100.79	5.79	Cave in to 4.57m	-	Dry at 5.63	-	Dry at 5.70	-	Dry at 5.70	-
MW6	100.45	12.95	8.23	92.22	7.86	-	7.96	92.49	7.99	92.46

Based on the above information and visual examination of the soil samples, we conclude that groundwater exists in the wet sand/silty sand to gravelly sand layers encountered towards bottom of the boreholes. Perched water may also be encountered from the wet seams/pockets/layers trapped inside the soils. We consider the water level in the monitoring wells represents real ground water table. This groundwater table may fluctuate with seasonal weather conditions; climate change; change in the surrounding land use or the water shed area etc.

It should be noted that 'Fisher' also carried out a hydrogeological assessment in conjunction with this geotechnical investigation. Issues pertaining to the groundwater such as requirements for temporary dewatering, permanent drainage, amount/quality of water for discharge etc. have been discussed/addressed separately in the hydrogeological investigation report. These reports should be read in conjunction in finalizing the sub-structure design process.

7. GEOTECHNICAL DISCUSSIONS AND RECOMMENDATIONS

7.1 General Discussion

- We understand that the proposed development will comprise the construction of a medium rise (ten-storey) building with two levels of underground parking.

- Based on the updated lowest floor level of 95.0m provided, footing founding elevations are expected to vary between approximate elevations of 92.5m & 93.5m. it should be noted that foundation plan indicating the underside/founding levels of footings was not available at the time of update.

The following sections provide general geotechnical recommendations for design and construction.

7.2 Foundation Considerations

Boreholes indicate that dense to very dense undisturbed native soils of greyish brown to grey sand/silty sand/sand & silt/gravelly sand encountered between the elevations can be used for the building support using conventional strip and/or spread footing foundations.

For footings placed over undisturbed native soils between the elevations 92.0m and 94.0m, factored geotechnical resistance at ULS of 600kPa & geotechnical reaction at SLS of 400kPa can be used for foundation design purposes. SLS values are based on the current/general engineering practice of total settlement of 25mm and 19mm differential movements.

Based on the groundwater conditions encountered it appears that part of the site may require dewatering to maintain the stability of footing subgrades.as the footings will be located below the local groundwater table. We recommend that adequate dewatering system should be provided (as & where required), maintained & monitored to prevent any damage/disturbance of founding soils/subgrade due to uplift pressure until the construction of super structure is able to balance the uplift forces (usually recommended by the structural consultant. It should be noted that groundwater conditions sometimes can change suddenly especially for sandy soils and sudden change in the weather conditions.

A mud slab is always preferable to protect the integrity of the base and provide consistent earth cover. If the footings are not formed, then footing excavations should be over-sized or sides sloped so that the caved materials do not end up in/under the footing area.

For footings founded at different levels in the vicinity of each other or located adjacent to excavated and backfilled areas, such as sewer/utility trenches etc., the slope of the imaginary line joining the bottom of two footings or the bottom of footing and excavation should not be steeper than 1.5 horizontal to 1 vertical. Preferably footings at the lower levels be excavated/poured first to prevent undermining of footings located at higher elevations.

The base conditions at the footing founding levels should be observed by a soil engineer from our office prior to pouring concrete, to ensure that the design bearing pressures are being attained. During sub-zero temperatures founding soils and footings must be adequately protected to prevent damage due to freezing/adfreezing/frost penetration using insulated or thermal blankets or straw.

For frost protection, a minimum 900 mm soil cover should be provided for the interior/isolated footings located in the unheated two level of underground parking garage areas. For perimeter wall footings 600mm depth is a common practice in GTA. However, in the garage entrance areas and air shaft/ventilation locations, a minimum 1.2 m earth cover should be provided or a combination of earth cover and insulation should be provided.

7.3 Earthquake Considerations

The 2012 OBC Subsection 4.1.8.7 stipulates that earthquake design for building should be based on the average properties of the top 30 m soil profile.

The parameters for determining the Site Classification for Seismic Site Response are given in Table 4.1.8.4A of the 2012 OBC. The Site Classification for Seismic Site Response (Table 4.1.8.4.A) is based on the average shear wave velocity or Standard Penetration Resistance (N60), or the undrained shear strength of the soils (Su).

Based on the results of the current geotechnical investigation, the site designation for seismic analysis applicable for the proposed development is expected to be "**Class C**". However, shear wave velocity measurement may be required to confirm the classification.

7.4 Underground Parking Garage

The underground structure should be equipped with efficient drainage system, which includes the perimeter weeping tiles around the bottom of the garage wall footings and the interior weeping tiles below the floor slab. The perimeter weepers should be surrounded by clear stone or pea gravel encased in a granular filter or filter cloth. Both weepers should be connected to independently positive frost-free sump pits from where the water is constantly removed.

Where there is insufficient space for the installation of exterior perimeter weeping tiles, the drainage system can be modified by providing vertical drainage between the garage walls and the adjacent shoring. A series of drain holes should be precast through the walls below the garage

floor slab level, forming a complete drainage path to the interior weeping tiles placed beside the garage wall footings.

Underfloor weeping tile drainage system should be provided under the floor slab to release any potential uplift pressure on the slab-on-grade. Top of the underfloor drain should be located below the bottom of granular bedding layer. The drains should be encased in 150 mm of clear stone/pea gravel wrapped in geotextile filter and connected positively to sump pit. The geotextile filter should have equipment opening size of less than 60 µm. A filter fabric should be provided for separation and to prevent migration of the subgrade soils where groundwater is anticipated to rise above the subgrade levels.

Damp or water proofing of garage floor slab will be required depending upon the potential/anticipated highest groundwater table/elevations.

The entire drainage system should be designed by competent professionals, to ensure its capacity and effectiveness concerning the efficient transmittal of volume of water generated without any migration of fines from the surrounding soils.

In the event of power or mechanical failure, a backup system should be designed for pumping/dewatering operations. Water relief valves/plates may be installed in the garage floor slab to relieve any excess hydrostatic pressure in the event of malfunction of the drainage system. The floor slab should also be designed to accommodate the maximum allowable pressure for relief valves.

The lowest floor slab can be constructed as slab-on-grade. After excavating to the desired level, any loose or wet soil should be sub-excavated and replaced with granular material compacted to 98% of the Standard Proctor Maximum Dry Density. A 19 mm clear stone granular bedding of at least 200 mm in thickness should be provided.

The modulus of subgrade reaction for slab-on-grade design of 40MN/m^3 can be used provided the subgrade is undisturbed/adequately compacted & granular bedding is well compacted.

The parking garage walls under free drainage conditions, can be designed for a lateral earth pressure P, as given by the following expression:

$$P = K (\gamma h + q)$$

where K = Coefficient of earth pressure

γ = Unit weight of soil

Q = Surcharge load, if any

Design parameters K, γ are suggested in section 7.5 of this report.

If the perimeter/underfloor drainage systems are not feasible or permitted, water tight structure (bath tub) design (full or partial) is adopted then impacted lowest parking garage floor slab must be designed to resist hydrostatic/uplift pressures and water-proofed. Potential/anticipated highest groundwater level during the life of the structure should be used for determining the water pressures. Parking garage walls should be waterproofed to at least 1m above the highest water level.

For a waterproofed basement, the lateral earth pressures acting on basement walls may be calculated from the following expression:

$$p = K (\gamma h_1 + \gamma' h_2 + q) + \gamma_w h_2$$

where
- p = lateral earth pressure in kPa acting at depth h
- K = earth pressure coefficient, assumed to be 0.4 for vertical walls and horizontal backfill
- γ' = submerged unit weight of backfill of 12kN/m^3 may be assumed
- γ_w = Unit weight of water, a value of 10kN/m^3 can be used
- h_1 = depth to the highest groundwater table in metre
- h_2 = depth below water table in metres
- q = Equivalent value of surcharge on the ground surface in kPa

7.5 Excavation / Shoring

It is understood that the excavation for the proposed structure may extend to the depth of 10m or more. According to the Ontario Occupational Health and Safety Act, all excavations deeper than 1.2m should be adequately supported against ground collapse.

As the space will be limited for a safe excavation slope, we consider that a vertical shoring system would be appropriate for the overall parking garage system.

All structural members should be designed in accordance with relevant codes of practice.

The following soil parameters can be used in the evaluation of lateral earth pressures and design of the shoring system.

	FILL	COMPACT SILTY SAND	SILTY SAND/ SAND/GRAVELLY SAND
Unit weight, γ, kN/m^3	18	20.0	21.0
Coefficient of earth pressure at rest (K_0)	0.48	0.36	0.40
Coefficient of active earth pressure (Ka)	0.35	0.33	0.28
Coefficient of passive earth pressure (Kp)	2.86	3.00	3.57

Extra care will be required to install shoring support system due to anticipated ground water at/below the approximate depth of 7.5m. Furthermore, obstructions from cobbles/boulders will likely be encountered while auguring shaft holes for soldier pile installation.

Excavations extending into water bearing sand/silty sand should not proceed until the dewatering has carried out to bring the wet sand into moist state. We recommend that a dewatering consultant should be engaged/retained to design appropriate system for lowering the water table to the desired/anticipated elevations without migration of fines. Dewatering system should be kept in operation/maintained/monitored until the sub-structure is built up to the height to balance the uplift pressure.

The excavation sides should be protected to prevent any erosion/migration/flowing or washing out of soils from surface water ingress or water bearing wet pockets/layers. Provision of filler fabric may be required to prevent any migration of soils into the excavation. Any cavities behind the lagging should be filled up with compacted soils or unshrinkable fill to prevent their progression into surrounding areas.

Temporary shoring/tie-backs should be designed in accordance with the Canadian Foundation Engineering Manual, 4th Edition. An estimated bond stress value of 65kN/m can be used for preliminary design of soil anchors. It should be noted that inclination, method of grouting/installation etc. influence the bond stress values. Design bond stress should be confirmed by load testing to 200% design load.

Raker pads if required can be designed using soil bearing pressure of 200kPa. Subsoil conditions at the raker founding levels must be observed by our field staff to ensure that they are placed over undisturbed native soils and surrounding soils are not disturbed due to groundwater conditions/excavation operations.

It should also be noted that if raker pad option is adopted for shoring support system, dewatering will also be required for their foundations as typically these pads are 1.2m to 1.5m deep and are located below the building footing founding levels.

Due to presence of water bearing deposits/layers, tie-back holes should be cased during installation to minimize risk of caving. Shoring contractor must provide adequate measures to prevent any caving of loose soils or flow of soils due to ground water into the augured holes during soldier pile installation operations. Temporary safety liners must be used during soldier pile installation and the withdrawal of liner should be slow and coordinated with pouring of concrete/u-fill.

8. EXCAVATION / VIBRATION MONITORING

We understand that two stage tie backs are being proposed for the proposed soldier pile/lagging support purposes. It should be noted that encroachment agreements will be required with the adjacent property owners. If the above agreements are not feasible/achievable then raker pads may be used for the soldier pile support purposes.

Zone of influence for excavation wall movements/displacements can be estimated as 12m beyond the property lines. All the control network points should be located outside the above zone of influence. Reflective targets should be installed at the top of each soldier pile and for each tie-back to monitor the movement of shored walls during and after excavation. Precision targets should be installed on the neighbouring structures within the zone of influence to ensure they are not being impacted by the construction activities on the subject site.

Construction activities for the proposed development such as drilled caissons, soil compaction etc. may generate vibrations which could be perceptible to the nearby residents or sensitive to the adjacent structures. Construction activity vibrations must be limited to the maximum peak particle velocity (PPV) as outlined/regulated by the local/regional/provincial authorities or an expert/qualified person in vibration monitoring and control. Frequency & duration of monitoring and zone of influence due to vibration should also be established by or in accordance with the recommendations by the qualified person.

Pre and post construction surveys should be undertaken to document the existing conditions of properties/infrastructure/structures prior to the start of construction and at the end of project for determining/establishing any substantial changes resulting from construction within the zones of influence.

9. CHEMICAL ANALYSES

One soil sample was submitted to Fisher Environmental laboratories for chemical analyses related to potential sulphate attack on buried concrete. Results of testing are presented in Appendix C.

The chemical analyses that the sulphate concentration in the soil sample is 9.4ppm or 0.00094%. According to CSA-A23. 1-09 Table 3, the result indicates negligible degree of exposure to sulphate attack.

10. GENERAL CONSIDERATIONS

This report is limited in scope to those items specifically referenced in the text. No other testing and design calculations have been performed except as specifically reported.

The discussions and recommendations presented in this report are intended for the sole guidance of the client named and the design consultants. It should not be relied upon for any other purpose.

The information on which these recommendations are based is subject to confirmation by engineering personnel at the time of construction.

The fact that localised variations in the subsurface conditions may be present between and beyond the boreholes and that those conditions may be significantly different from the general description provided for design purposes should be understood.

Contractors bidding on or undertaking the work should decide on their own investigations, as well as their own interpretations of the factual borehole results. This concern specifically applies to the classification of the subsurface soils and the potential reuse of these soils on/off Site. Contractors must draw their own conclusions as to how the near surface and subsurface conditions may affect them.

It is strongly urged that Fisher be contacted to provide assistance in the interpretation of the borehole records by anyone undertaking work on/or below the ground surface at this site prior to this work being carried out.

The client expressly agrees that it has entered into this agreement with Fisher, both on its own behalf and as agent on behalf of its employees and principals.

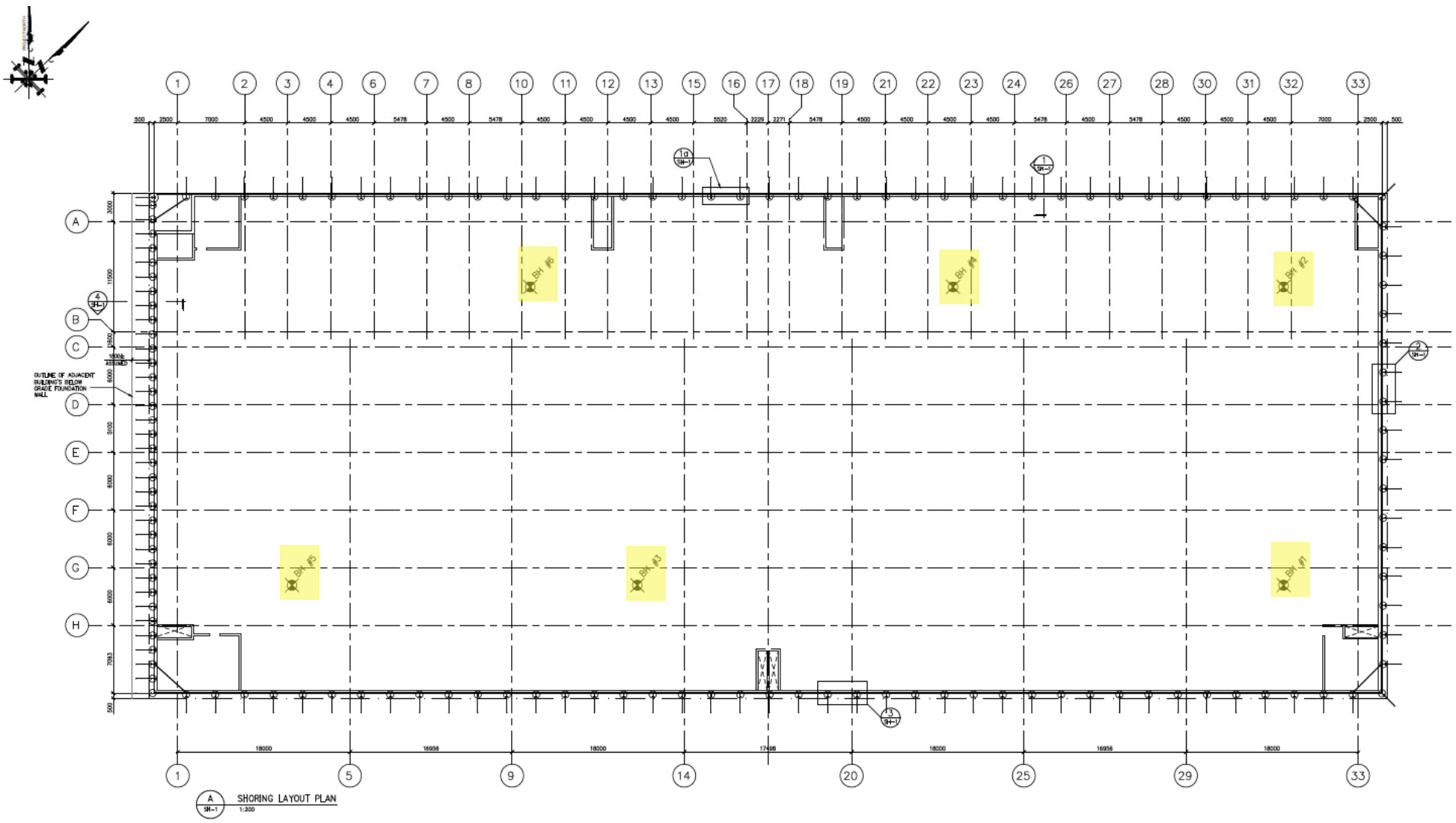
The client expressly agrees that Fisher's employees and principals shall have no personal liability to the client in respect of a claim, whether in contract, tort and/or any other cause of action in law.

Accordingly, the client expressly agrees that it will bring no proceedings and take no action in any court of law against any of Fisher's employees or principals in their personal capacity.

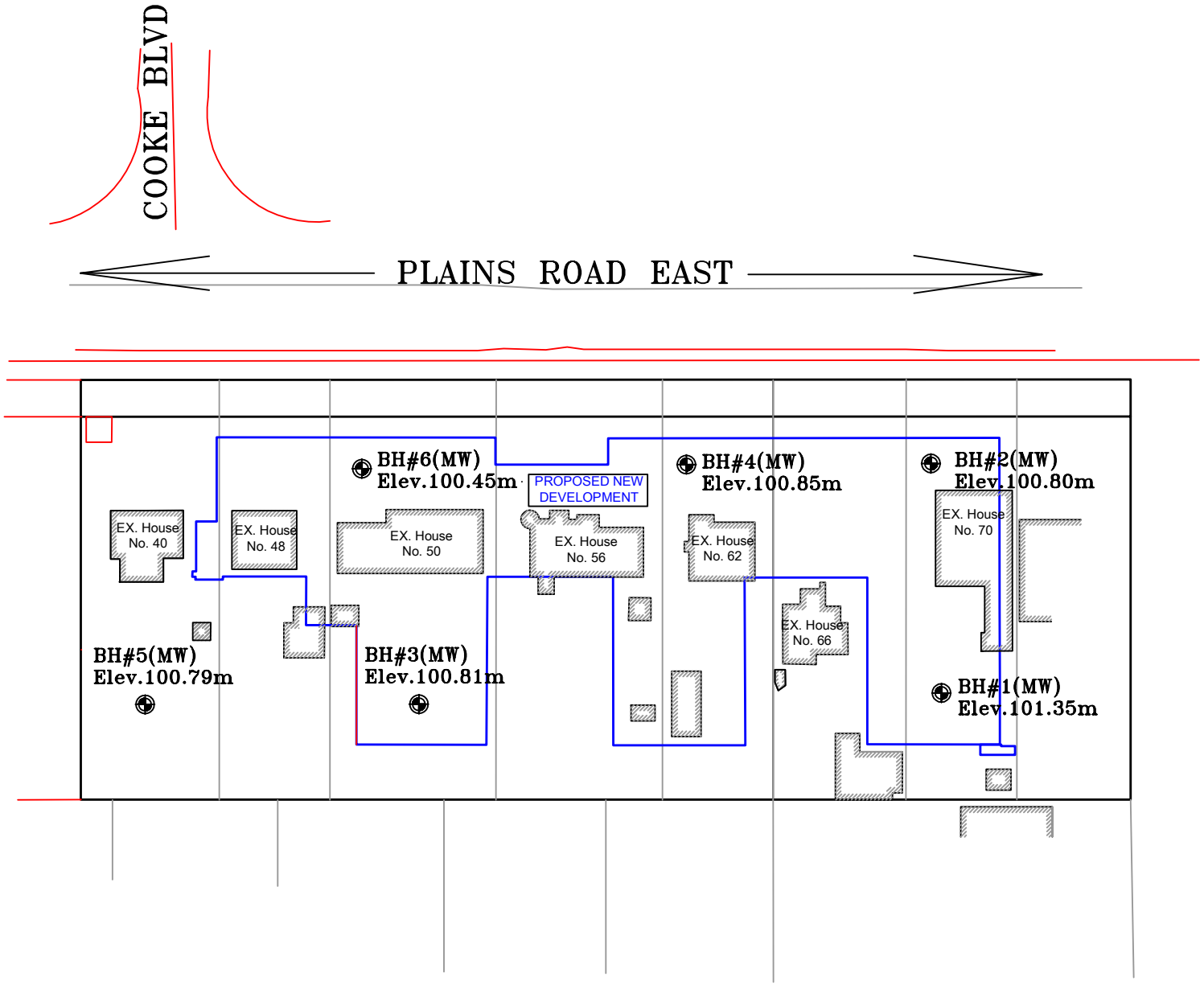
11. CLOSING

We trust that the foregoing information is sufficient for your present needs and will be pleased to review the contents of this report in greater detail should you so require. Should you require our services further in this regard, please do not hesitate to contact our office.

APPENDIX A – SITE PLAN



A SHORING LAYOUT PLAN
SH-1
1:200



FISHER ENGINEERING
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Markham, Ontario
L3R 3K2
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Fax: 905 475-7718

NORTH

LEGEND

Borehole with Monitoring Well

PROJECT NAME AND ADDRESS

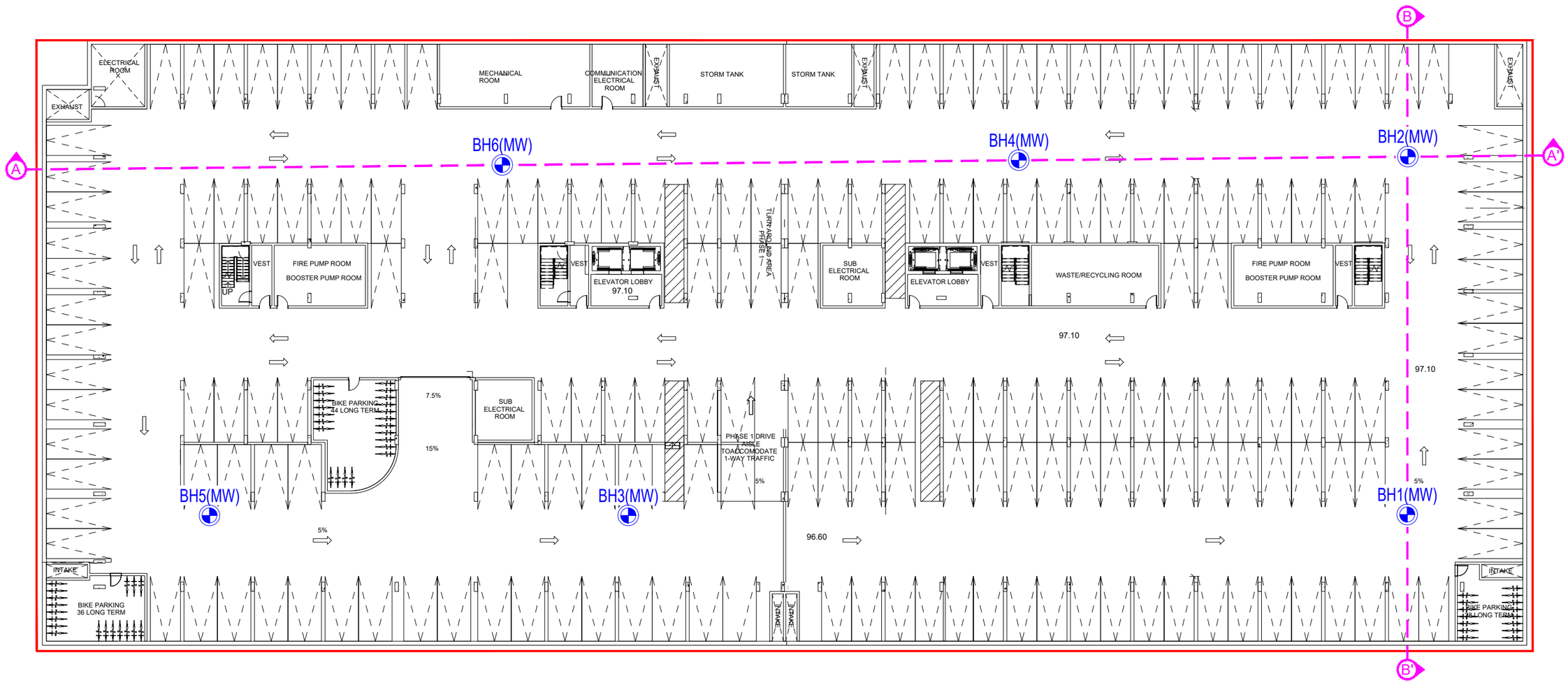
GEOTECHNICAL AND HYDROGEOLOGICAL INVESTIGATIONS

40-70 PLAINS RD. E., BURLINGTON, ONTARIO

FIGURE 1:

SITE PLAN WITH APPROXIMATE BOREHOLE LOCATIONS

PROJECT NO.	SHEET NO.
FE-P 20-10328/29	1
DATE: JUNE 2020	
SCALE: AS SHOWN	



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Fax: 905 475-7718

NORTH

LEGEND

SITE BOUNDARY

BOREHOLE/ MONITORING WELL

CROSS SECTION MARK

PROJECT NAME AND ADDRESS

HYDROGEOLOGICAL & GEOTECHNICAL INVESTIGATIONS

40-70 Plains Rd. East,.
Burlington, Ontario

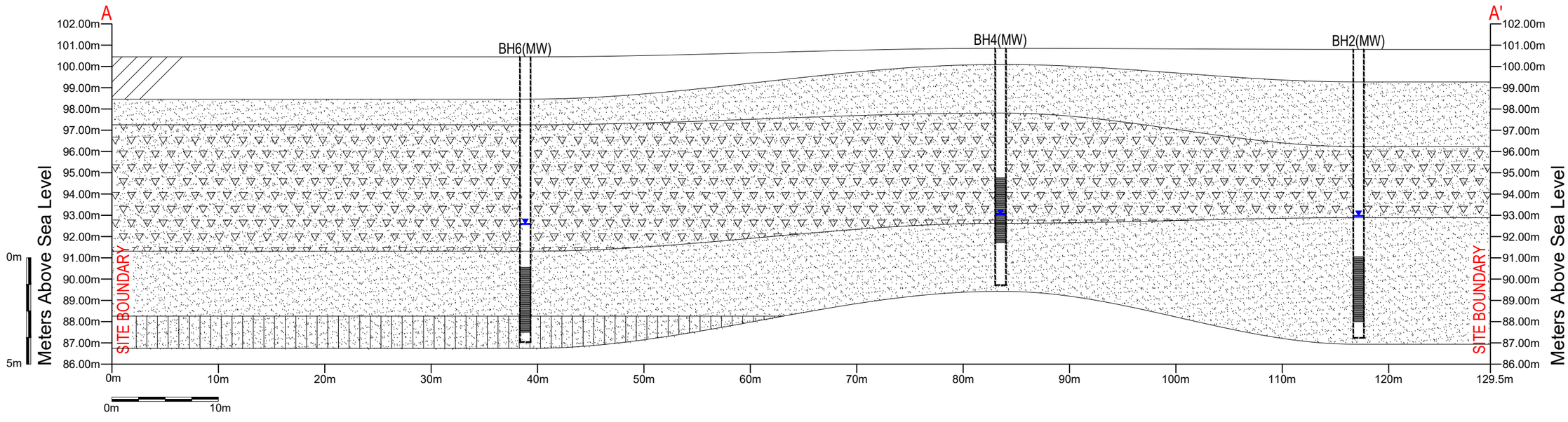
PROJECT NO. FE-P 20-10328

DATE. 11 March 2021

SCALE. AS SHOWN

FIGURE 1: Site Plan With Approximate Borehole Locations

SHEET NO. 1



FISHER ENGINEERING

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L3R 3K2

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NORTH

LEGEND

FILL
SILT
SAND
GROUNDWATER POTENTIOMETRIC LEVEL
GRAVEL

PROJECT NAME AND ADDRESS

GEOTECHNICAL INVESTIGATION

40-70 Plains Rd. East,.
Burlington, Ontario

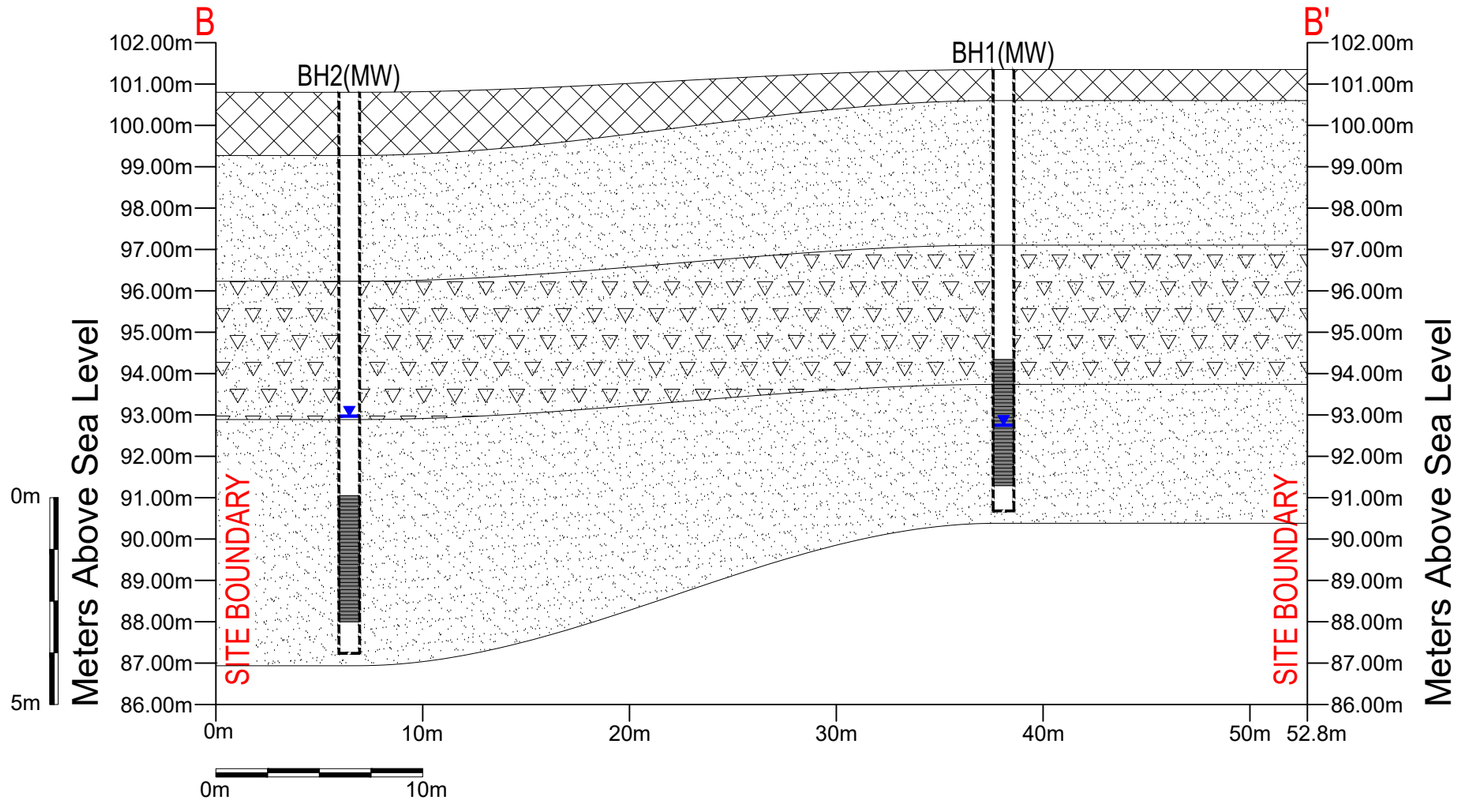
PROJECT NO.
FE-P 20-10328

DATE.
22 July 2020

SCALE.
AS SHOWN

FIGURE 2:
CROSS SECTION A-A'

SHEET NO.
2



FISHER ENGINEERING

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Markham, Ontario
L3R 3K2

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NORTH

LEGEND

FILL

SAND

GRAVEL

GROUNDWATER POTENTIOMETRIC LEVEL

PROJECT NAME AND ADDRESS

GEOTECHNICAL INVESTIGATION

40-70 Plains Rd. East,.
Burlington, Ontario

PROJECT NO.
FE-P 20-10328

DATE.
22 July 2020

SCALE.
AS SHOWN

FIGURE 3:
CROSS SECTION B-B'

SHEET NO.
3

COOKE BLVD

℄ OF ROAD

BACK OF CURB

GUTTER

STM MH
RIM=99.85
INV IN=97.55 #1.2
INV IN=97.03 #1.3

PLAINS ROAD EAST

(ROAD ALLOWANCE BETWEEN BROKEN FRONT CONCESSION AND CONCESSION 1)

PIN 07122-002

℄ OF ASPHALT

OVERHEAD WIRE

EDGE OF GUTTER

MSC. PLAN 153

SIDEWALK

PART 1
PLAN 20R-310

PART 11
PLAN 20R-789

PART 10
PLAN 20R-789

PART 9
PLAN 20R-789

PART 8
PLAN 20R-789

PART 7
PLAN 20R-789

PART 6
PLAN 20R-789

PART 5
PLAN 20R-789

PART 4
PLAN 20R-789

167.69

19.05

15.24

22.86

N43°34'30"E

22.91

15.24

18.29

15.54

144.67

52.73

1 1/2 STOREY BRICK & VINYL DWELLING # 40

1 1/2 STOREY BRICK & VINYL DWELLING # 46

1 1/2 STOREY BRICK & VINYL DWELLING # 50

1 1/2 STOREY BRICK & VINYL BUILDING # 50

2 STOREY STUCCO BUILDING # 56

1 STOREY STONE BUILDING # 62

1 STOREY STONE BUILDING # 66

1 1/2 STOREY BRICK BUILDING # 70

1 STOREY STONE BUILDING # 992

1 1/2 STOREY VINYL BUILDING # 982

PIN 07117-0050

PIN 07117-0051

PIN 07117-0052

PIN 07117-0053

PIN 07117-0054

PIN 07117-0055

PIN 07117-0056

PIN 07117-0003

PIN 07117-0004

PIN 07117-0005

LOT 16
PIN 07117-0065

LOT 15

LOT 14
PIN 07117-0067

LOT 13
PIN 07117-0068

LOT 12
PIN 07117-0069

LOT 1

LOT 2

LOT 3

PART OF LOT 6

BROKEN FRONT CONCESSION

REGISTERED PLAN 779 (PF)

BIRCHWOOD AVENUE

N46°25'30"W

N46°29'30"W

N46°20'05"E

N46°59'30"E

152.40

22.81

15.84

Benchmark Note:

CITY OF BURLINGTON BENCHMARK No. 298
ELEVATION = 97.915 METRES CGVD 1928:1978 ADJUSTMENT

BENCHMARK SET ON CITY PLATE N SOUTH FACE AT SOUTHEAST CORNER OF GLENVIEW PUBLIC SCHOOL, No. 143 TOWNSEND AVENUE.

Legend :

- ⌀ DENOTES ROUND
- ℄ DENOTES CENTRE LINE
- SAN MH DENOTES SANITARY MANHOLE
- STM MH DENOTES STORM MANHOLE
- CB DENOTES CATCH BASIN
- BMH DENOTES BELL MANHOLE
- LS DENOTES LIGHT STANDARD
- HP DENOTES HYDRO POLE
- GW DENOTES GUY WIRE
- WV DENOTES WATER VALVE
- AC DENOTES AIR CONDITIONER
- MB DENOTES MAIL BOXES
- MB DENOTES MAIL BOX
- FH DENOTES FIRE HYDRANT

FFE DENOTES FIRST FLOOR ELEVATION
GM DENOTES GAS MARKER
GMR DENOTES GAS METRE

DENOTES DECIDUOUS TREE

DENOTES CONIFER TREE

APPENDIX B – LOG OF BOREHOLES

FISHER ENGINEERING

LOG OF BOREHOLE NO. BH1(MW) SHEET. 1 of 1

PROJECT NO.: FE-P 20-10328 & 20-10329

PROJECT NAME: Geotechnical and Hydrogeological Investigations

LOCATION: 40-70 Plains Road. E., Burlington, ON.

DRILLING METHOD: D-50, Hollow Stem

DRILLING DATE: May 26, 2020

DEPTH (feet)	DEPTH (metres)	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	LAB ID	SAMPLES Type NO.	"N" VALUE
		GROUND SURFACE (m asl)		101.35			
0	0	FILL: dark brown to brown silty sand, some to trace of topsoil/roots, moist.				SS-1	4
0.76m				100.59			
4	1					SS-2	11
6	2	REDDISH BROWN TO BROWN FINE TO MEDIUM SAND: trace to some silt, moist, compact.				SS-3	19
8	2					SS-4	29
10	3					SS-5	25
12	4						
4.27m				97.08			
16	5	BROWN SAND & GRAVEL TO GRAVELLY SAND: moist, very dense.				SS-6	100+
18							
20	6					SS-7	100+
22	7						
7.62m				93.73			
26	8	BROWN TO GREYISH BROWN SAND: some to trace of gravel/silt, moist, wet below 9.14m, very dense to compact.				SS-8	58
28	9						
30						SS-9	17
32	10						
10.67m				90.68			
36	11	End of Borehole					
38							
40	12						
42							
44	13						
46	14						
48							
50	15						
52	16						
54							
56							

PENETRATION TESTING (SPT) ▲ 20 40 60 80

SHEAR STRENGTH (Kpa) ✤ 40 80 120 160

(Possibly Disturbed)

VAPOUR READING (ppm) □ 20 40 60 80

MOISTURE CONTENT (%) ● 10 20 30 40

5.6%

6.0%

3.4%

3.7%

PIEZOMETER OR WELL CONSTRUCTION

Flush Mount Cover

Bentonite Pellets

50mm blank PVC

50mm Slotted Pipe

Silica Sand

10.06m

Groundwater Depth on completion: 8.08m

LOGGED: FF

CHECKED: RC

FISHER ENGINEERING

LOG OF BOREHOLE NO. BH2(MW) SHEET. 1 of 1

PROJECT NO.: FE-P 20-10328 & 20-10329

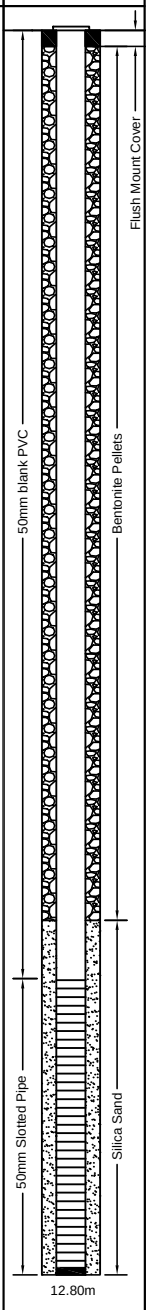
PROJECT NAME: Geotechnical and Hydrogeological Investigations

LOCATION: 40-70 Plains Road. E., Burlington, ON.

DRILLING METHOD: CME-75, Hollow Stem

DRILLING DATE: June 4, 2020

DEPTH (feet)	DEPTH (metres)	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	LAB ID	SAMPLES Type NO.	"N" VALUE	PENETRATION TESTING (SPT) ▲ 20 40 60 80 / SHEAR STRENGTH (Kpa) ✤ 40 80 120 160	VAPOUR READING (ppm) □ 20 40 60 80 / MOISTURE CONTENT (%) ● 10 20 30 40	PIEZOMETER OR WELL CONSTRUCTION
0	0	GROUND SURFACE (m asl)		100.80						
		FILL: dark brown to brown silty sand, some to trace of topsoil/roots, moist.				SS-1	6			
2						SS-2	10			
4	1									
		1.52m		99.28						
6		BROWN FINE TO MEDIUM SAND: trace to some silt/gravel, occasional cobbles, moist, compact to very dense.				SS-3	11			
8	2					SS-4	37			
10						SS-5	100+			
12	3									
14	4									
		4.57m		96.23						
16		BROWN SAND & GRAVEL TO GRAVELLY SAND: trace to some silt, moist, very dense.				SS-6	100+			
18	5									
20						SS-7	100+			
22	6									
24	7									
		7.92m		92.88						
26	8	GREYISH BROWN TO GREY SAND: trace to some silt/gravel, wet, dense to compact.				SS-8	42			
28										
30	9					SS-9	25			
32										
34	10									
36	11					SS-10	16	(Possibly Disturbed)		
38										
40	12					SS-11	15	(Possibly Disturbed)		
42										
44	13					SS-12	21	(Possibly Disturbed)		
		13.56m		87.24						
46	14	End of Borehole								
48										
50	15									
52	16									
54										
56										



Groundwater Depth on completion: 7.77m

LOGGED: CW

CHECKED: RC

FISHER ENGINEERING

LOG OF BOREHOLE NO. BH3(MW) SHEET. 1 of 1

PROJECT NO.: FE-P 20-10328 & 20-10329

PROJECT NAME: Geotechnical and Hydrogeological Investigations

LOCATION: 40-70 Plains Road. E., Burlington, ON.

DRILLING METHOD: Bombadier, Hollow Stem

DRILLING DATE: June 18, 2020

DEPTH (feet)	DEPTH (metres)	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	LAB ID	SAMPLES Type NO.	"N" VALUE
		GROUND SURFACE (m asl)		100.81			
		FILL: dark brown to brown silty sand, some to trace of topsoil/roots, moist.				SS-1	7
						SS-2	4
4	1	1.37m		99.44			
		REDDISH BROWN TO BROWN SAND: trace to some silt, occasional seam of very moist/wet sandy silt, moist, compact.				SS-3	11
						SS-4	19
10	3	3.35m		97.46		SS-5	15
		BROWN SAND AND GRAVEL TO GRAVELLY SAND: trace to some silt, occasional cobbles, moist, compact to very dense.				SS-6	100+
						SS-7	100+
24	7	7.62m		93.19			
		BROWN SAND: trace to some silt/gravel, layers of silt/sandy silt below 9.14m, moist, wet below 9.14m, dense to compact.				SS-8	37
						SS-9	20
						SS-10	23
						SS-11	40
42	12	12.65m		88.16			
		End of Borehole					

PENETRATION TESTING (SPT) ▲ 20 40 60 80
SHEAR STRENGTH (Kpa) ✙ 40 80 120 160
VAPOUR READING (ppm) □ 20 40 60 80
MOISTURE CONTENT (%) ● 10 20 30 40

(Possibly Disturbed)
(Possibly Disturbed)

PIEZOMETER OR WELL CONSTRUCTION

Flush Mount Cover
50mm blank PVC
Bentonite Pellets
50mm Slotted Pipe
Silica Sand
12.19m

Groundwater Depth on completion: dry

LOGGED: CW CHECKED: RC

FISHER ENGINEERING

LOG OF BOREHOLE NO. BH4(MW) SHEET. 1 of 1

PROJECT NO.: FE-P 20-10328 & 20-10329

PROJECT NAME: Geotechnical and Hydrogeological Investigations

LOCATION: 40-70 Plains Road. E., Burlington, ON.

DRILLING METHOD: CME-75, Hollow Stem

DRILLING DATE: June 4, 2020

DEPTH (feet)	DEPTH (metres)	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	LAB ID	SAMPLES Type NO.	SAMPLES "N" VALUE
		GROUND SURFACE (m asl)		100.85			
		FILL: dark brown to brown silty sand, some to trace of topsoil/roots, moist.				SS-1	5
		0.76m		100.09			
		BROWN FINE TO MEDIUM SAND: trace to some silt, occasional trace of gravel, moist, compact.				SS-2	12
						SS-3	18
						SS-4	13
		3.05m		97.80			
		BROWN SAND & GRAVEL TO GRAVELLY SAND: trace to some silt, occasional cobbles/boulders, dry to moist, very dense.				SS-5	52
						SS-6	100+
						SS-7	100+
						SS-8	100+
		8.23m		92.62			
		GREYISH BROWN TO GREY SAND: trace of gravel/silt, wet, compact.				SS-9	28
						SS-10	30
		11.13m		89.72			
		End of Borehole					

PENETRATION TESTING (SPT) ▲ 20 40 60 80

SHEAR STRENGTH (Kpa) ✙ 40 80 120 160

VAPOUR READING (ppm) □ 20 40 60 80

MOISTURE CONTENT (%) ● 10 20 30 40

PIEZOMETER OR WELL CONSTRUCTION

Flush Mount Cover

Bentonite Pellets

50mm blank PVC

Silica Sand

50mm Slotted Pipe

9.14m

Groundwater Depth on completion: 7.77m

LOGGED: CW

CHECKED: RC

FISHER ENGINEERING

LOG OF BOREHOLE NO. BH5(MW) SHEET. 1 of 1

PROJECT NO.: FE-P 20-10328 & 20-10329

PROJECT NAME: Geotechnical and Hydrogeological Investigations

LOCATION: 40-70 Plains Road. E., Burlington, ON.

DRILLING METHOD: Bombadier, Hollow Stem

DRILLING DATE: June 18, 2020

DEPTH (feet)	DEPTH (metres)	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	LAB ID	SAMPLES Type NO.	"N" VALUE
0	0	GROUND SURFACE (m asl)		100.79			
0	0	FILL: dark brown to brown silty sand, some to trace of topsoil/roots, moist.				SS-1	7
4	1					SS-2	2
5	1.52m			99.27			
6	2	REDDISH BROWN SAND: trace to some silt/gravel, moist, loose.				SS-3	9
8	2					SS-4	7
9	2.74m			98.05			
10	3	BROWN SAND & GRAVEL TO GRAVELLY SAND: trace to some silt, layers of cobbles/boulders below 4.5m, moist, very dense.				SS-5	100+
14	4						
15	4.57m			96.22			
16	5	GRAVEL AND COBBLES: some brown sand, moist, very dense.				SS-6	100+
20	6					SS-7	79
20	6.25m			94.54			
22	7	End of Borehole					
24	7	Refusal to augering possibly due to boulder at 6.25m.					
26	8	BH caved in to 4.57m on completion.					
28	9						
30	9						
32	10						
34	10						
36	11						
38	11						
40	12						
42	13						
44	13						
46	14						
48	14						
50	15						
52	16						
54	16						
56							

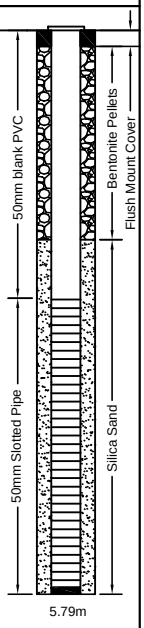
PENETRATION TESTING (SPT) ▲ 20 40 60 80

SHEAR STRENGTH (Kpa) ✙ 40 80 120 160

VAPOUR READING (ppm) □ 20 40 60 80

MOISTURE CONTENT (%) ● 10 20 30 40

PIEZOMETER OR WELL CONSTRUCTION



Groundwater Depth on completion:

LOGGED: CW

CHECKED: RC

FISHER ENGINEERING

LOG OF BOREHOLE NO. BH6(MW) SHEET. 1 of 1

PROJECT NO.: FE-P 20-10328 & 20-10329

PROJECT NAME: Geotechnical and Hydrogeological Investigations

LOCATION: 40-70 Plains Road. E., Burlington, ON.

DRILLING METHOD: CME-75, Hollow Stem

DRILLING DATE: June 5, 2020

DEPTH (feet)	DEPTH (metres)	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: LAB ID	SAMPLES: Type NO.	SAMPLES: "N" VALUE
		GROUND SURFACE (m asl)		100.45			
0	0	FILL: dark brown to brown silty sand, some to trace of topsoil/roots, moist.				SS-1	7
2						SS-2	3
4	1						
6						SS-3	3
	2	1.98m		98.47			
8		BROWN SAND: trace of gravel, some silt, moist, compact.				SS-4	13
10	3	3.20m		97.25		SS-5	62
12		BROWN SAND & GRAVEL TO GRAVELLY SAND: trace to some silt, occasional cobbles, moist to very moist, very dense.					
	4						
14							
16						SS-6	100+
	5						
18							
20	6					SS-7	100+
22							
	7						
24							
26						SS-8	100+
	8						
28							
30	9	9.14m		91.31		SS-9	100+
32		GREYISH BROWN MEDIUM SAND: some silt, wet, very dense.					
	10						
34							
36	11					SS-10	69
38							
	12	12.19m		88.26			
40		GREY SILTY SAND: trace of gravel, wet, dense.				SS-11	48
42	13						
		13.41m		87.04		SS-12	44
44		End of Borehole					
46	14						
48							
50	15						
52	16						
54							
56							

PENETRATION TESTING (SPT) ▲ 20 40 60 80
SHEAR STRENGTH (Kpa) ✙ 40 80 120 160

VAPOUR READING (ppm) □ 20 40 60 80
MOISTURE CONTENT (%) ● 10 20 30 40

9.0%
5.2%
5.5%
13.0%

PIEZOMETER OR WELL CONSTRUCTION

Flush Mount Cover
50mm blank PVC
Bentonite Pellets
50mm Slotted Pipe
Silica Sand
12.95m

Groundwater Depth on completion: 8.23m

LOGGED: CW CHECKED: RC

APPENDIX C – MOISTURE CONTENT AND GRAIN SIZE ANALYSES RESULTS

FISHER ENVIRONMENTAL LABORATORIES

FULL RANGE ANALYTICAL SERVICES • SOIL/WATER/AIR TESTING • ENVIRONMENTAL COMPLIANCE PACKAGES • 24 HOUR EMERGENCY RESPONSE • CALA ACCREDITED

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TEL: 905 475-7755
FAX: 905 475-7718
www.fisherenvironmental.com

Client: 40-70 Plains Road
Address:

Tel.:
Email:
Attn.:

F.E. Job #: 20-4617
Project Name: 40-70 Plains Road
Project ID: FE-P 20-10328
Date Sampled: 5-Jun-2020
Date Received: 5-Jun-2020
Date Reported: 15-Jun-2020
Location: 40-70 Plains Road
Toronto, ON

Certificate of Analysis

Analyses	Matrix	Quantity	Date Extracted	Date Analyzed	Lab SOP	Method Reference
pH	Soil	1	9-Jun-20	9-Jun-20	pH-EC-SAR F-16	SW-846, 9045D
Chloride	Soil	1	N/A	15-Jun-20	Chloride F-20	SM 4500-Cl-E
Sulphate	Soil	1	9-Jun-20	15-Jun-20	Sulphate F-21	SM 4500-SO_4
Moisture Content	Soil	8	N/A	5-Jun-20	Support Procedures F-99	Carter (1993)
Grain Size	Soil	8	N/A	9-Jun-20	Grain Size F-28	ASTM D6913-04

Fisher Environmental Laboratories is accredited by CALA (the Canadian Association for Laboratory Accreditation Inc.) for specific parameters as required by Ontario Regulation 153/04. All analytical testing has been performed in accordance with ISO 17025 and the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act published by Ontario Ministry of the Environment.

Authorized by:

Roger Lin, Ph. D., C. Chem.
Laboratory Manager

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
Ronggen (Roger) Lin
CHEMIST

Results related only to the items tested

Certificate of Analysis

Analysis Requested:	Sulphate, Chloride, pH, Moisture Content, Grain Size
Sample Description:	8 Soil Samples

Parameter	***20-4617-6*** BH1 SS5					**Soil Standards** *
pH *(pH unit)*	9.31					(5-11) 5-9

* Surface soil pH value from 5 - 9, Sub-surface soil pH value from 5-11.

QA/QC Report

Parameter	**LCS**	**AR**	**Duplicate**	**AR**		
	Absolute Difference *(pH Unit)*					
pH *(pH unit)*	7.05	6.90-7.20	0.15	<0.3		

LEGEND:
LCS - Laboratory Control Sample
AR - Acceptable Range

Results related only to the items tested

Certificate of Analysis

Analysis Requested:	Sulphate, Chloride, pH, Moisture Content, Grain Size
Sample Description:	8 Soil Samples

Parameter	***20-4617-6*** BH1 SS5					
	Concentration (µg/g)					
Chloride in Soil	2.8					

< result obtained was below RL (Reporting Limit).

QA/QC Report

Parameter	**Blank**	**RL**	**LCS**	**AR**	**MS**	**AR**
	(µg/g)		**Recovery (%)**		**Recovery (%)**	
Chloride in Soil	<10	10	94	70-130	110	70-130

Parameter	**Duplicate**	**AR**				
	RPD (%)					
Chloride in Soil	3.6	0-20				

LEGEND:

RL - Reporting Limit
LCS - Laboratory Control Sample
MS - Matrix Spike
AR - Acceptable Range
RPD - Relative Percent Difference

Results related only to the items tested

Certificate of Analysis

Analysis Requested:	Sulphate, Chloride, pH, Moisture Content, Grain Size
Sample Description:	8 Soil Samples

Parameter	***20-4617-6*** BH1 SS5					
Sulphate *(mg/kg)*	9.4					

QA/QC Report

Parameter	**Blank**	**RL**	**LCS/Spike**	**AR**	**Duplicate**	**AR**
	(mg/kg)		**Recovery (%)**		**RPD (%)**	
Sulphate	9.4	1	95	70-130	15	0-30

LEGEND:
RL - Reporting Limit
LCS - Laboratory Control Sample
AR - Acceptable Range
RPD - Relative Percent Difference

Results related only to the items tested

Certificate of Analysis

Analysis Requested:	Sulphate, Chloride, pH, Moisture Content, Grain Size
Sample Description:	8 Soil Samples

Parameter	***20-4617-1*** MW6 1.50-1.95m	***20-4617-2*** MW6 3.00-3.45m	***20-4617-3*** MW6 4.55-5.00m	***20-4617-4*** MW6 7.55-8.05m	***20-4617-5*** BH1 SS3	***20-4617-6*** BH1 SS5
Moisture Content (%)	9.0	5.2	5.5	13	5.6	6.0

Parameter	***20-4617-7*** BH1 SS7	***20-4617-8*** BH1 SS8				
Moisture Content (%)	3.4	3.7				

QA/QC Report

Parameter	**Blank**	**RL**	**LCS**	**AR**	**Duplicate**	**AR**
			Recovery (%)		**RPD (%)**	
Moisture Content (%)	<0.1	0.1	100	70-130	10.6	0-20

LEGEND:
RL - Reporting Limit
LCS - Laboratory Control Sample
AR - Acceptable Range
RPD - Relative Percent Difference

Results related only to the items tested

Certificate of Analysis

Analysis Requested:	Sulphate, Chloride, pH, Moisture Content, Grain Size
Sample Description:	8 Soil Samples

Parameter	***20-4617-1*** MW6 1.50-1.95m	***20-4617-2*** MW6 3.00-3.45m	***20-4617-3*** MW6 4.55-5.00m	***20-4617-4*** MW6 7.55-8.05m	***20-4617-5*** BH1 SS3	***20-4617-6*** BH1 SS5
Grain Size (%)						
>19mm	0.0	0.0	0.0	0.0	0.0	0.0
9.5mm-19mm	9.3	0.0	2.0	2.9	0.0	0.0
4.75mm-9.5mm	5.0	3.1	10.3	3.2	0.7	1.5
1.18m-4.75mmm	7.8	6.7	34.3	4.6	2.7	1.9
300um-1.18mm	15.3	19.6	15.9	14.9	40.4	64.6
75um-300um	41.0	52.8	20.4	53.0	39.1	20.5
<75um	21.6	17.8	17.2	21.4	17.0	11.4
Clay & Silt	**22**	**18**	**17**	**21**	**17**	**11**
Sand	**64**	**79**	**70**	**72**	**82**	**87**
Gravel	**14**	**3**	**12**	**6**	**1**	**2**

Results related only to the items tested

Certificate of Analysis

Analysis Requested:	Sulphate, Chloride, pH, Moisture Content, Grain Size
Sample Description:	8 Soil Samples

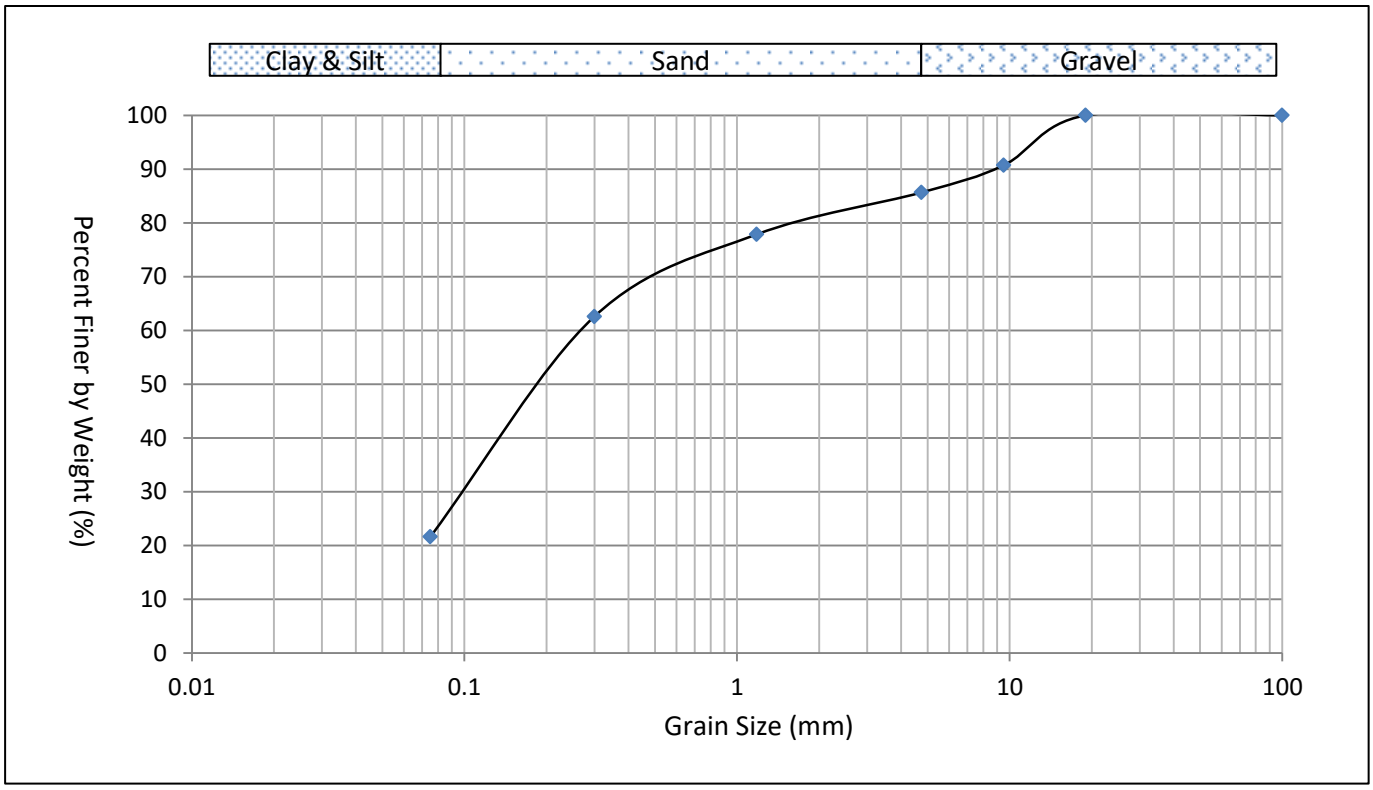
Parameter	***20-4617-7*** BH1 SS7	***20-4617-8*** BH1 SS8				
Grain Size (%)						
>19mm	0.0	0.0				
9.5mm-19mm	2.2	3.2				
4.75mm-9.5mm	16.8	10.9				
1.18m-4.75mmm	35.5	26.8				
300um-1.18mm	23.2	22.5				
75um-300um	7.4	24.7				
<75um	14.9	11.9				
Clay & Silt	**15**	**12**				
Sand	**66**	**74**				
Gravel	**19**	**14**				

Results related only to the items tested

Grain Size Distribution

Sample ID: 20-4617-1 MW6 1.50-1.95m

Clay & Silt: 22% Sand: 64% Gravel: 14%

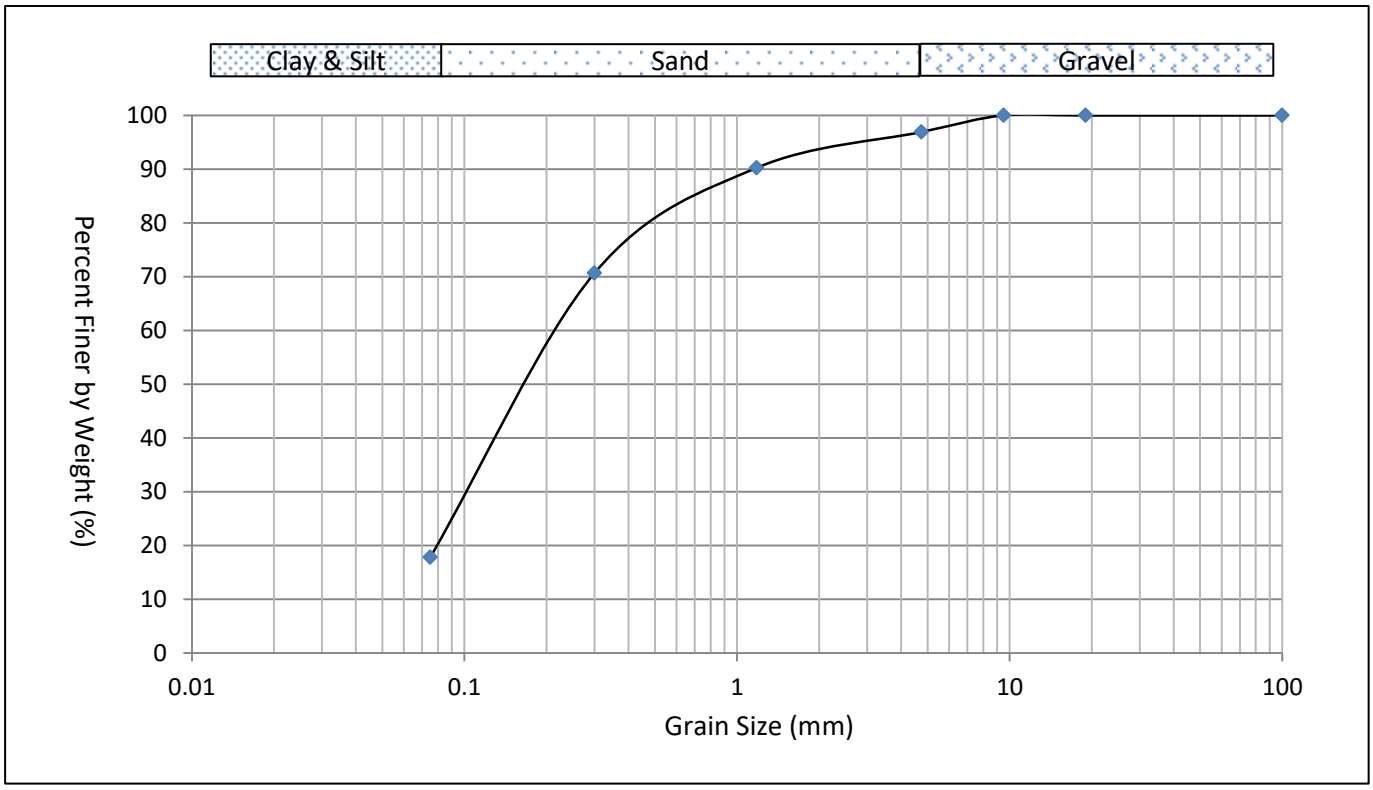


Results related only to the items tested

Grain Size Distribution

Sample ID: 20-4617-2 MW6 3.00-3.45m

Clay & Silt: 18% Sand: 79% Gravel: 3%

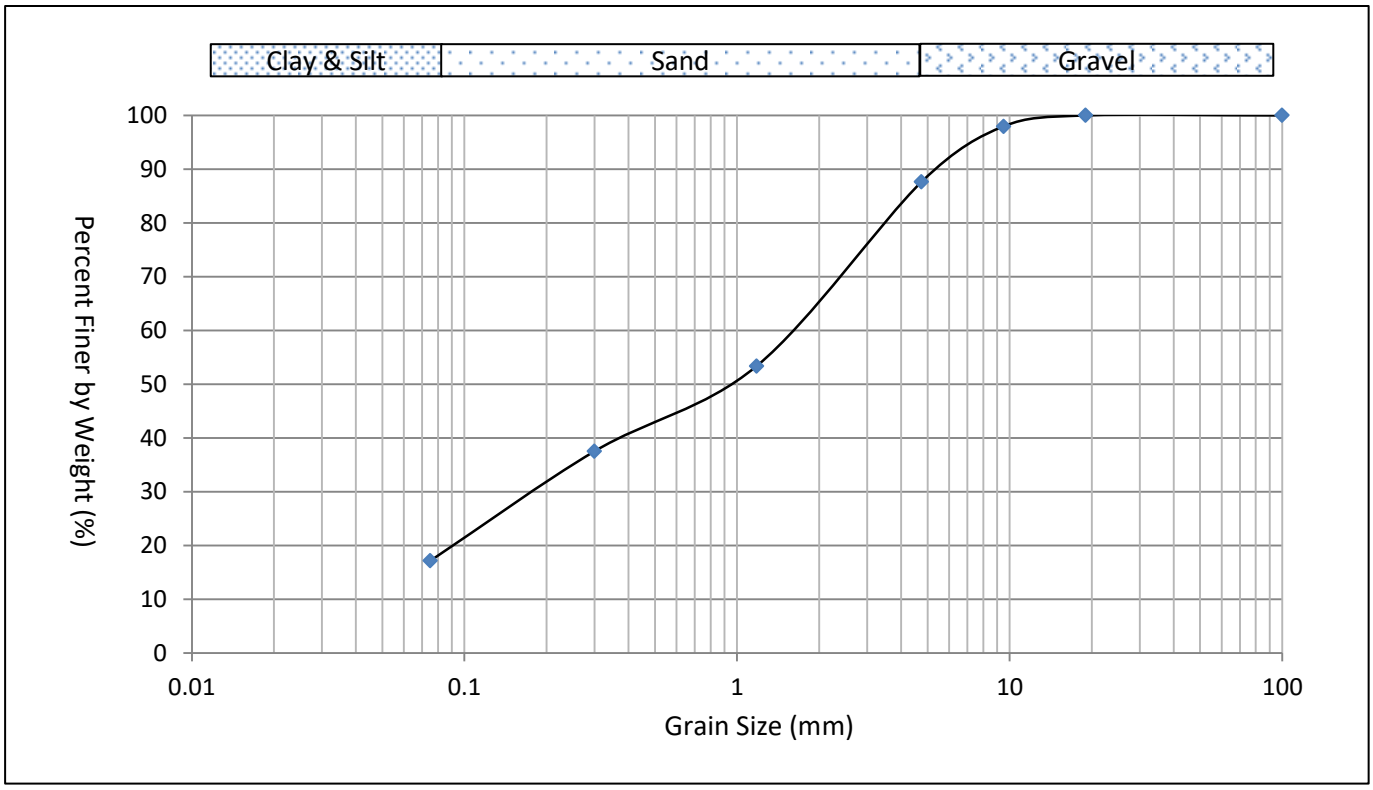


Results related only to the items tested

Grain Size Distribution

Sample ID: 20-4617-3 MW6 4.55-5.00m

Clay & Silt: 17% Sand: 70% Gravel: 12%

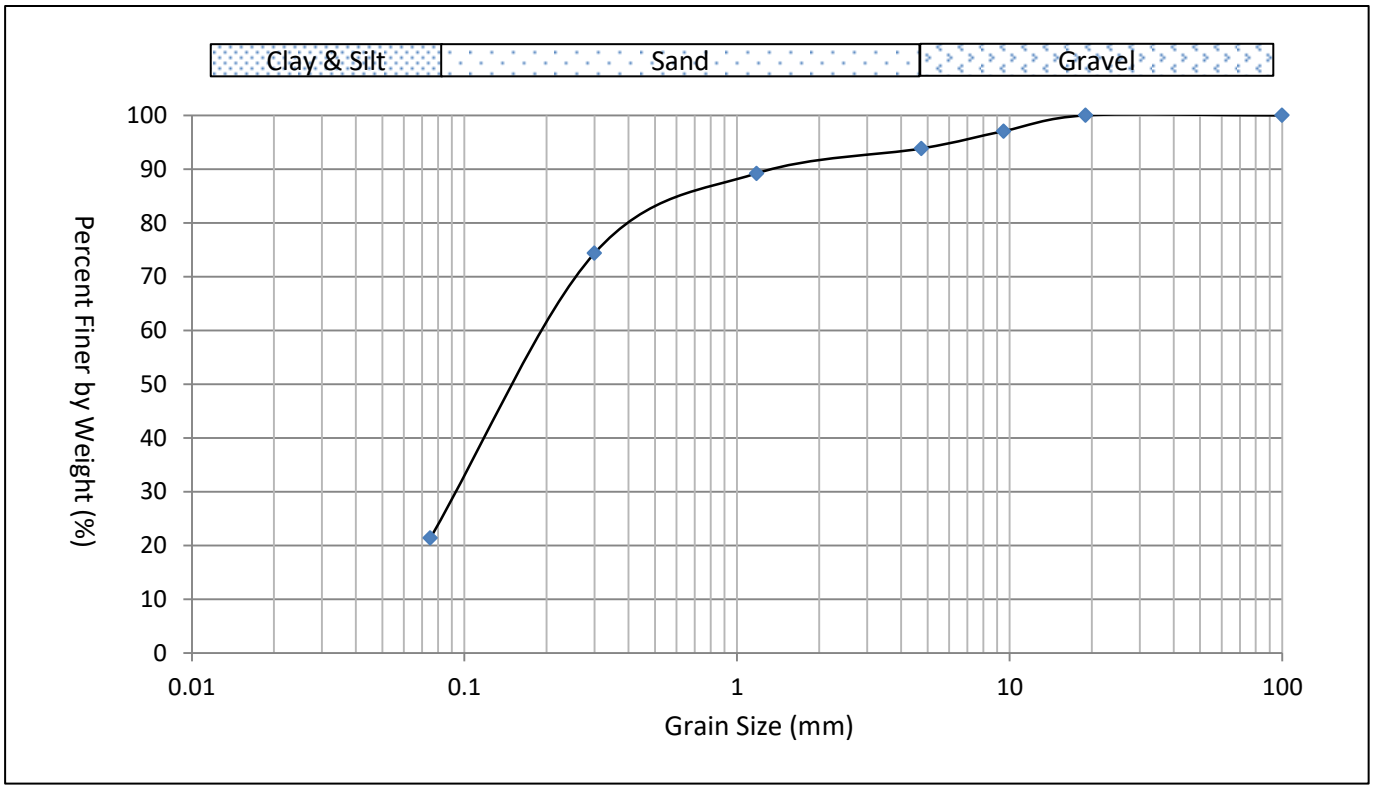


Results related only to the items tested

Grain Size Distribution

Sample ID: 20-4617-4 MW6 7.55-8.05m

Clay & Silt: 21% Sand: 72% Gravel: 6%

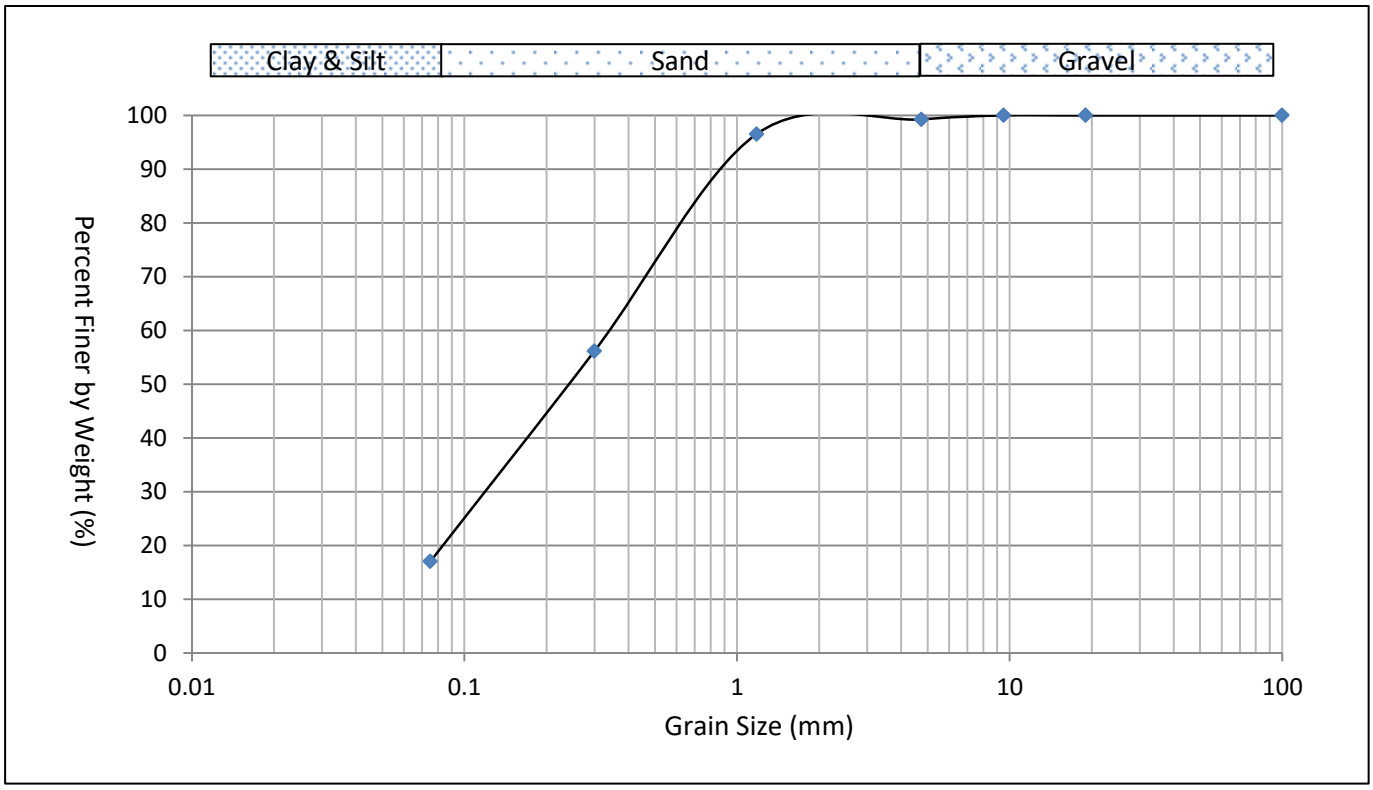


Results related only to the items tested

Grain Size Distribution

Sample ID: 20-4617-5 BH1 SS3

Clay & Silt: 17% Sand: 82% Gravel: 1%

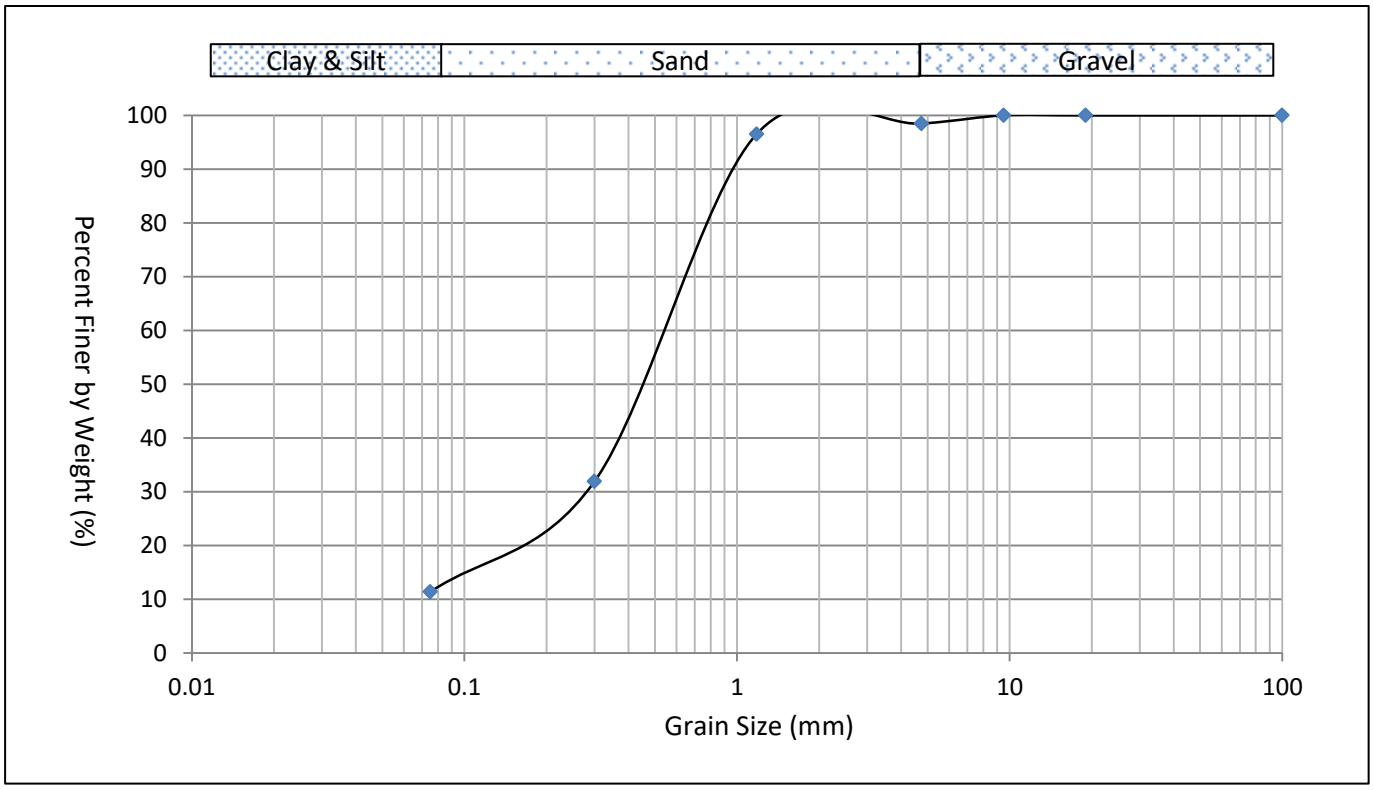


Results related only to the items tested

Grain Size Distribution

Sample ID: 20-4617-6 BH1 SS5

Clay & Silt: 11% Sand: 87% Gravel: 2%

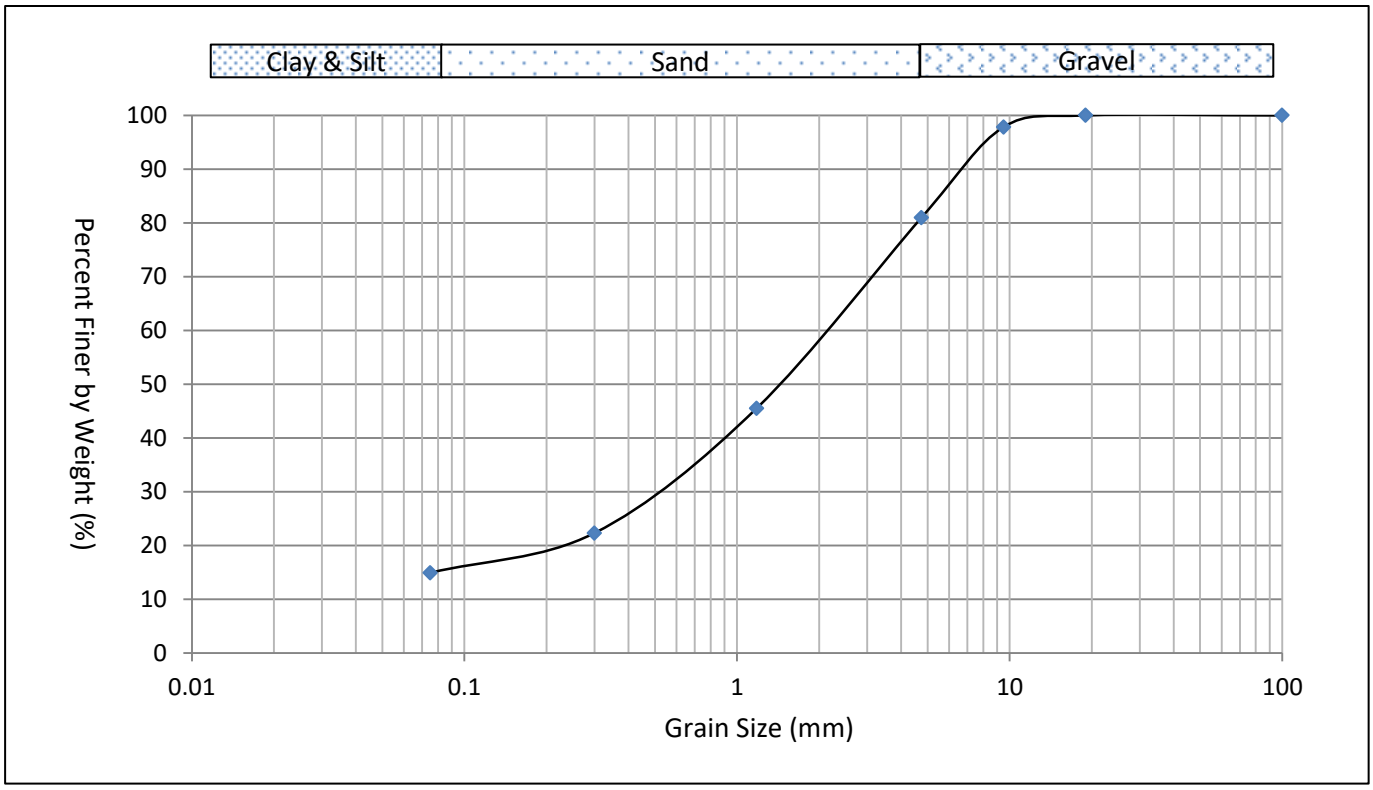


Results related only to the items tested

Grain Size Distribution

Sample ID: 20-4617-7 BH1 SS7

Clay & Silt: 66% Sand: 15% Gravel: 66%

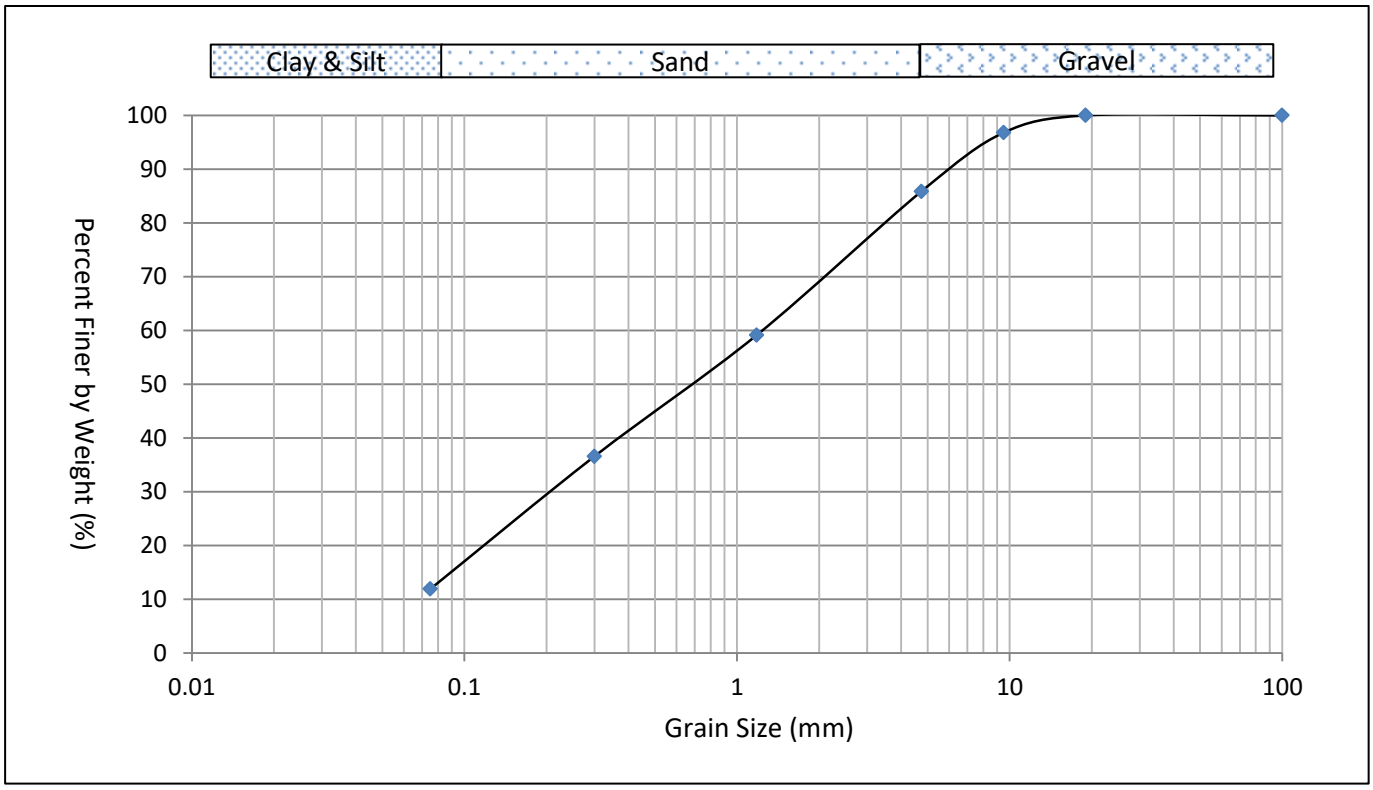


Results related only to the items tested

Grain Size Distribution

Sample ID: 20-4617-8 BH1 SS8

Clay & Silt: 12% Sand: 74% Gravel: 14%



Results related only to the items tested

APPENDIX D – SITE PLAN & BOREHOLE LOGS PREPARED BY LANDTEK LIMITED

SOUTH LIMIT OF KING'S HIGHWAY No. 2
AS ESTABLISHED BY DEPOSITED PLAN 153 MISC

PLAINS ROAD EAST
(WIDTH VARIES)
PIN 07122-0002 (LT)
PART 3, INST. 1431, PLAN P-1957-44
ORDER IN COUNCIL 4000/69 FORMERLY THE KING'S HIGHWAY No. 2

TBM

BH(MW) 2

BH(MW) 1

BH(MW) 3

BH 5

BH 4

Approximate Limits of Subject Site

PART 1 PLAN 20R-310

PART 11 PLAN 20R-789

PART 10 PLAN 20R-789

PART 9 PLAN 20R-789

PART 8 PLAN 20R-789

REFERENCE BEARING N43°34'30"E

1 1/2 STOREY BRICK & VINYL DWELLING # 40

CAR PORT

1 1/2 STOREY BRICK & VINYL DWELLING # 46

1 1/2 STOREY BRICK & VINYL DWELLING # 50

2 STOREY BRICK & VINYL DWELLING # 56

GARAGE

SHED

DECK

PORCH

ASPHALT DRIVEWAY

INTERLOCKING BRICK DRIVEWAY

CONCRETE WALK

RETAINING WALL

FENCE

CEDAR HEDGE

ROW OF CEDARS

TREE LINE

PIN 07117-0050 (LT)

PIN 07117-0051 (LT)

PIN 07117-0052 (LT)

PIN 07117-0053 (LT)

PIN 07117-0054 (LT)

PIN 07117-0065 (LT)

PIN 07117-0066 (LT)

PIN 07117-0067 (LT)

PIN 07117-0068 (LT)

B R O K E N F R O N T C O N C E S S I O N

G E O G R A P H I C T O W N S H I P O F E A S T F L A M B O R O U G H

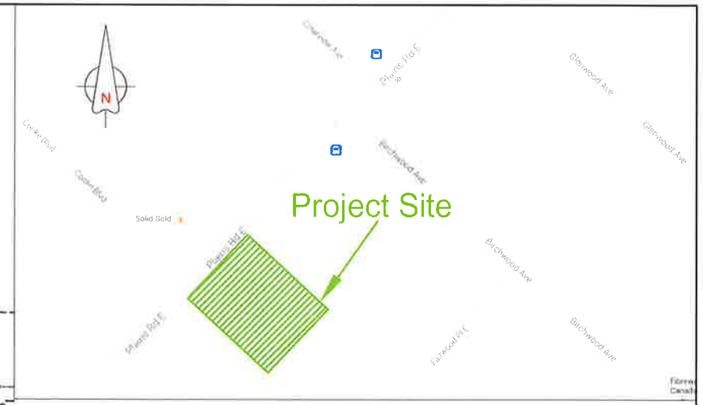
L O T 1 5

L O T 1 6

L O T 1 4

L O T 1 3

R E G I S T E R E D P L A N 7 7 9 (P F)



Key Plan

LEGEND:

Boreholes by Landtek Limited on August 16, 2013

Boreholes with Monitoring Wells by Landtek Limited on August 16, 2013

TBM; Temporary Benchmark, top of storm manhole cover in front of house # 40 Plains Road East, elevation of 100.03 m

NOTES:

1. Borehole and Monitoring Well locations are considered approximate.
2. Base plan taken from drawing by Mackay Mackay & Peters Limited dated November 27, 2012.

LANDTEK LIMITED
CONSULTING ENGINEERS
205 NEBO ROAD, HAMILTON, ONTARIO, L8W 2E1

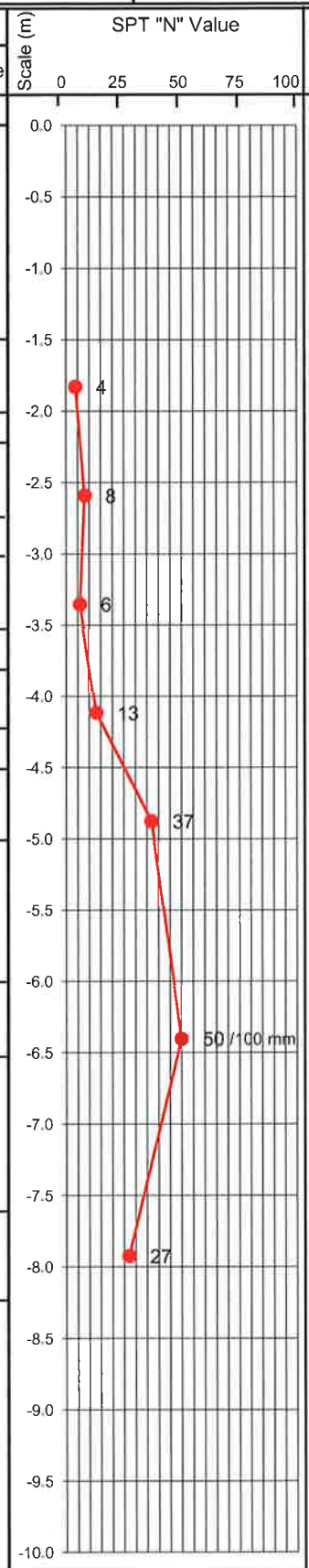
DRAWING:	Borehole and Monitoring Well Location Plan		
PROJECT:	Proposed Multi-Story Condominium Building 40, 46 & 50 Plains Road East, Burlington, Ontario.		
SCALE:	NTS	**PROJECT NO.**	13199
DATE:	September, 2013	**DRAWING NO.**	1

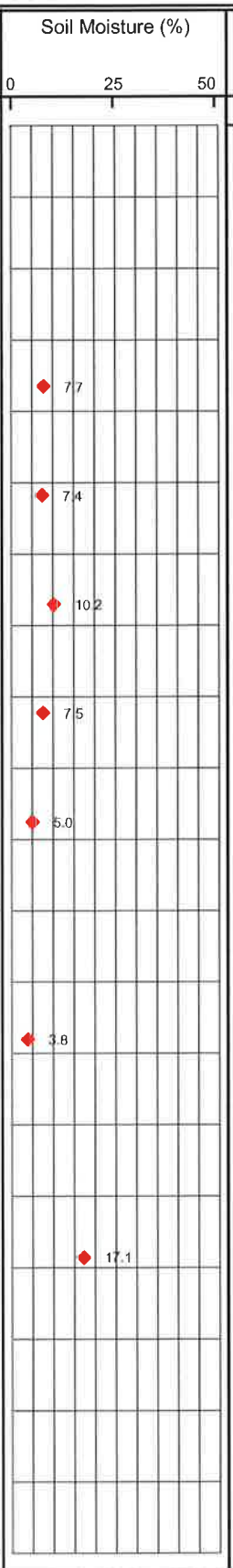
LANDTEK LIMITED

LOG OF BOREHOLE & MW NO. 1

Project No.:	13199	Drill Date:	August 16, 2013
Project:	Multi-Storey Condominium Building	Drill Method:	[ ] solid stem [x] hollow stem [ ] vibratory
Location:	40-50 Plains Road E., Burlington, Ontario	Datum:	Geodetic TBM

Material Description	Symbol	Elev. Depth	Samples No.	Samples Type	Test Data
Ground Surface		100.8			
±125 mm Topsoil		0.0			
SAND medium to fine grain, some silt, scattered gravel, brown, moist, (Loose to Very Loose)			1	SS	
			2	SS	bentonite backfill
			3	SS	
		97.0			
		3.8	4	SS	
SAND AND GRAVEL medium to coarse sand & gravel, trace silt, brown, moist, (Compact to Dense)			5	SS	50 mm dia. PVC well screen
			6	SS	
- wet below ±8.0 m			7	SS	
		92.6			
BOREHOLE TERMINATED		8.2			





GWL

Monitor Details

Notes:
1. On completion, borehole is open to 7.6 m and water level at 7.3 m depth
2. Monitoring well was dry & open to 7.6 m on Aug. 23.

PP = pocket penetrometer TCV = total combustible vapour BRD = bulk relative density
PL = plastic limit LL = liquid limit PI = plasticity index FV = field vane LV = lab vane VS = vane sensitivity

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www.landteklimited.com

LANDTEK LIMITED

LOG OF BOREHOLE & MW NO. 2

Project No.:	13199	Drill Date:	August 16, 2013
Project:	Multi-Storey Condominium Building	Drill Method:	[ ] solid stem [x] hollow stem [ ] vibratory
Location:	40-50 Plains Road E., Burlington, Ontario	Datum:	Geodetic TBM

Material Description	Symbol	Elev. / Depth	Samples No.	Samples Type	Scale (m)
Ground Surface		100.7			
±150 mm Topsoil		0.0			
SAND medium to fine grain, some silt, scattered gravel, brown, moist, (Very Loose)			1	SS	
			2	SS	
		97.7			
		3.0	3	SS	
SAND AND GRAVEL medium to coarse sand & gravel, trace silt, brown, moist, (Compact to Dense)			4	SS	
			5	SS	
			6	SS	
- wet below ±8.0 m			7	SS	
		92.5			
BOREHOLE TERMINATED		8.2			

SPT "N" Value: 0 25 50 75 100

Soil Moisture (%): 0 25 50

Depth (m)	SPT "N"	Soil Moisture (%)
-1.8	2	5.0
-2.5	3	3.7
-3.3	74	5.0
-4.1	42	2.7
-4.9	26	4.1
-6.4	42 /100 mm	5.8
-7.9	60	12.3

GWL

Monitor Details: bentonite backfill; 50 mm dia. PVC well screen

Test Data

Notes:
1. On completion, borehole is open to 7.5 m and water level at 7.3 m depth
2. Monitoring well was dry & open to 7.5 m on Aug. 23.

PP = pocket penetrometer TCV = total combustible vapour BRD = bulk relative density
PL = plastic limit LL = liquid limit PI = plasticity index FV = field vane LV = lab vane VS = vane sensitivity

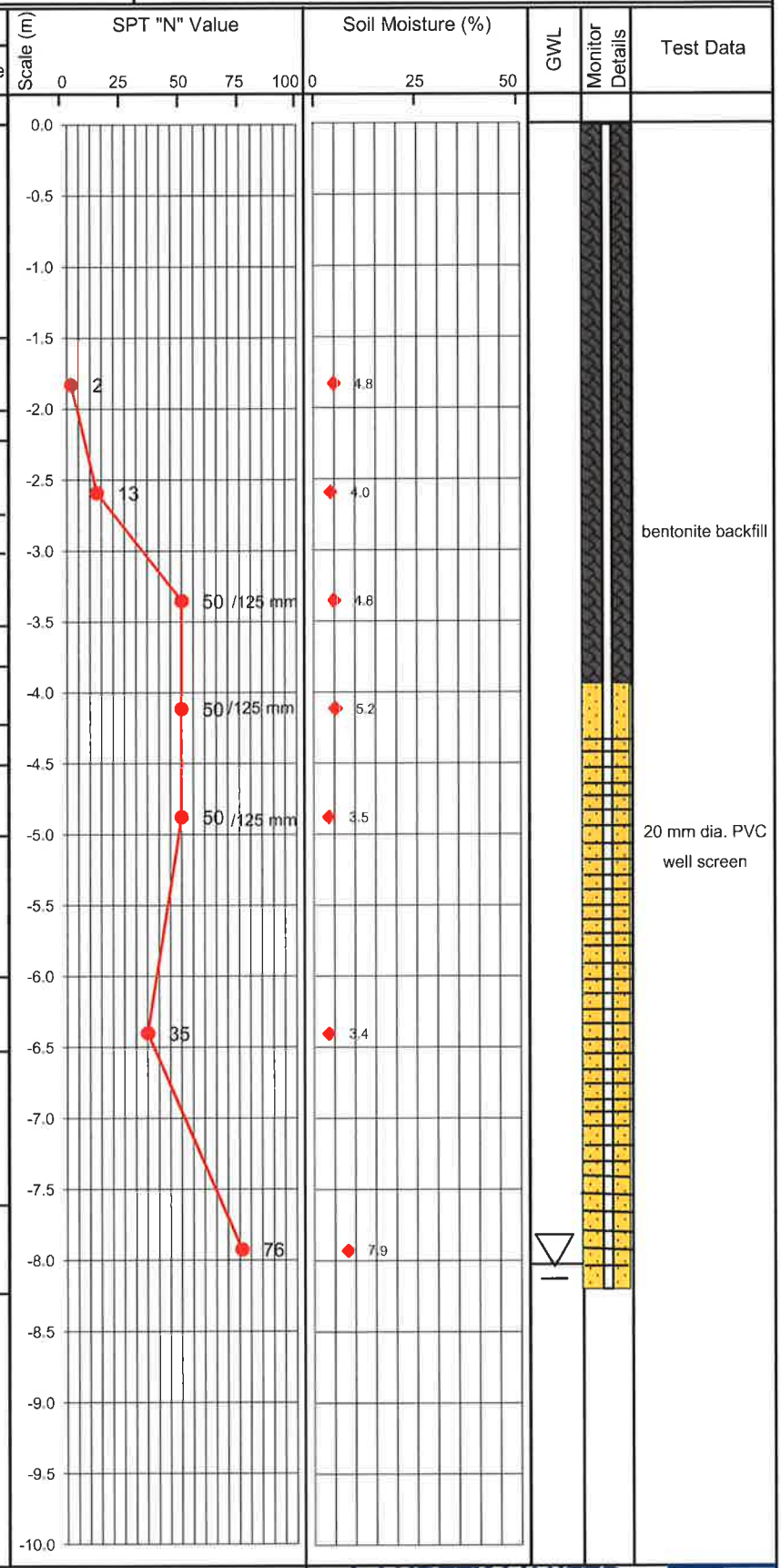
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Hamilton, Ontario, Canada, L8W 2E1
Ph: (905) 383-3733 Fax: (905) 383-8433
www.landteklimited.com

LANDTEK LIMITED

LOG OF BOREHOLE & MW NO. 3

Project No.:	13199	Drill Date:	August 16, 2013
Project:	Multi-Storey Condominium Building	Drill Method:	[ ] solid stem [x] hollow stem [ ] vibratory
Location:	40-50 Plains Road E., Burlington, Ontario	Datum:	Geodetic TBM

Material Description	Symbol	Elev. / Depth	Samples No.	Samples Type	Test Data
Ground Surface		100.7			
±125 mm Topsoil		0.0			
SAND medium to fine grain, some silt, scattered gravel, brown, moist, (Very Loose to Compact)			1	SS	
			2	SS	
			3	SS	
		96.9			
		3.8	4	SS	
SAND AND GRAVEL medium to coarse sand & gravel, trace silt, brown, moist, (Dense)			5	SS	
			6	SS	
- wet below ±8.0 m			7	SS	
		92.5			
BOREHOLE TERMINATED		8.2			



Notes:
1. On completion, borehole is open to 8.2 m and water level at 7.7 m depth
2. Monitoring well was open to 8.2 m & W.L. @ 8.0 m on Aug. 23.

PP = pocket penetrometer TCV = total combustible vapour BRD = bulk relative density
PL = plastic limit LL = liquid limit PI = plasticity index FV = field vane LV = lab vane VS = vane sensitivity

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LANDTEK LIMITED

LOG OF BOREHOLE NO. 4

Project No.:	13199	Drill Date:	August 16, 2013
Project:	Multi-Storey Condominium Building	Drill Method:	[ ] solid stem [x] hollow stem [ ] vibratory
Location:	40-50 Plains Road E., Burlington, Ontario	Datum:	Geodetic TBM

Material Description	Symbol	Elev. / Depth	Samples No.	Samples Type	SPT "N" Value (Scale (m))	Soil Moisture (%)	GWL	Monitor Details	Test Data
Ground Surface		100.9							
±125 mm Topsoil		0.0							
SAND medium to fine grain, brown, moist, (Very Loose to Compact)			1	SS	4	3.0			
			2	SS	7	3.3			
			3	SS	13	3.7			
		97.1							
		3.8	4	SS	85	3.6			
SAND AND GRAVEL trace silt, cobbles, limestone fragements, medium to coarse grain, brown, moist (Dense)			5	SS	42	4.2			
			6	SS	62	5.9			
- wet below ±8.1 m		92.7	7	SS	50	13.4			
BOREHOLE TERMINATED		8.2							

SPT "N" Value scale: 0 25 50 75 100

Soil Moisture (%) scale: 0 25 50

Scale (m): 0.0 -0.5 -1.0 -1.5 -2.0 -2.5 -3.0 -3.5 -4.0 -4.5 -5.0 -5.5 -6.0 -6.5 -7.0 -7.5 -8.0 -8.5 -9.0 -9.5 -10.0

Notes: 1. On completion, borehole open to 7.7 m and dry.

PP = pocket penetrometer TCV = total combustible vapour BRD = bulk relative density
PL = plastic limit LL = liquid limit PI = plasticity index FV = field vane LV = lab vane VS = vane sensitivity

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LANDTEK LIMITED

LOG OF BOREHOLE NO. 5

Project No.:	13199	Drill Date:	August 16, 2013
Project:	Multi-Storey Condominium Building	Drill Method:	[ ] solid stem [x] hollow stem [ ] vibratory
Location:	40-50 Plains Road E., Burlington, Ontario	Datum:	Geodetic TBM

Material Description	Symbol	Elev. Depth	Samples No.	Samples Type	Scale (m)	SPT "N" Value	Soil Moisture (%)	GWL	Monitor Details	Test Data
Ground Surface		100.8								
±100 mm Topsoil		0.0								
FILL sand, medium to fine grain, brown, moist										
± 300 mm Concrete		99.9								
		0.9	1	SS		9	7.7			
SAND medium to fine grain, brown, moist, (Loose to Compact)			2	SS		7	4.6			
			3	SS		18	4.4			
		97.8								
SAND AND GRAVEL - medium to coarse grain, rounded pebbles, trace silt, brown, moist, (Dense)		3.0	4	SS		81	9.7			
		97.3								
BOREHOLE TERMINATED		3.5								

SPT "N" Value: 0 25 50 75 100 | Soil Moisture (%): 0 25 50 | Scale (m): 0.0 -0.5 -1.0 -1.5 -2.0 -2.5 -3.0 -3.5 -4.0 -4.5 -5.0 -5.5 -6.0 -6.5 -7.0 -7.5 -8.0 -8.5 -9.0 -9.5 -10.0

Notes: 1. On completion, borehole open to 3.5 m and dry.

PP = pocket penetrometer TCV = total combustible vapour BRD = bulk relative density
PL = plastic limit LL = liquid limit PI = plasticity index FV = field vane LV = lab vane VS = vane sensitivity

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APPENDIX E – SHORING / ARCHITECTURAL PLAN PREPARED BY RAW DESIGN

18035 Plains Road

40-70 Plains Rd E, Burlington ON

Project: 18035
Date: APRIL 01, 2021
Issued for: REZONING



ARCHITECTURAL DRAWING LIST	
SHEET NUMBER	SHEET NAME
A001	COVER / DRAWING LIST
A002	3D VIEWS
A003	CONTEXT PLAN
A100	SITE PLAN
A101	PARKING LEVEL 01
A102	PARKING LEVEL 02
A201	GROUND FLOOR PLAN
A202	2ND FLOOR PLAN
A203	3RD FLOOR PLAN
A204	4TH FLOOR PLAN
A205	5TH FLOOR PLAN
A206	6TH FLOOR PLAN
A207	7TH FLOOR PLAN
A208	8TH FLOOR PLAN
A209	9TH FLOOR PLAN
A210	PH FLOOR PLAN
A211	ROOF PLAN
A401	NORTH ELEVATION
A402	EAST ELEVATION
A403	SOUTH ELEVATION
A404	WEST ELEVATION
A451	NORTH COLOURED ELEVATION
A452	EAST-WEST COLOURED ELEVATIONS
A453	SOUTH COLOURED ELEVATION
A501	BUILDING SECTIONS
A502	BUILDING SECTIONS
A503	BUILDING SECTIONS

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SITE STATISTICS **COMPLETE**
4 November 2020

18035
40-70 Plains Road East
Burlington ON

Official Plan	Medium Density		GROSS SITE AREA	6823.0	sq.m.	73,445	sq.ft.	
Avenue Width	20		WIDENING		sq.m.	0	sq.ft.	
Character Area	N/A		NET SITE AREA	6823.0	sq.m.	73,445	sq.ft.	
Policy Area			AVG UNIT SIZE	69.95	sq.m. NET	752.96312	sq.ft. NET	
Established District				82.29	sq.m. GROSS	885.83896	sq.ft. GROSS	
Current Zoning		FSI Retail		**0.00**	Residential **4.34**	Total	**4.34**	
By-Law		UPH		**527.527**				

AREA CALCULATIONS

FLOOR	UNITS STUDIO	1B	1B+D	2B	3B	TOTAL	GCA RETAIL sq.m.	RETAIL sq.ft.	RESIDENTIAL sq.m.	RESIDENTIAL sq.ft.	TOTAL sq.m.	TOTAL sq.ft.	NSA RETAIL sq.m.	RETAIL sq.ft.	RESIDENTIAL sq.m.	RESIDENTIAL sq.ft.	TOTAL sq.m.	TOTAL sq.ft.
1	5	17		14		**36**		-	**3,371**	36,286	3,371	36,286	-	-				
2	0	13		27		**40**			**3,315**	35,682	3,313	35,660		-				
3	1	13		34		**48**			**3,946**	42,476	3,946	42,476		-				
4	0	20		28		**48**			**3,748**	40,344	3,748	40,344		-				
5	0	28		20		**48**			**3,532**	38,019	3,532	38,019						
6	2	30		16		**48**			**3,316**	35,694	3,316	35,694						
7	0	24		12		**36**			**2,622**	28,224	2,622	28,224						
8	0	8		20		**28**			**2,420**	26,050	2,420	26,050		-				
9	0	14		14		**28**			**2,220**	23,897	2,220	23,897						
						0			**1138**	12,250	1,138	12,250						
TOTAL	**8**	**167**	**0**	**185**	**0**	**360**	**0**	-	**29,626**	318,902	**29,626**	318,902	**0**	-				
Mix	2%	46%	0%	51%	0%													

Common Amenity	Provided			
Indoor Amenity	1095	sq.m.	11,787	sq.ft.
Outdoor Amenity	1052	sq.m.	11,324	sq.ft.
Landscape Open Space	Provided			
	1060	sq.m.	11,410	sq.ft.

5.96 m2 Per Unit
2.94 m2 Per Unit

VEHICLE PARKING

					PROVIDED	Surface	P1	P2		Total
RATIO PROPOSED		0.25	1.00	TOTAL						
	RESIDENT		360		Resident	0	193	217		410
	VISITOR	90			Visitor	14	0	0		14
	TOTAL	90	360	450	**TOTAL**	14	193	217		**424**

BICYCLE PARKING

		REQUIRED	PROVIDED
RESIDENTIAL	ALL LEVELS	**180**	232
Long Term (0.5/UNIT)	*AT GRADE*		*58*
VISITOR	AT GRADE	18	20
Short term(0.05/UNIT)			
TOTAL		**198**	**252**

ISSUE RECORD

REVISION RECORD

North

RAW

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18035 Plains Road

INFINITY GROUP

COVER / DRAWING LIST

A001

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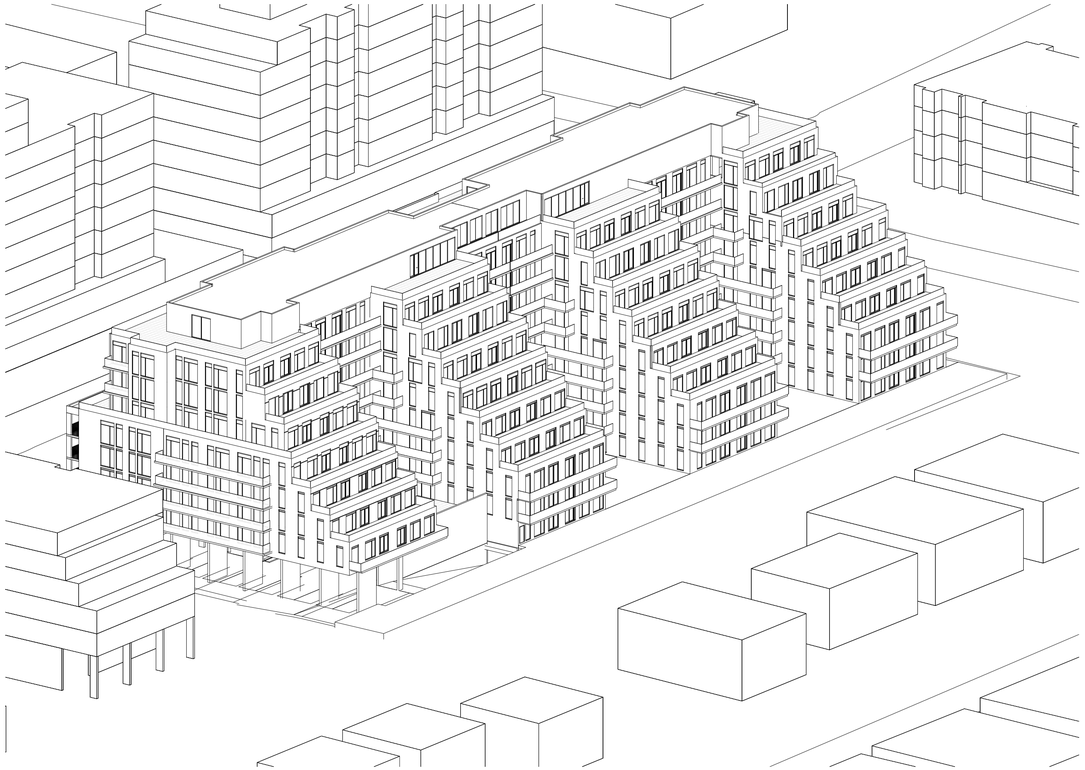
2021-04-05 9:41:00 AM



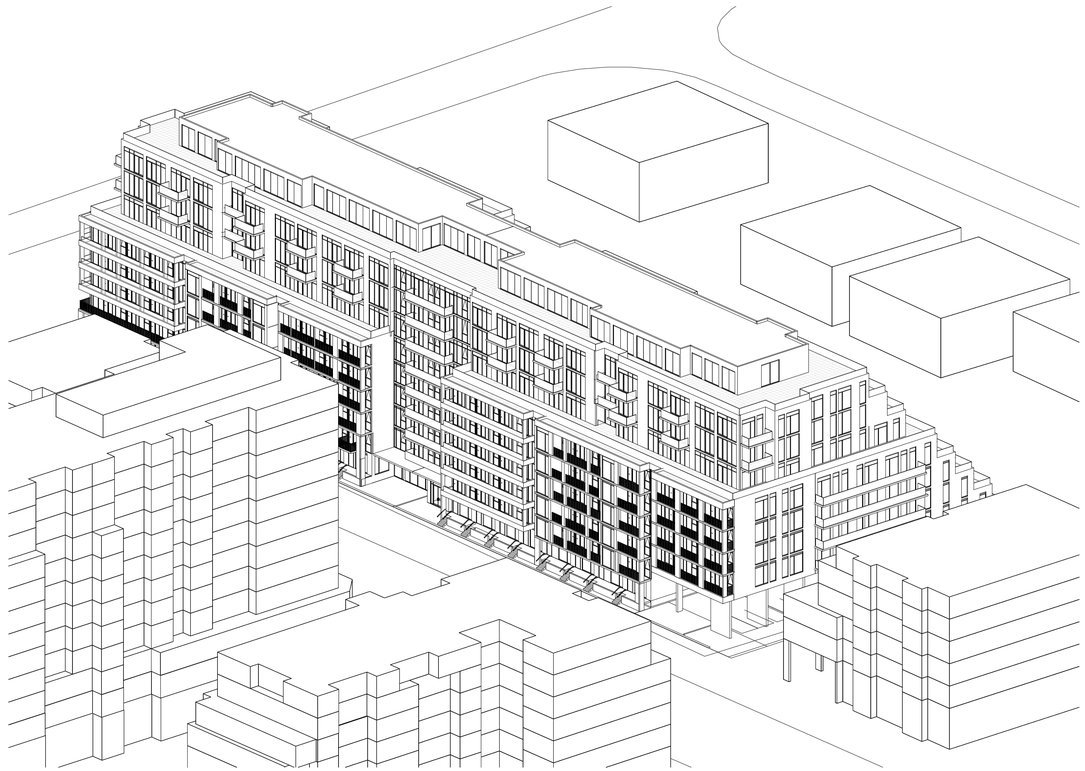
2 A002 NORTH-EAST AXO



1 A002 SOUTH-EAST AXO



3 A002 SOUTH-WEST AXO



4 A002 NORTH-WEST AXO

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3D VIEWS

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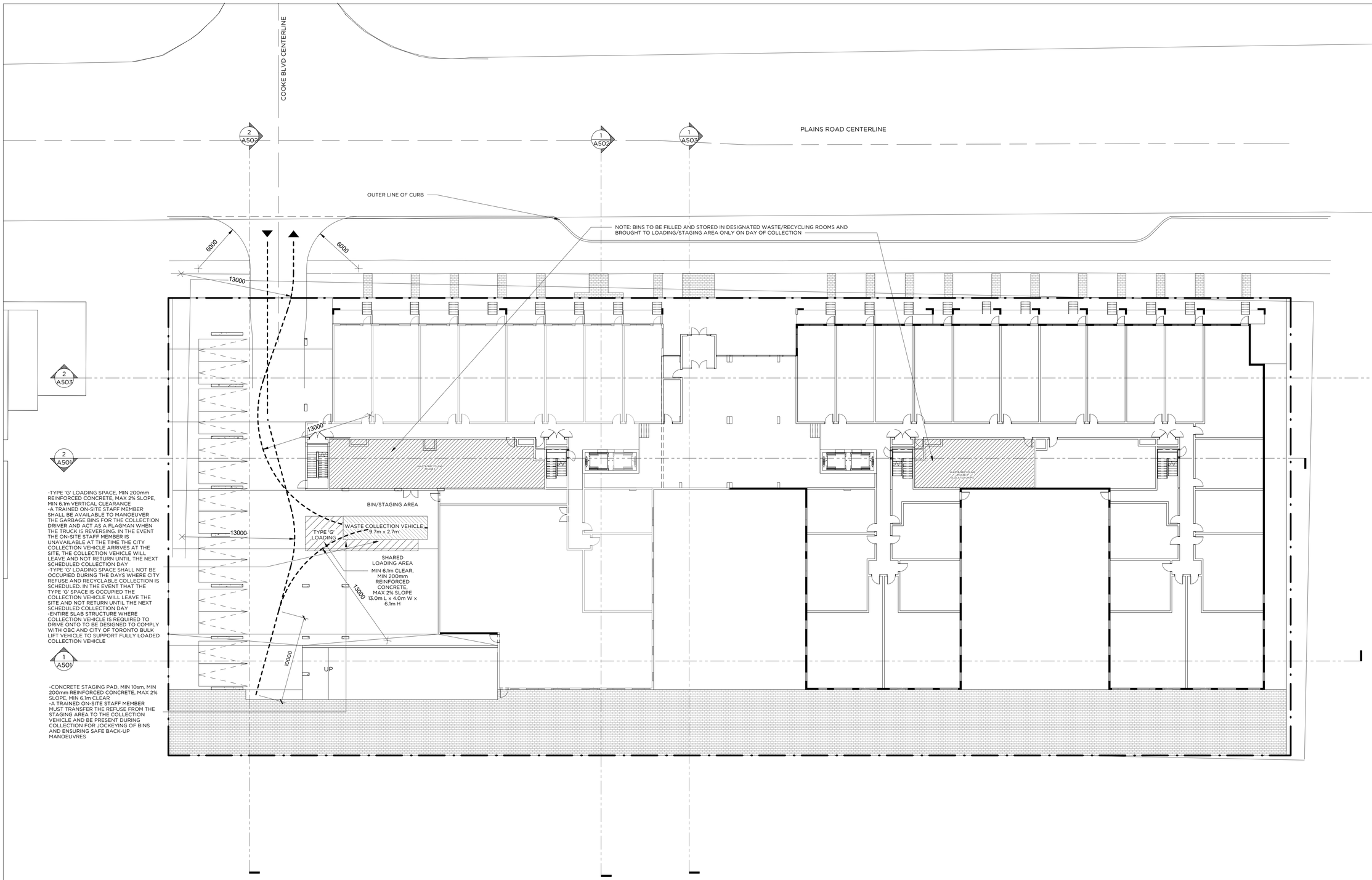
CONTEXT PLAN

1 : 1000

A003

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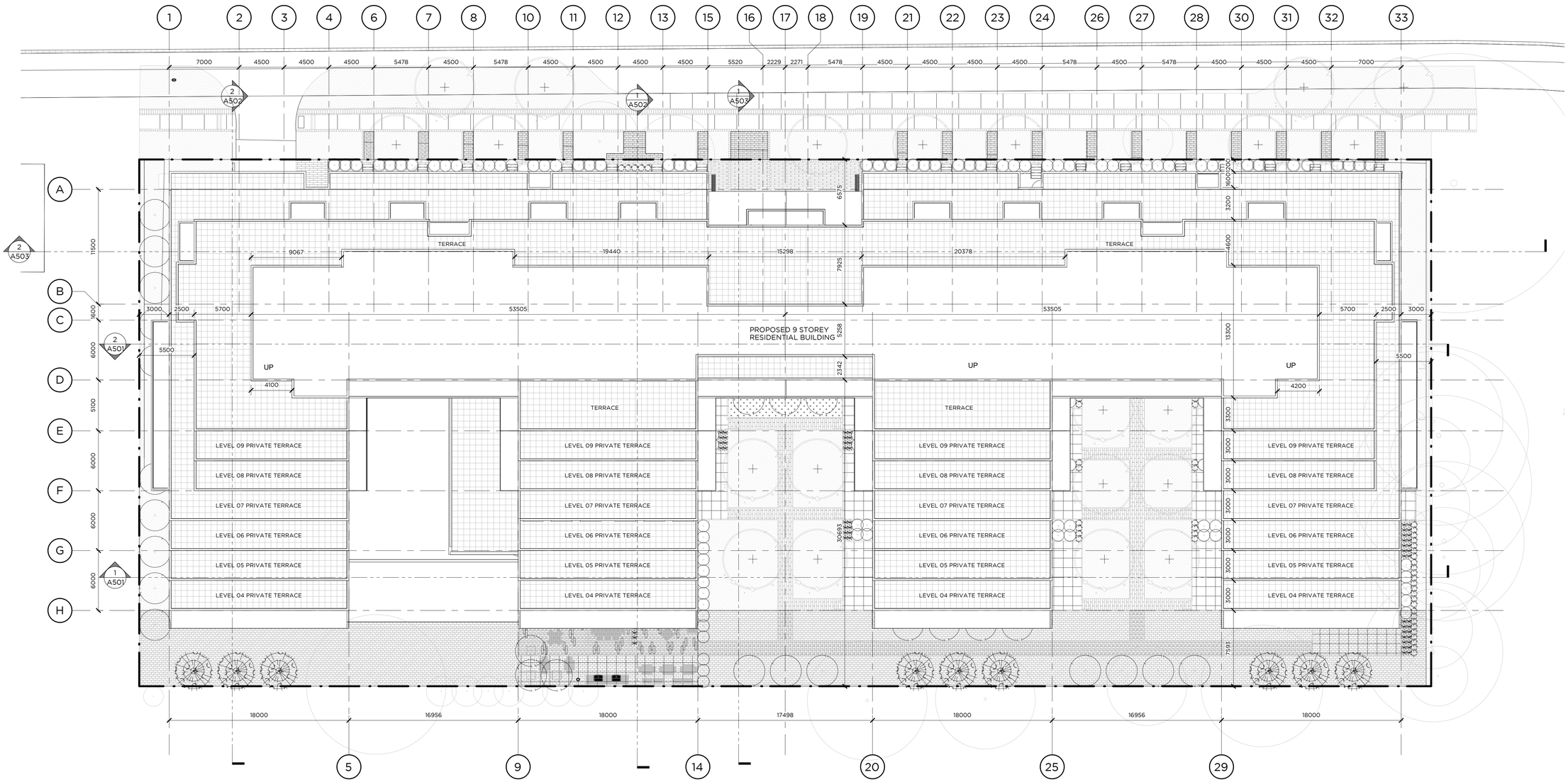
WASTE MANAGEMENT PLAN

1 : 200

A004

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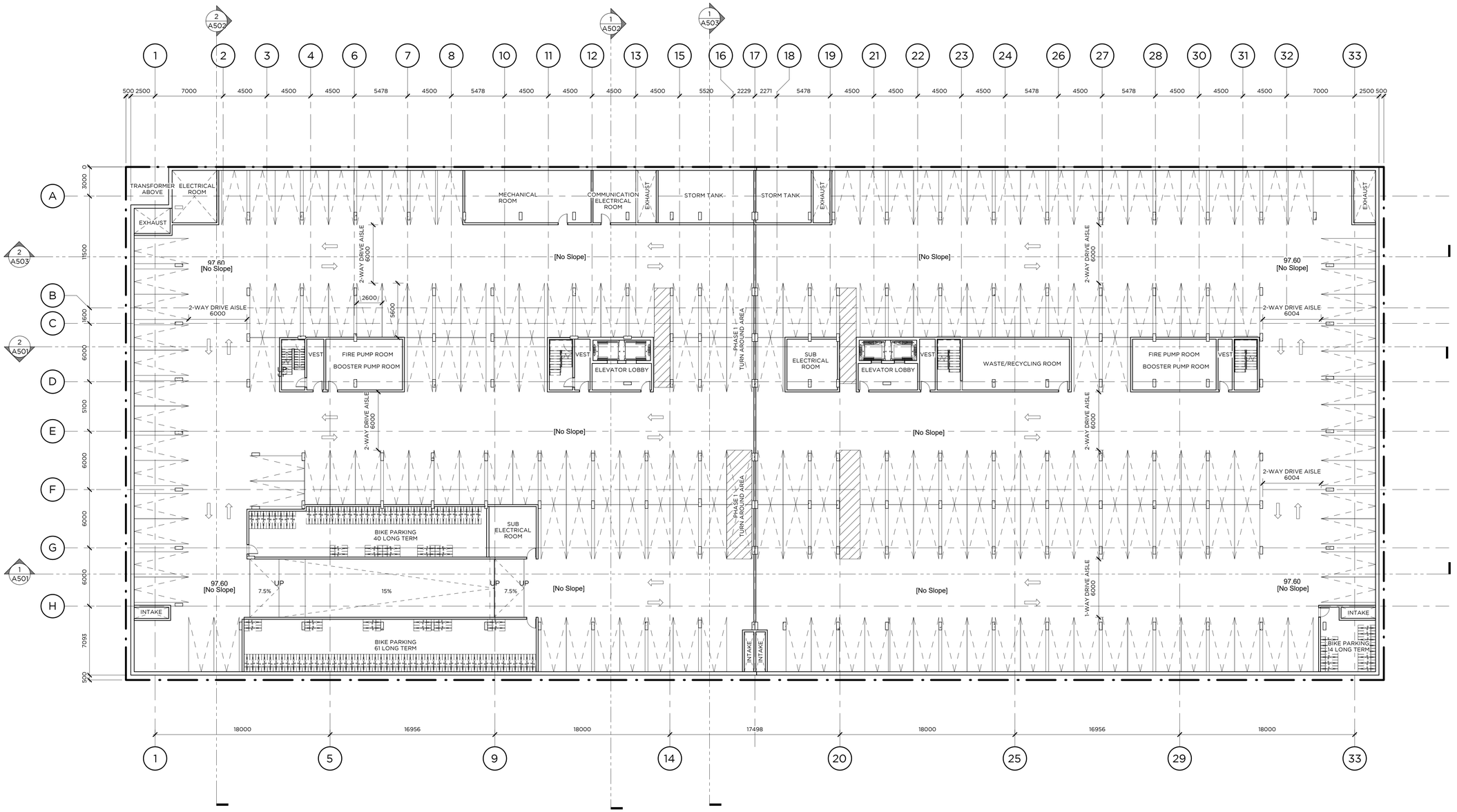
INFINITY ENT GROUP

SITE PLAN

1 : 200

A100

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18035

18035 Plains Road

INFINITY GROUP

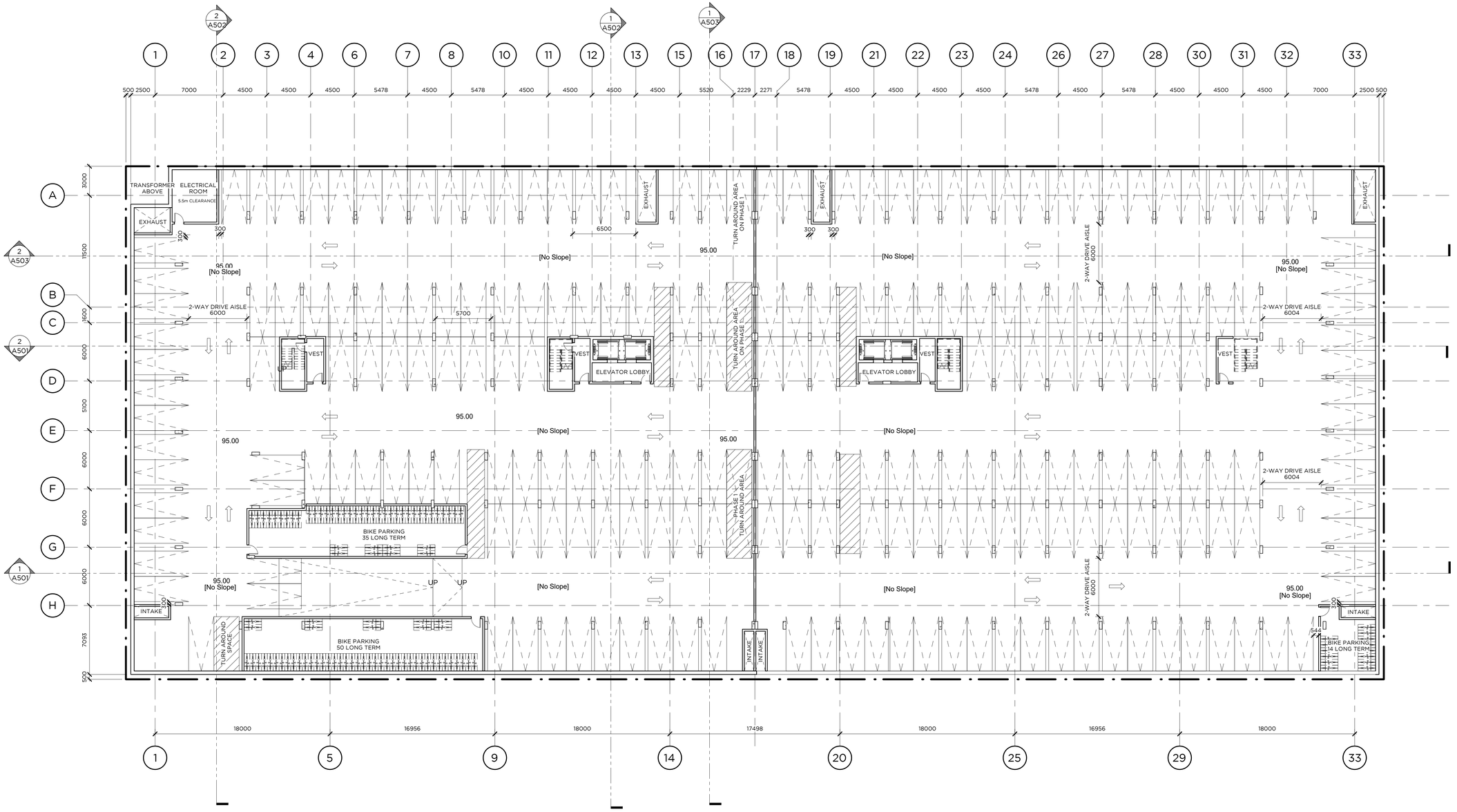
PARKING LEVEL 01

1 : 200

A101

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PARKING LEVEL 02

1 : 200

A102

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COOKE BLVD CENTERLINE

PLAINS ROAD CENTERLINE

OUTER LINE OF CURB

INCOMING WATER FIRE, REFER TO CIVIL

RELOCATE EX. FIRE HYDRANT

INCOMING WATER FIRE, REFER TO CIVIL

INCOMING WATER DOMESTIC, REFER TO CIVIL

SANITARY CONTROL MANHOLE, REFER TO CIVIL

STORM CONTROL MANHOLE, REFER TO CIVIL

TRANSFORMER PAD

[No Slope]

[No Slope] 100.50

0.63%

100.45

[No Slope]

STAGING AREA, MAX 2% SLOPE MIN 200mm REINFORCED CONC.

[No Slope]

TYPE 'G' LOADING 13m L x 4m W x 6.1m H MAX 2% SLOPE MIN 200mm REINFORCED CONC.

2.45%

SHORT-TERM BIKE PARKING 20 SPACES

PARKING INTERCOM

UP 7.5%

15%

6000 2-WAY DRIVE AISLE

100.98 [No Slope]

BUILDING ABOVE

101.45

SERVICE 101.45

EXIT

INDOOR AMENITY 137 366.37 m² [3944 ft²] 101.25

101.25

OUTDOOR AMENITY 257.83 m² [2775 ft²] 101.45

101.45

MAIL ROOM

100.50 VEST

CACF

100.50

UP 101.45

UP 101.45

100.50

PIPE SPACE AIR SHAFT PIPE SPACE EC

PIPE SPACE AIR SHAFT PIPE SPACE EC

EXIT

EXIT

5885

5885

1B 103 52.90 m² [569 ft²]	2B 104 63.00 m² [678 ft²]	1B 105 51.75 m² [557 ft²]	2B 106 63.00 m² [678 ft²]	1B 107 51.75 m² [557 ft²]	1B 108 51.75 m² [557 ft²]	1B 109 51.75 m² [557 ft²]	1B 110 52.90 m² [569 ft²]	1B 111 52.90 m² [569 ft²]	1B 112 51.75 m² [557 ft²]	1B 113 51.75 m² [557 ft²]	1B 114 51.75 m² [557 ft²]	2B 115 63.00 m² [678 ft²]	1B 116 51.75 m² [557 ft²]	2B 117 63.00 m² [678 ft²]	1B 118 51.75 m² [557 ft²]	1B 119 51.75 m² [557 ft²]	1B 120 51.63 m² [556 ft²]	2B 121 87.12 m² [938 ft²]	2B 130 79.87 m² [860 ft²]	2B 129 81.87 m² [881 ft²]	1B 122 48.38 m² [521 ft²]	S 101 43.45 m² [468 ft²]	S 136 43.44 m² [468 ft²]	1B 131 51.66 m² [556 ft²]	1B 128 55.03 m² [592 ft²]	S 123 41.82 m² [450 ft²]	2B 102 71.56 m² [770 ft²]	2B 135 68.06 m² [733 ft²]	S 132 43.37 m² [467 ft²]	S 127 43.37 m² [467 ft²]	2B 124 68.06 m² [733 ft²]	2B 134 88.74 m² [955 ft²]	2B 133 88.74 m² [955 ft²]	2B 126 88.74 m² [955 ft²]	2B 125 88.74 m² [955 ft²]

7000 4500 4500 4500 5478 4500 5478 4500 4500 4500 4500 5520 2229 2271 5478 4500 4500 4500 4500 5478 4500 5478 4500 4500 4500 7000

1500 1600 6000 5100 6000 6000 6000

18000 16956 18000 17498 18000 16956 18000

1 5 9 14 20 25 29 33

A B C D E F G H

2 A503 2 A502 1 A502 1 A503 2 A503 2 A501 1 A501

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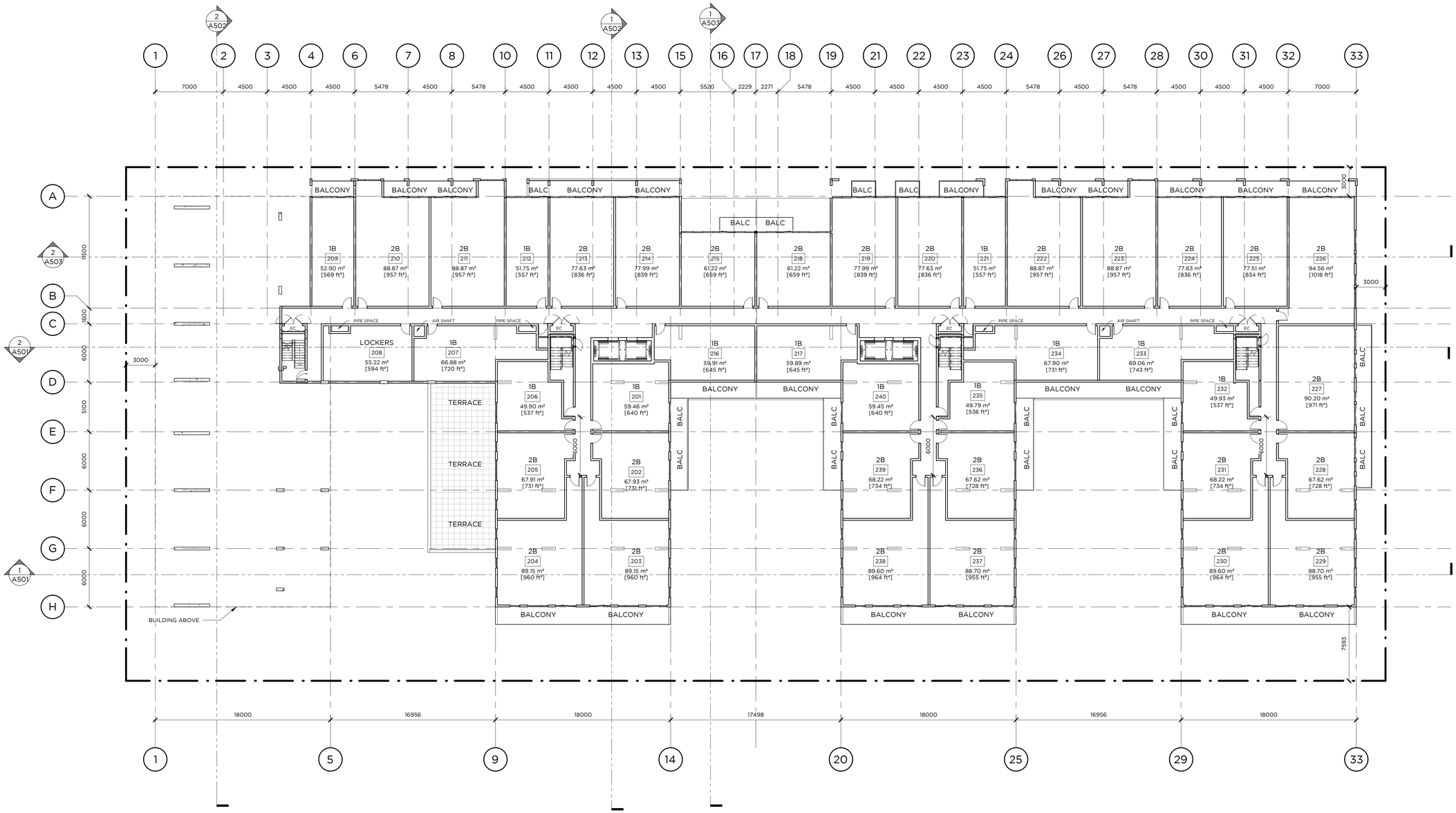
INFINITY GROUP

GROUND FLOOR PLAN

1 : 200

A201

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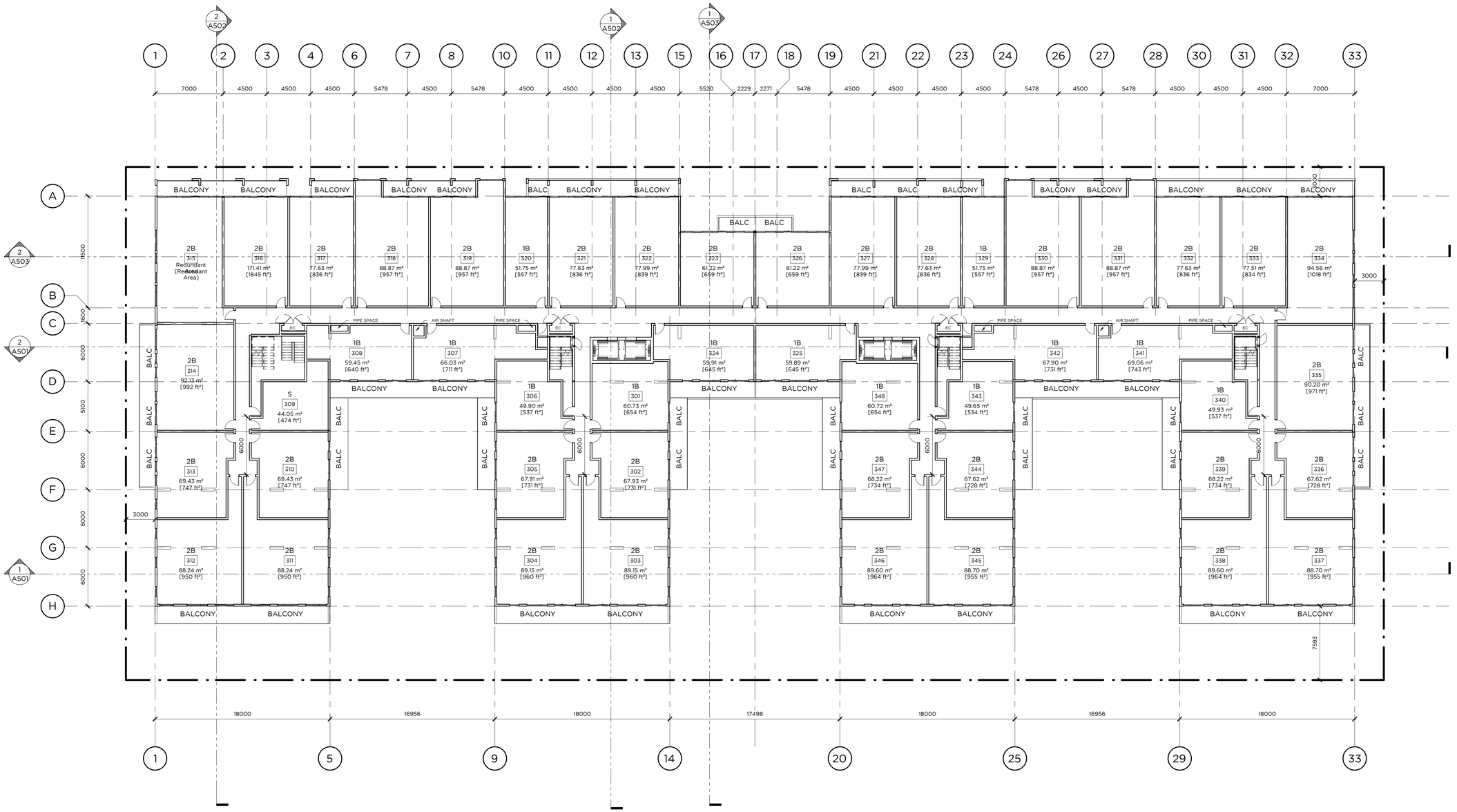
2ND FLOOR PLAN

1 : 200

A202

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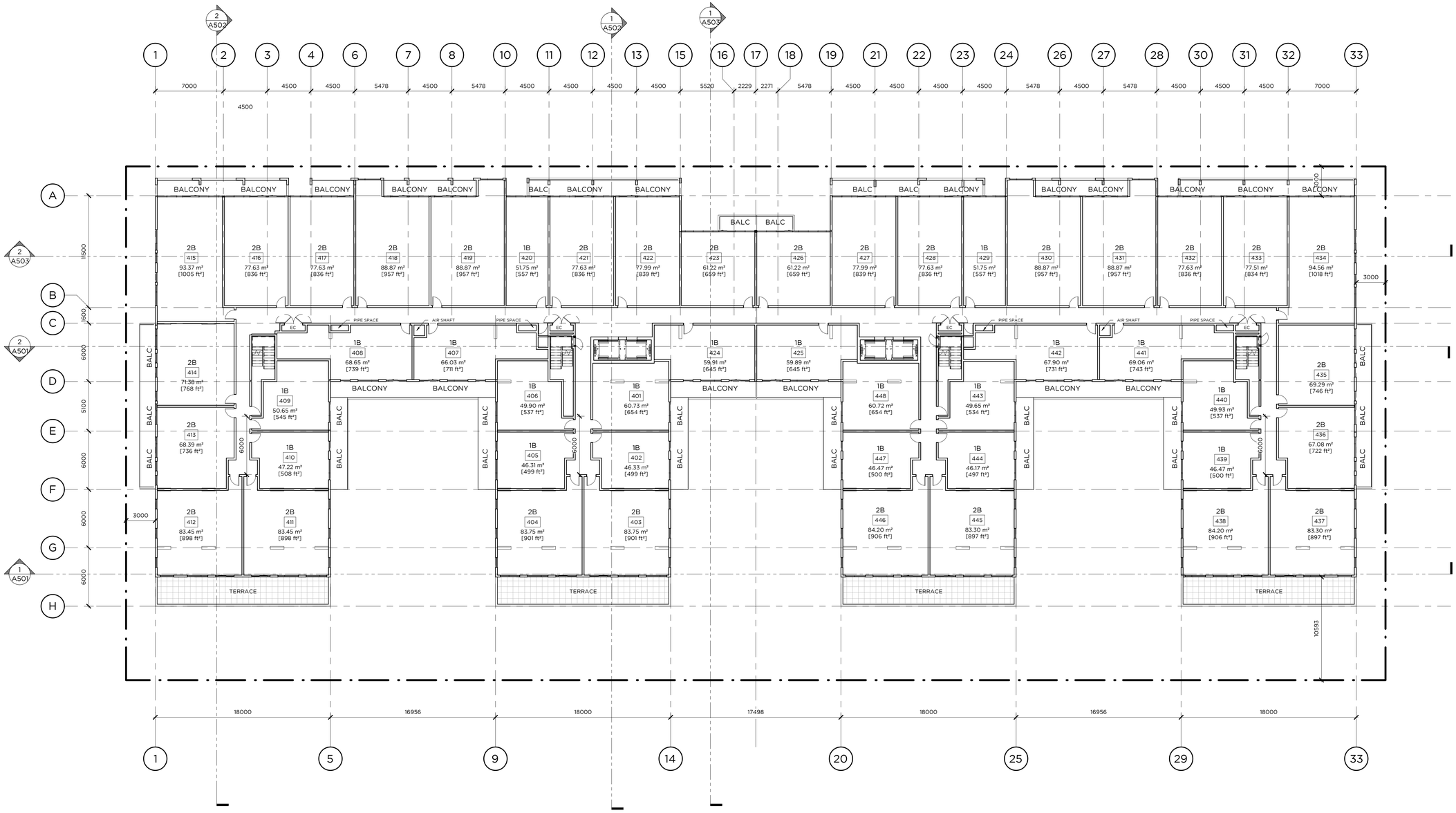
3RD FLOOR PLAN

1 : 200

A203

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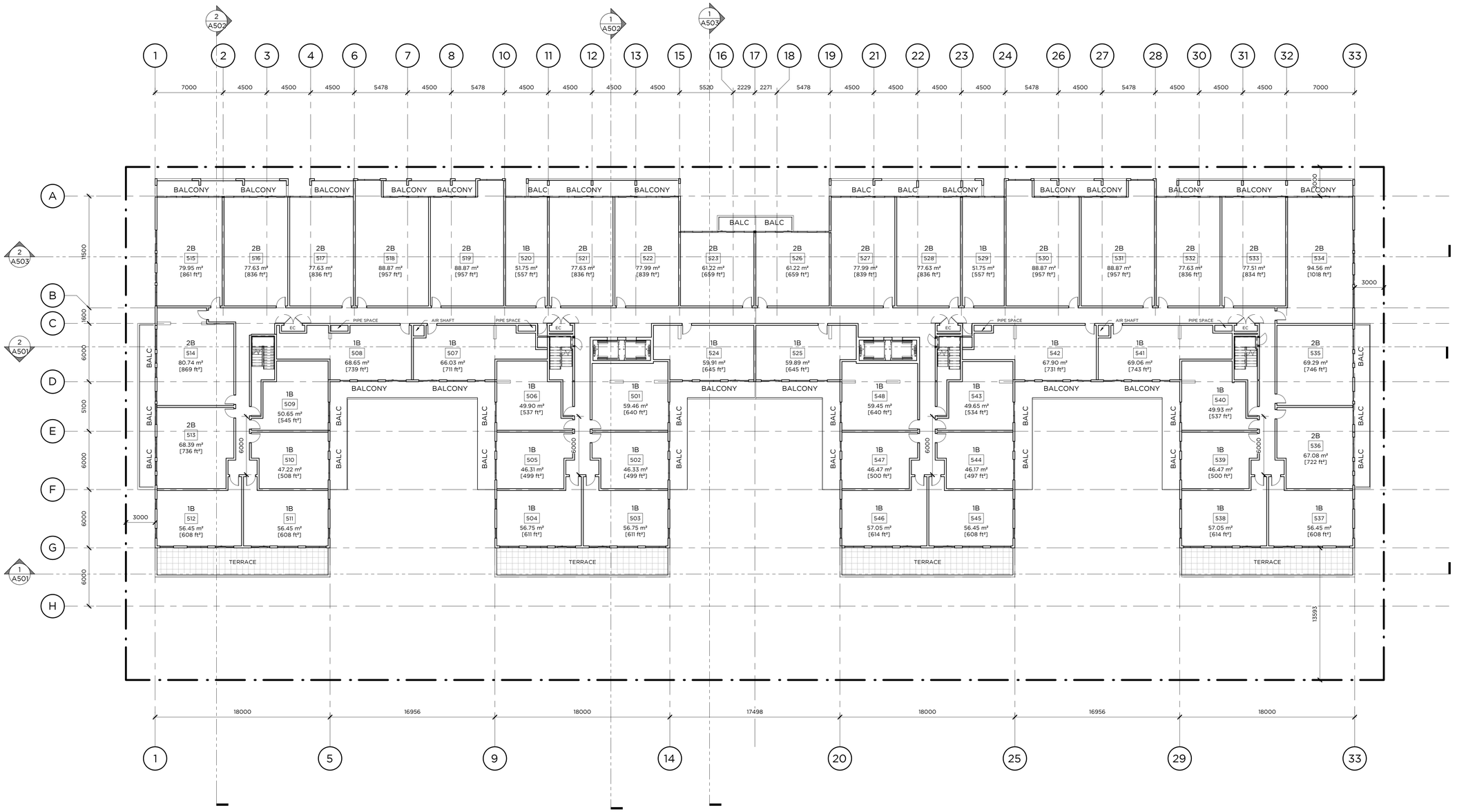
4TH FLOOR PLAN

1 : 200

A204

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INFINITY GROUP INT

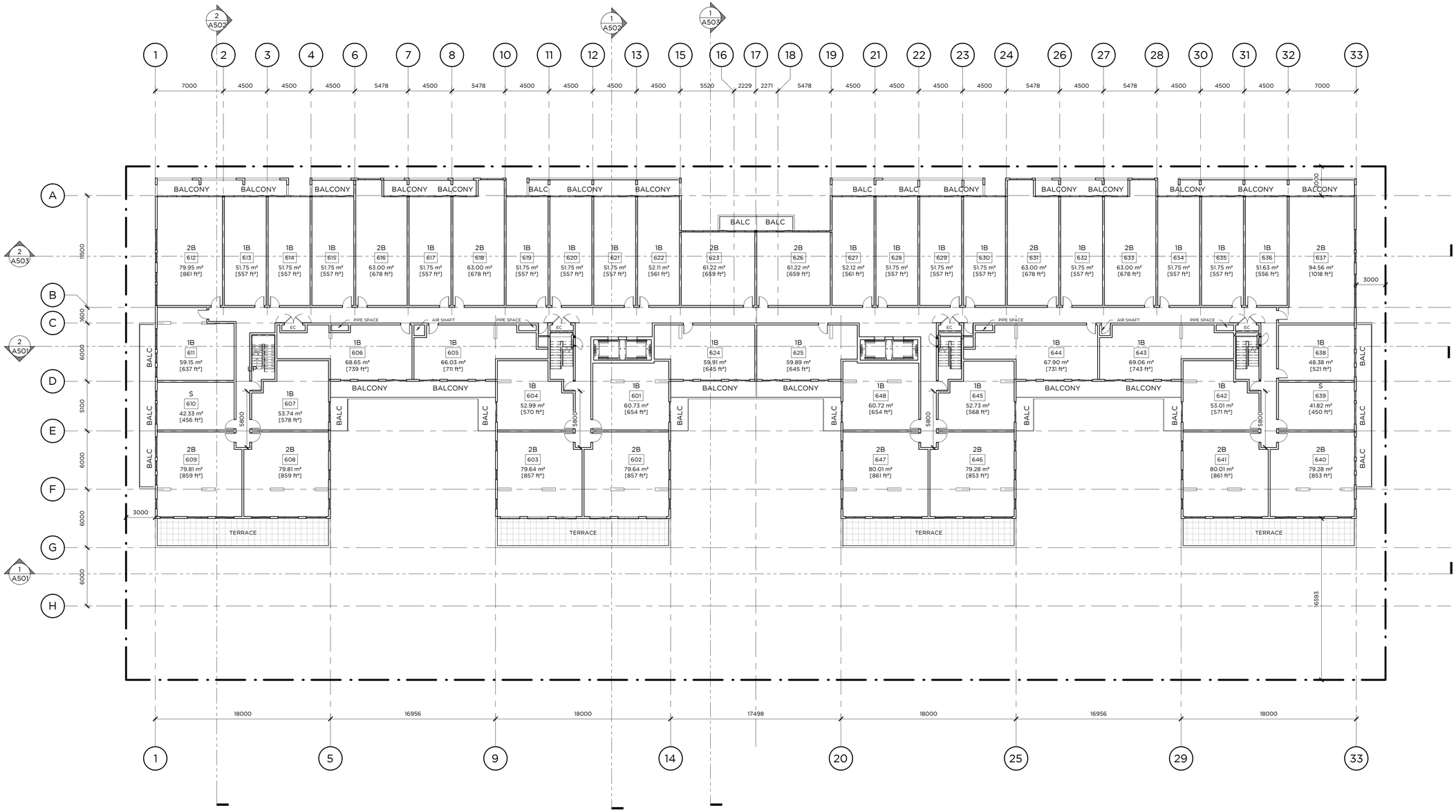
5TH FLOOR PLAN

1 : 200

A205

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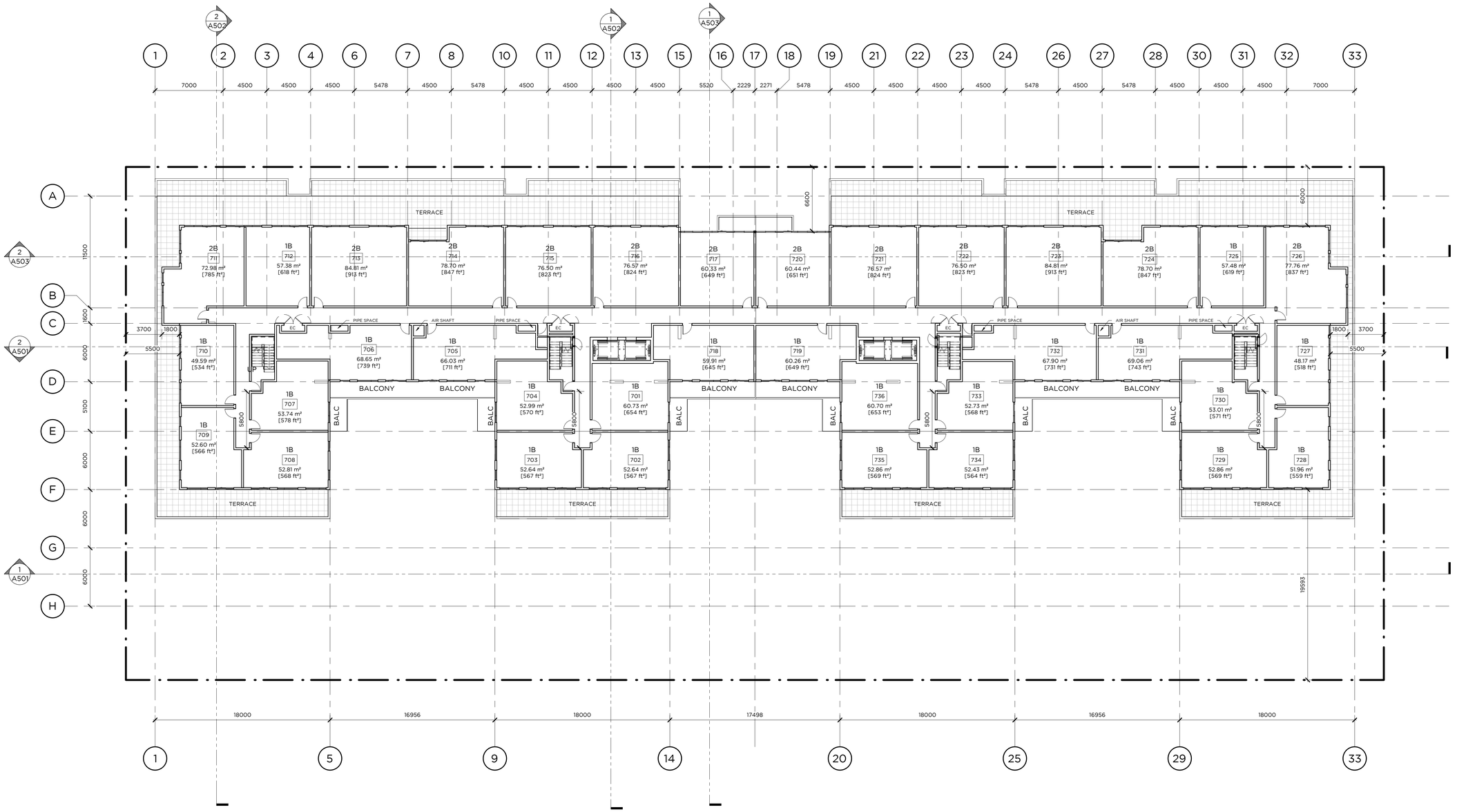
6TH FLOOR PLAN

1 : 200

A206

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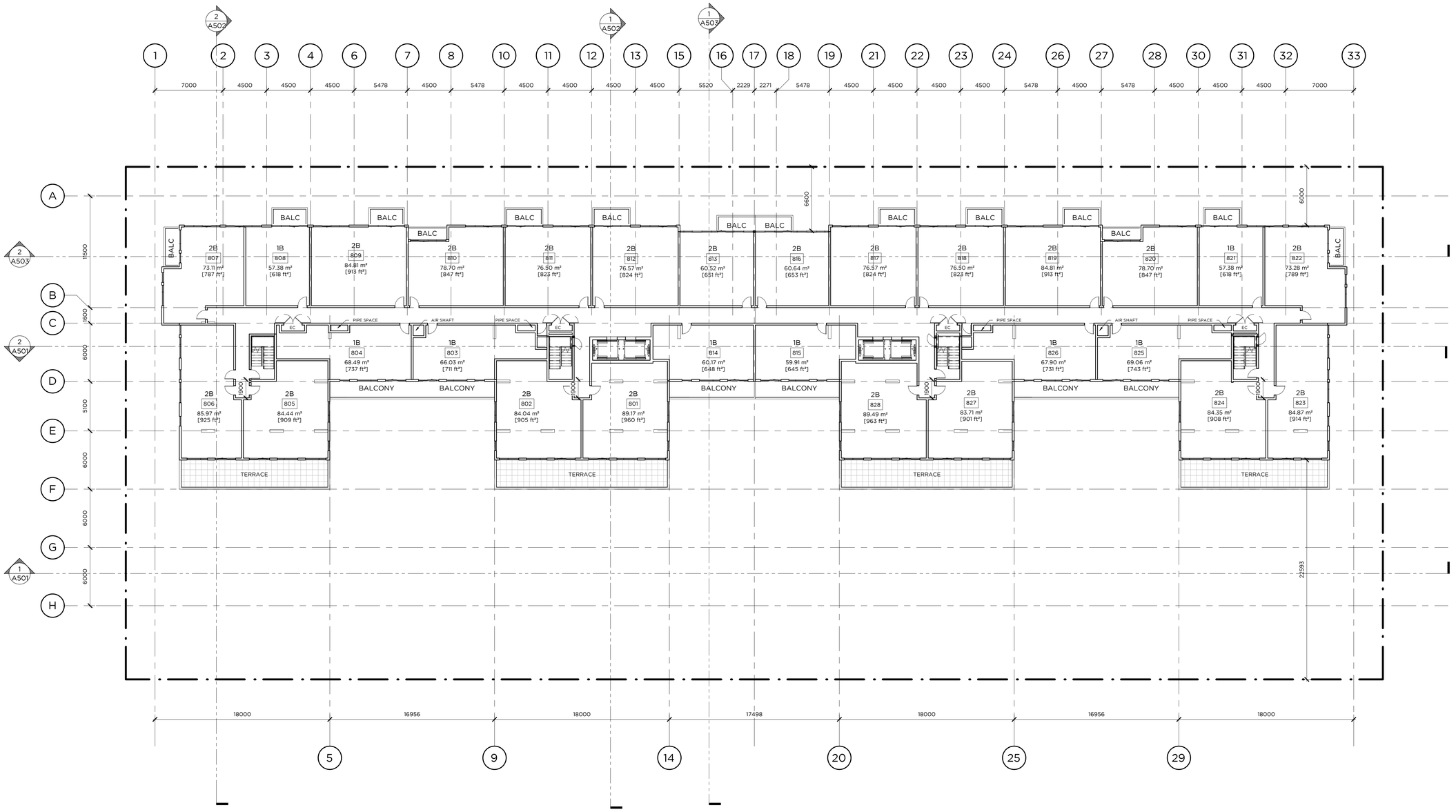
7TH FLOOR PLAN

1 : 200

A207

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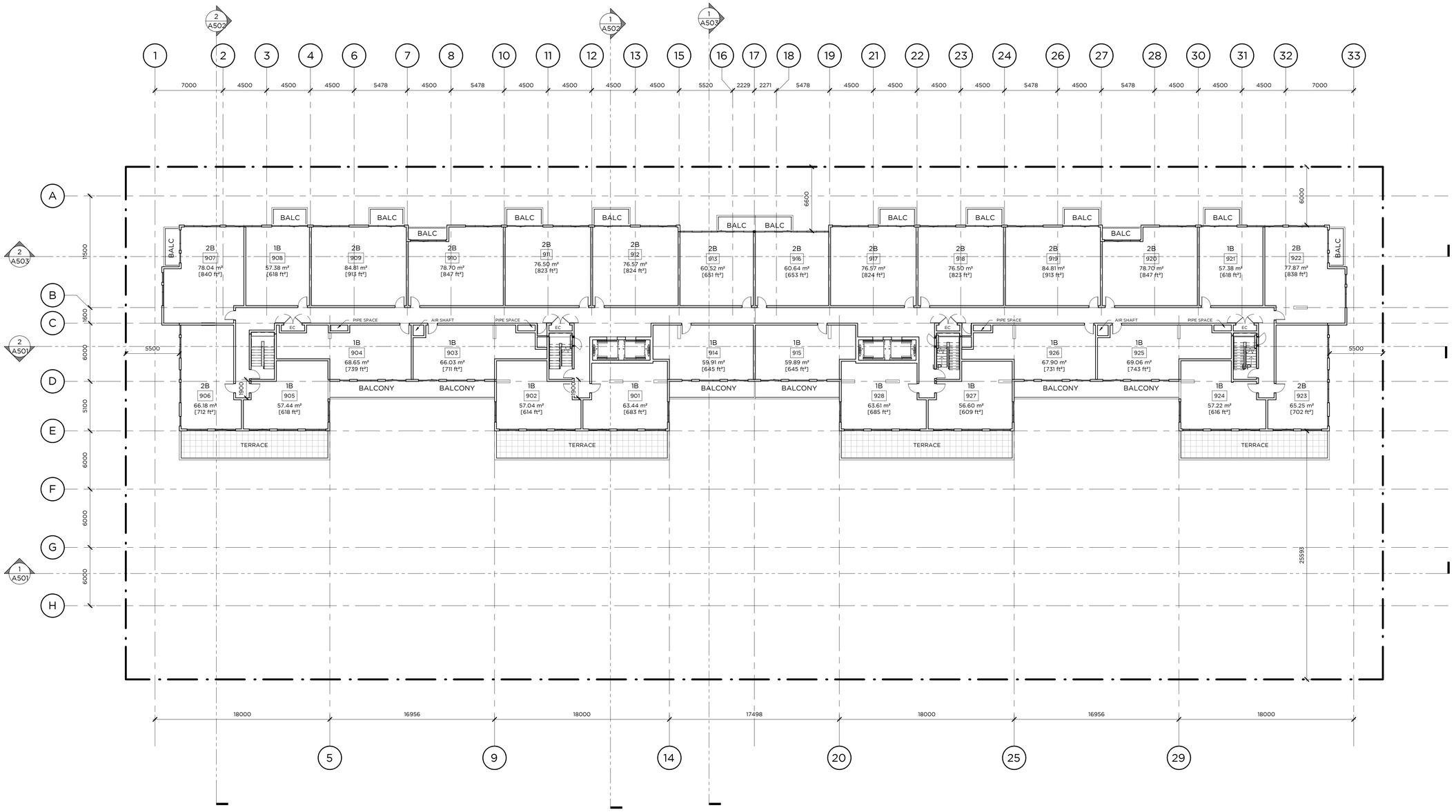
8TH FLOOR PLAN

1 : 200

A208

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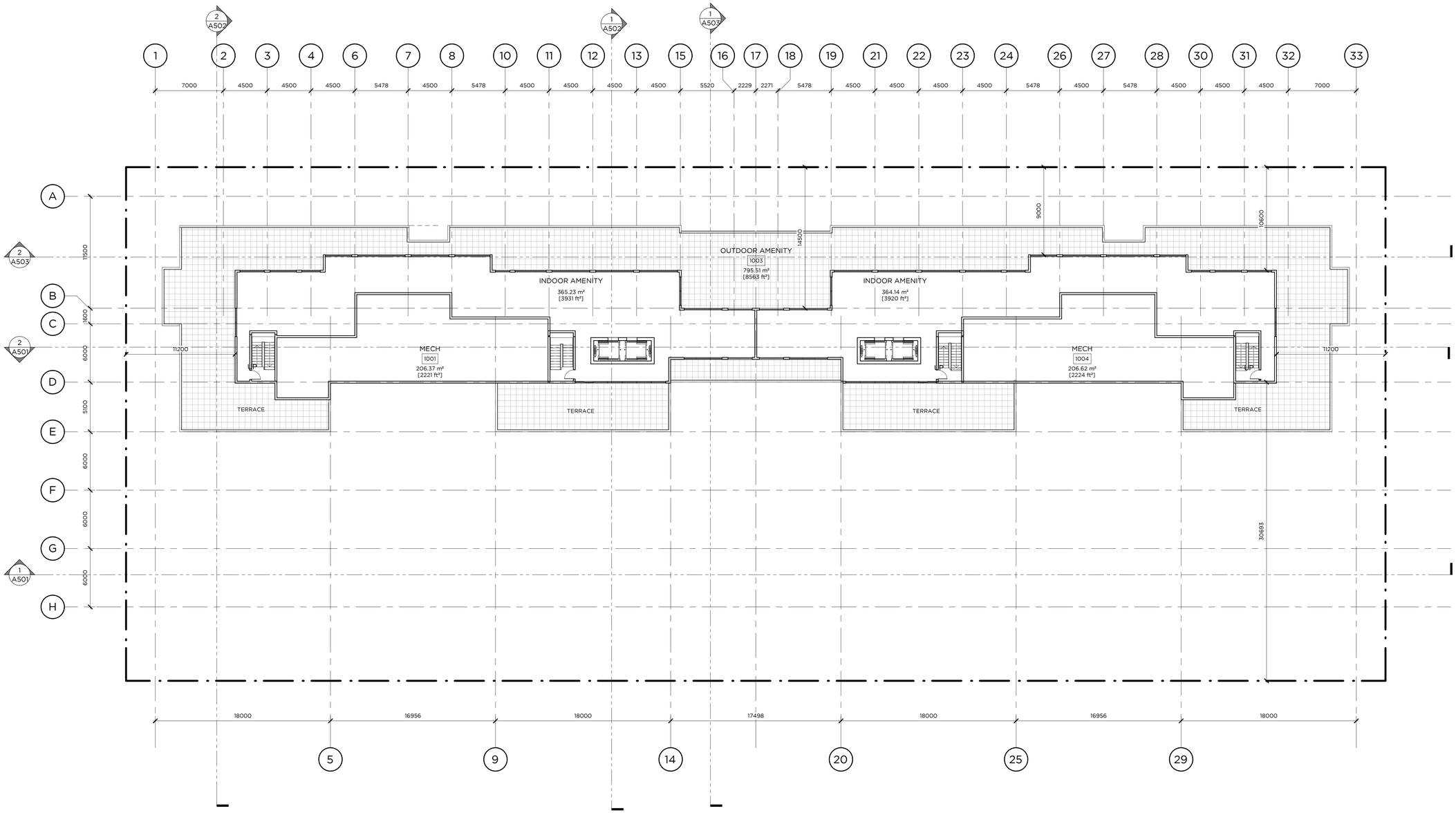
9TH FLOOR PLAN

1 : 200

A209

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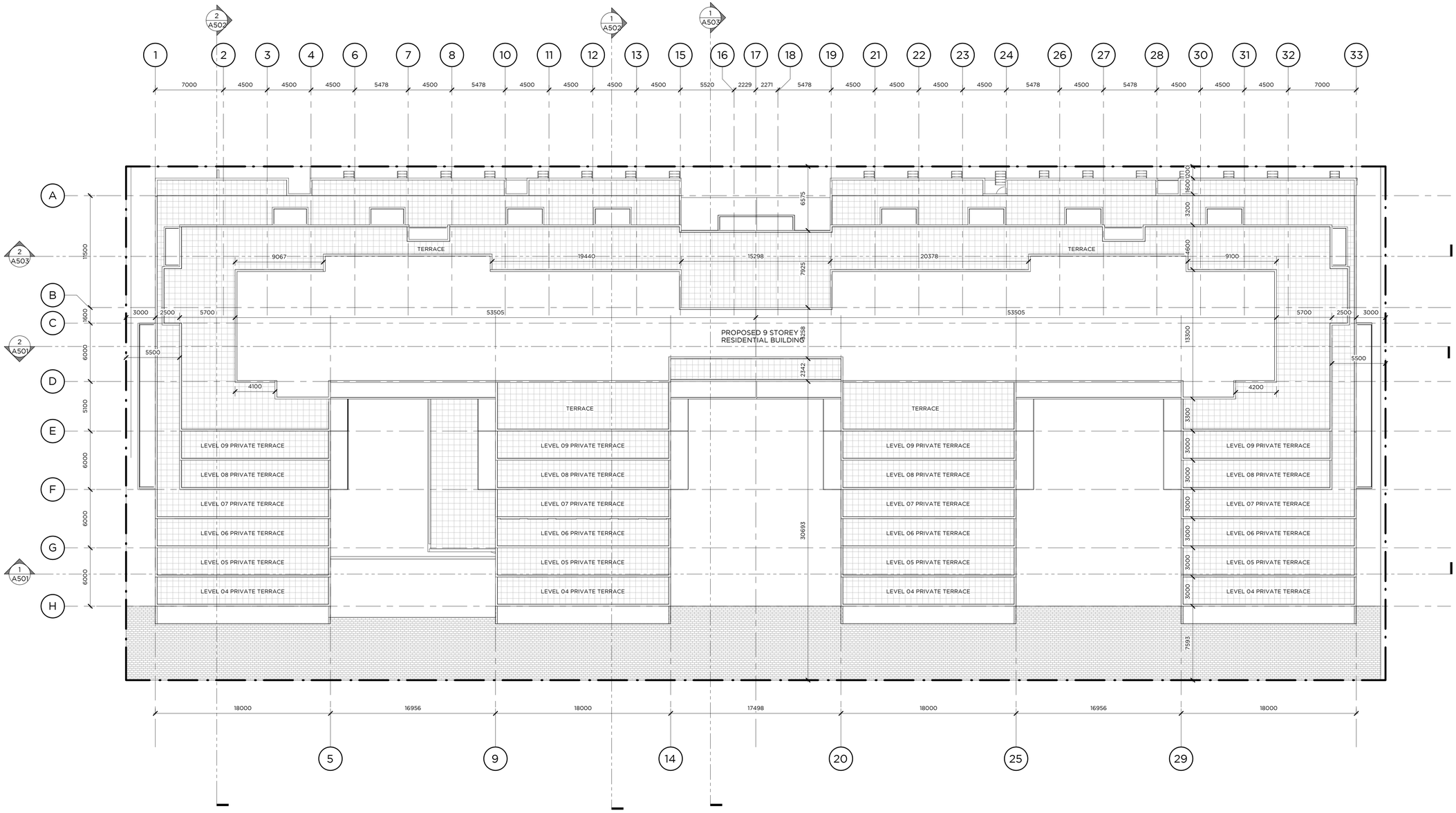
PH FLOOR PLAN

1 : 200

A210

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ROOF PLAN

1 : 200

A211

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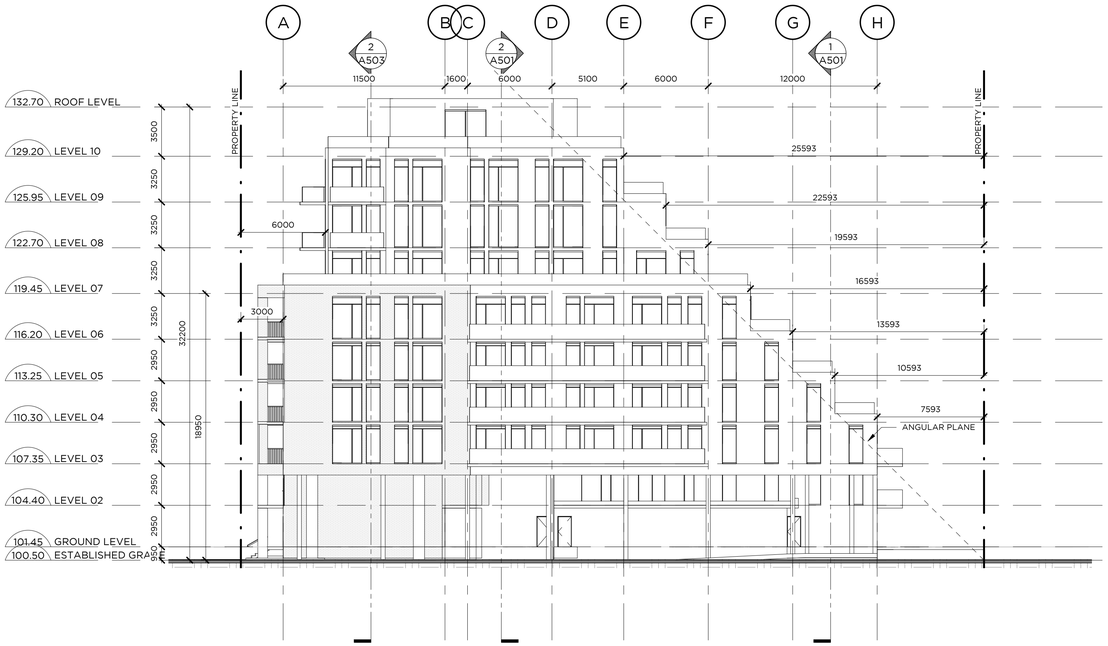
NORTH ELEVATION

1 : 200

A401

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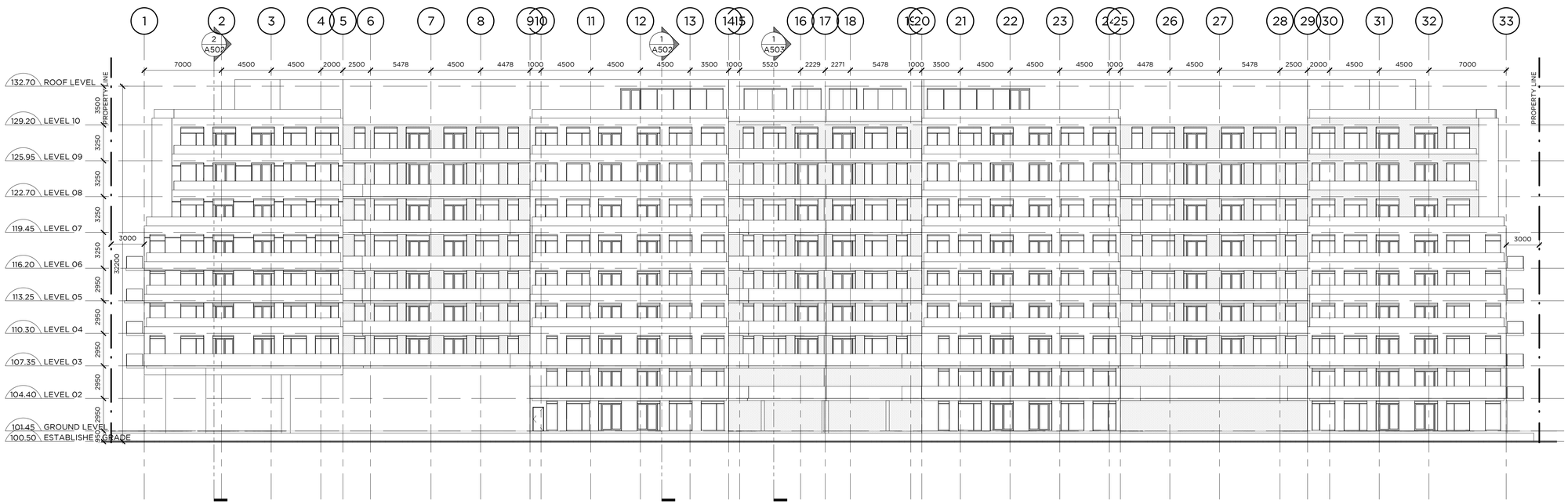
EAST ELEVATION

1 : 200

A402

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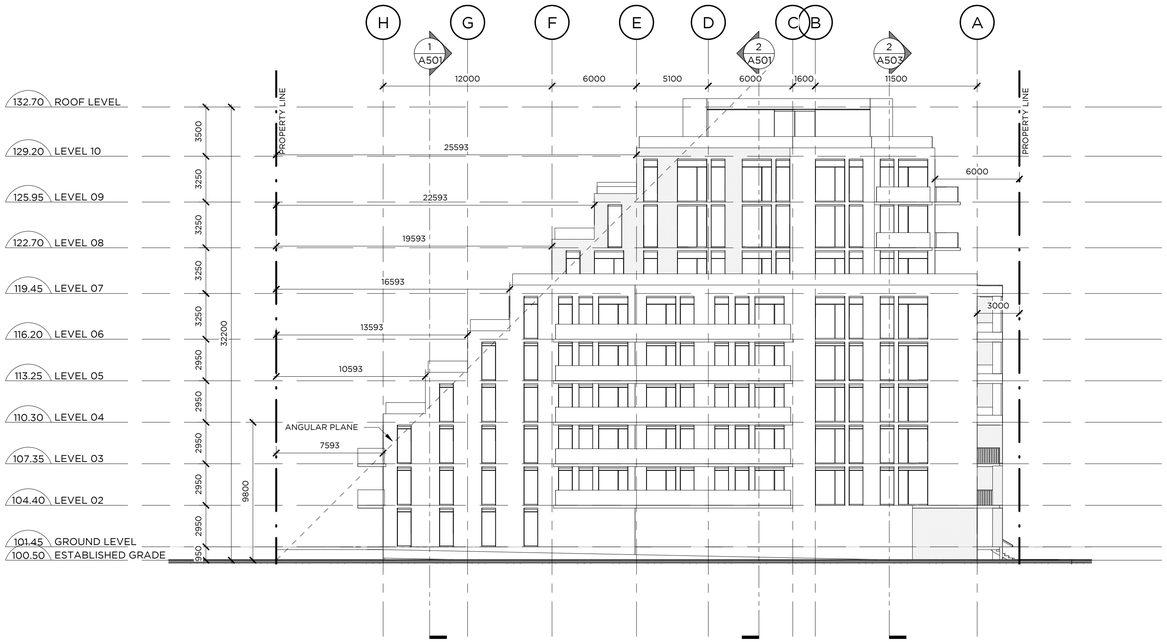
SOUTH ELEVATION

1 : 200

A403

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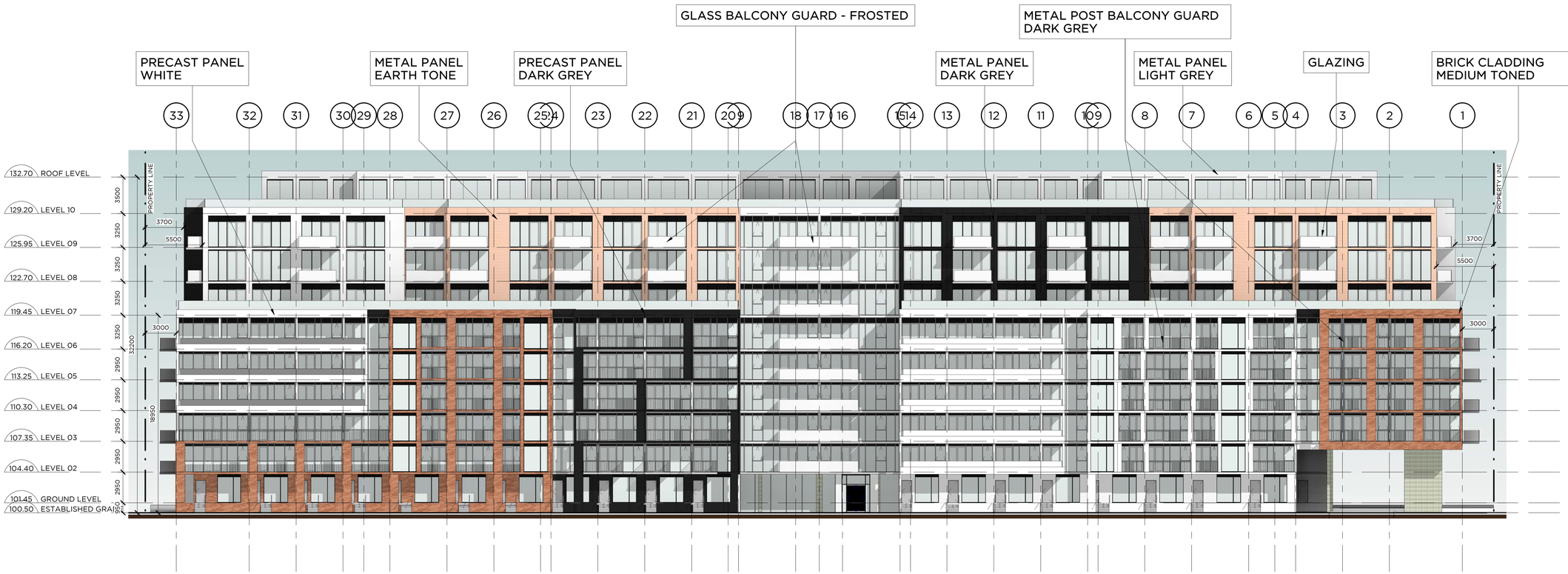
WEST ELEVATION

1 : 200

A404

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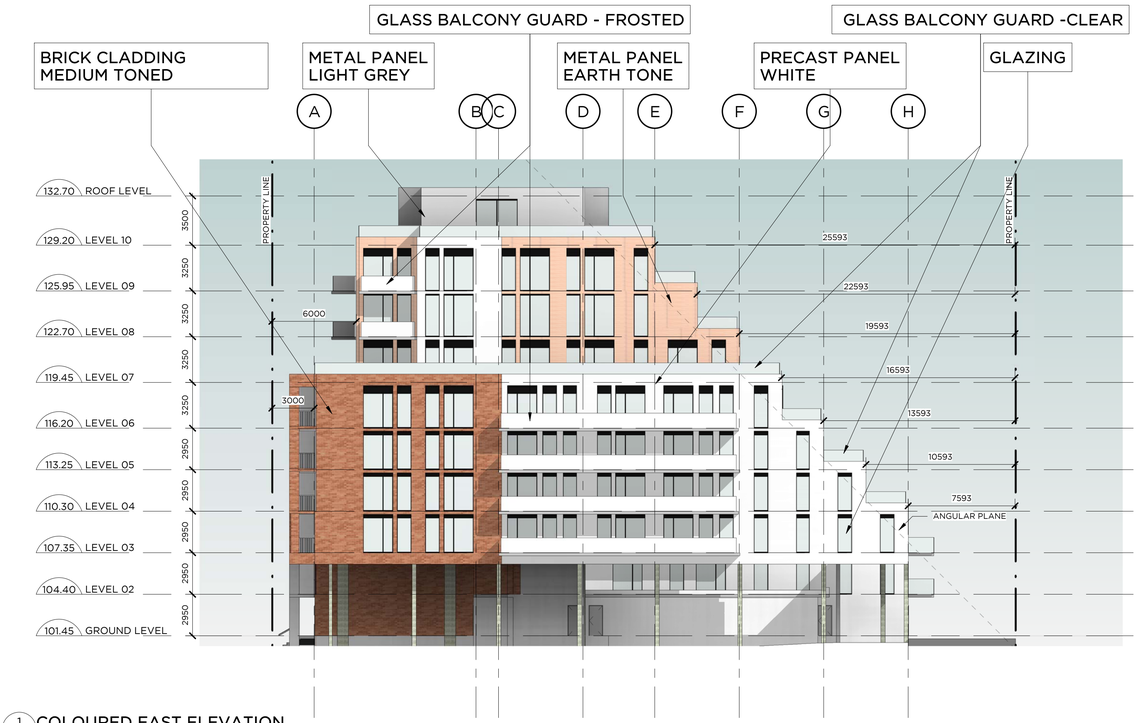
NORTH COLOURED ELEVATION

1 : 200

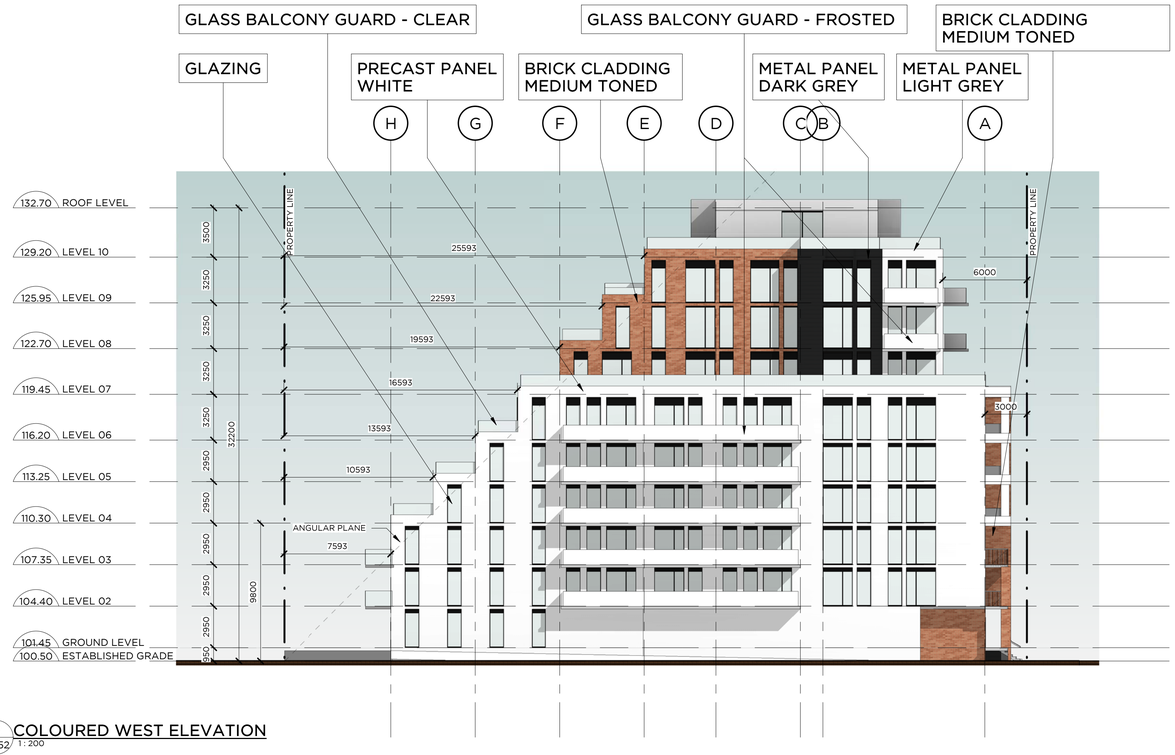
A451

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1 A452 COLOURED EAST ELEVATION
1 : 200



2 A452 COLOURED WEST ELEVATION
1 : 200

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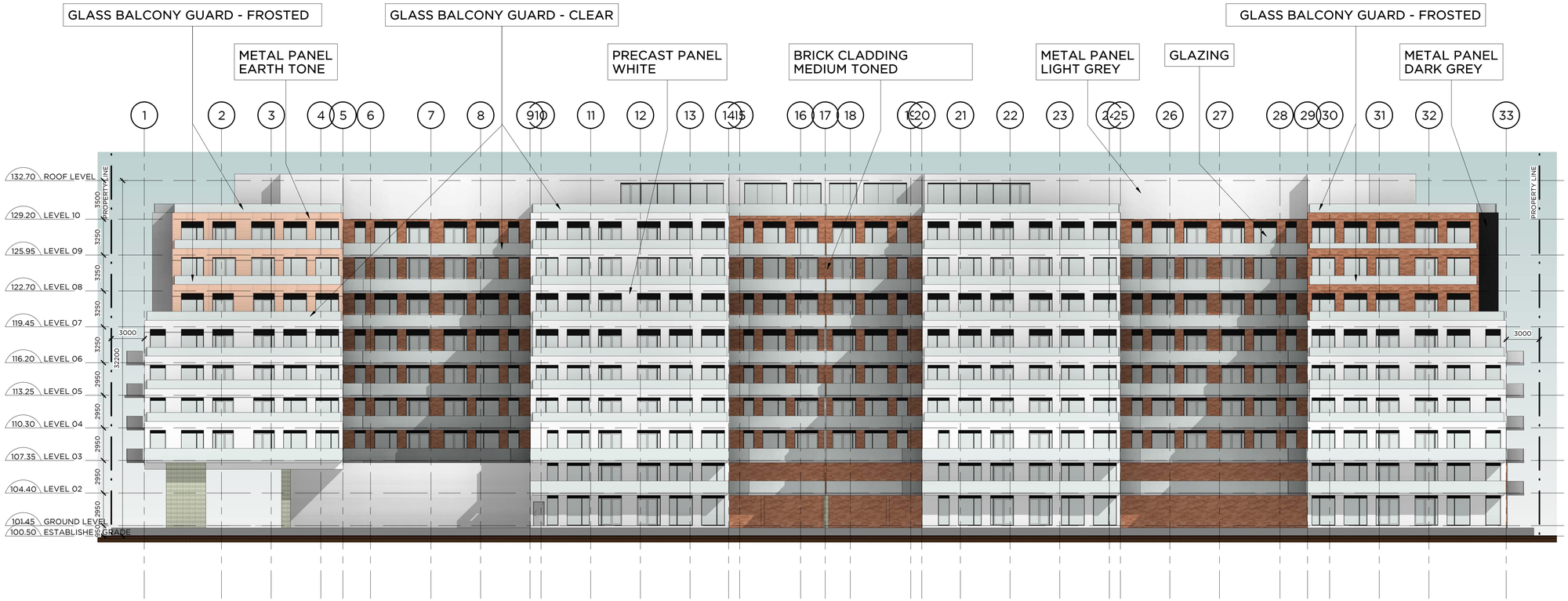
EAST-WEST
COLOURED
ELEVATIONS

1 : 200

A452

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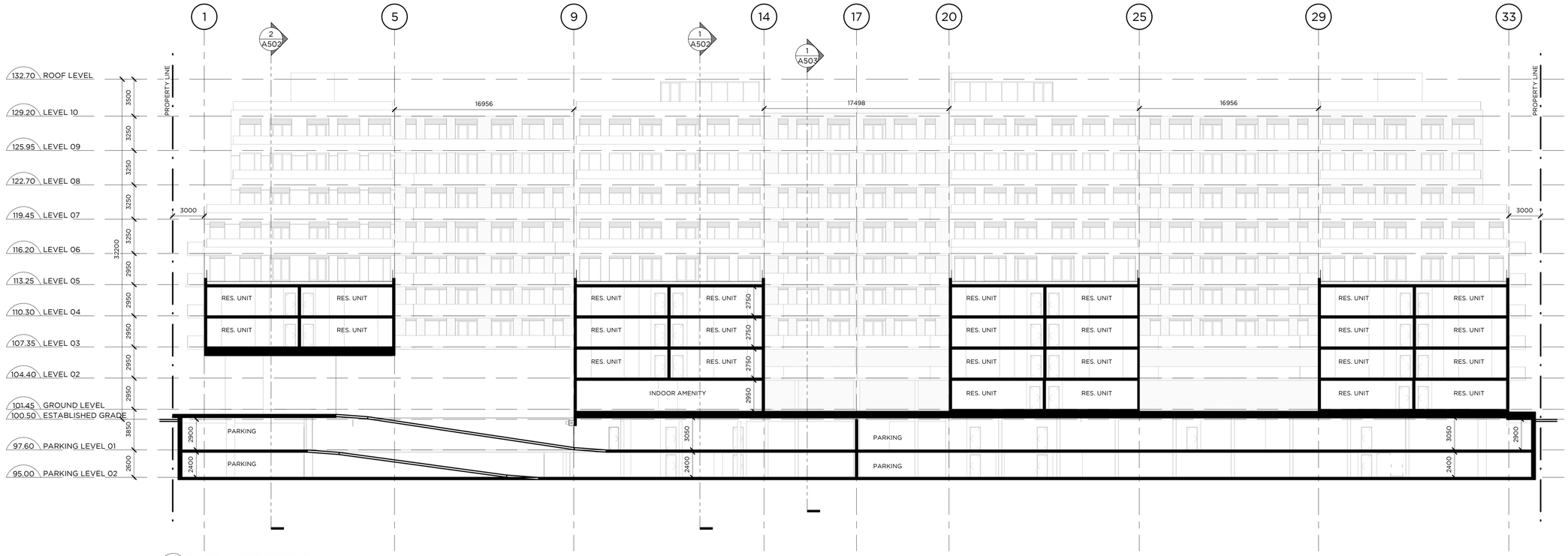
SOUTH COLOURED ELEVATION

1 : 200

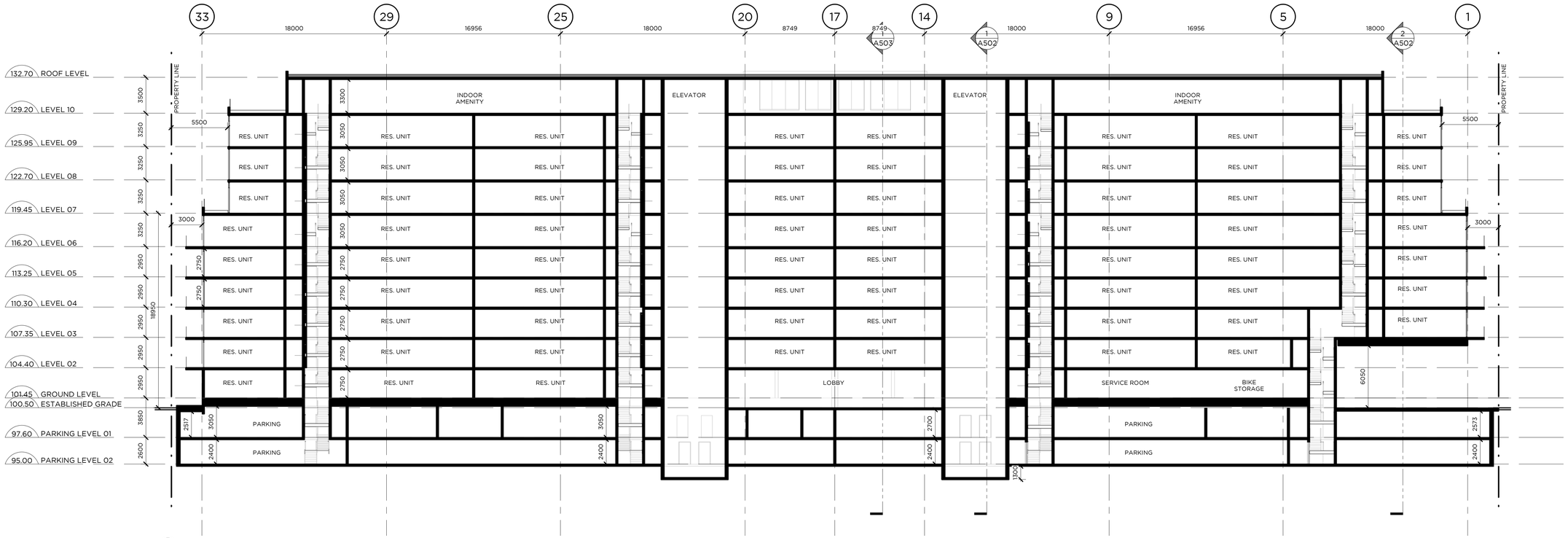
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1 A501 EAST-WEST SECTION 1
1 : 200



2 A501 EAST-WEST SECTION 2
1 : 200

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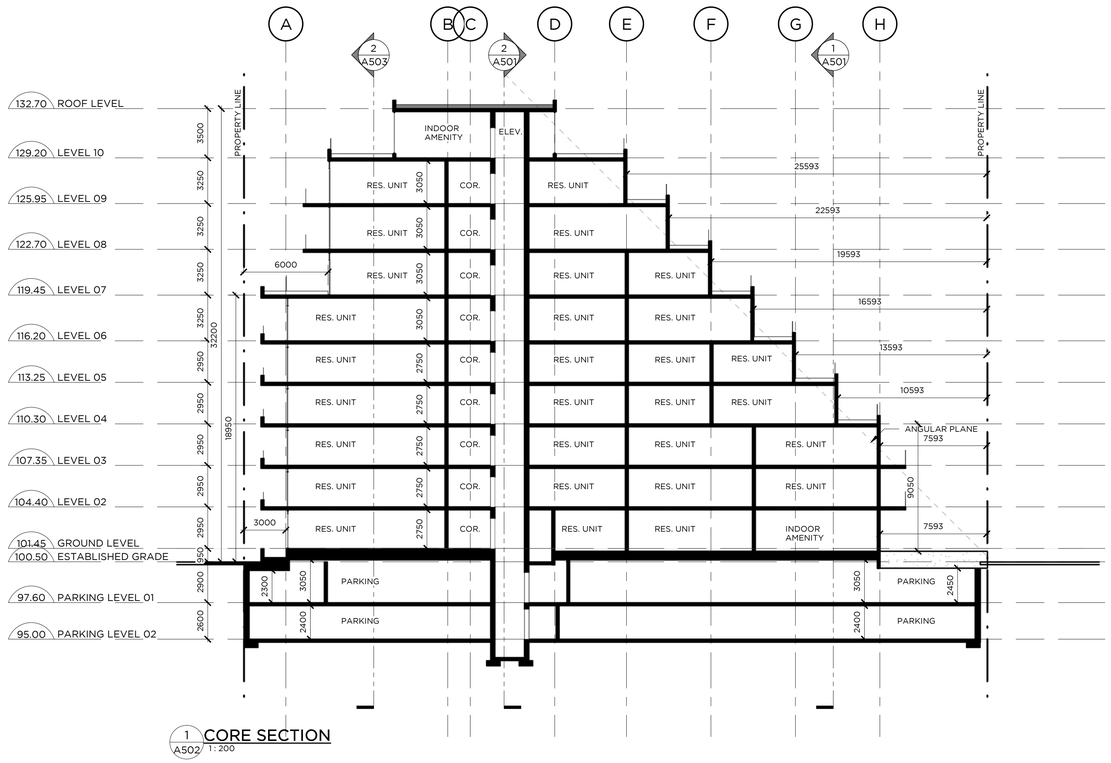
INFINITY GROUP

BUILDING SECTIONS

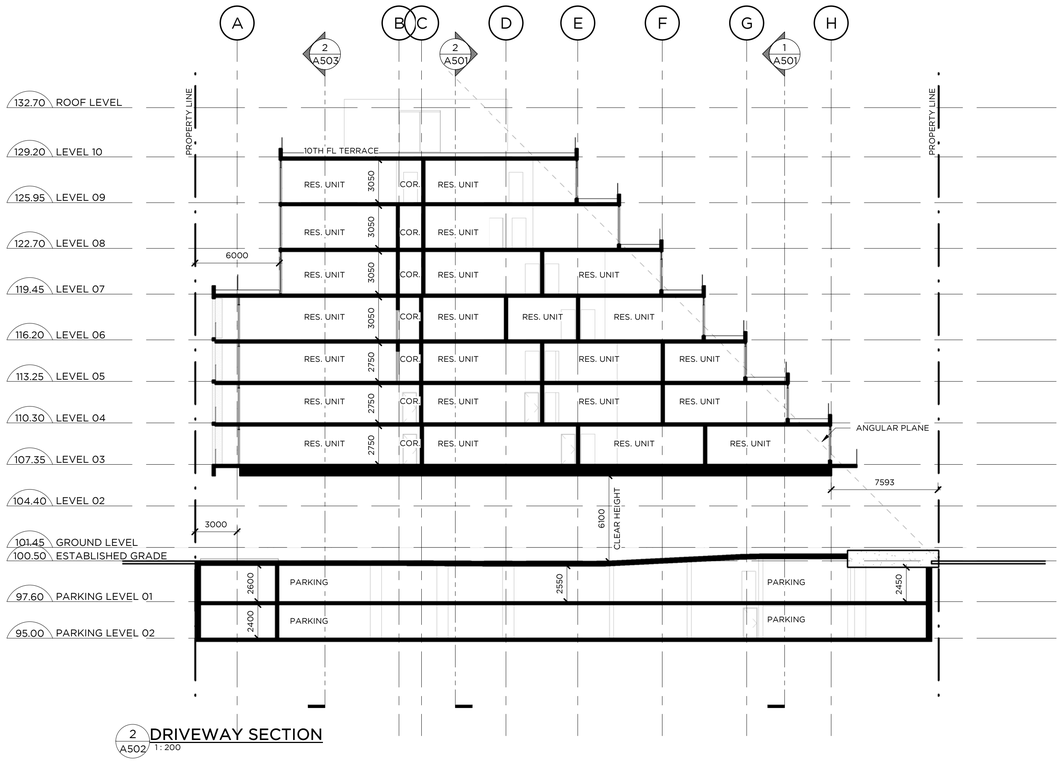
1 : 200

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1 A502 **CORE SECTION**
1 : 200



2 A502 **DRIVEWAY SECTION**
1 : 200

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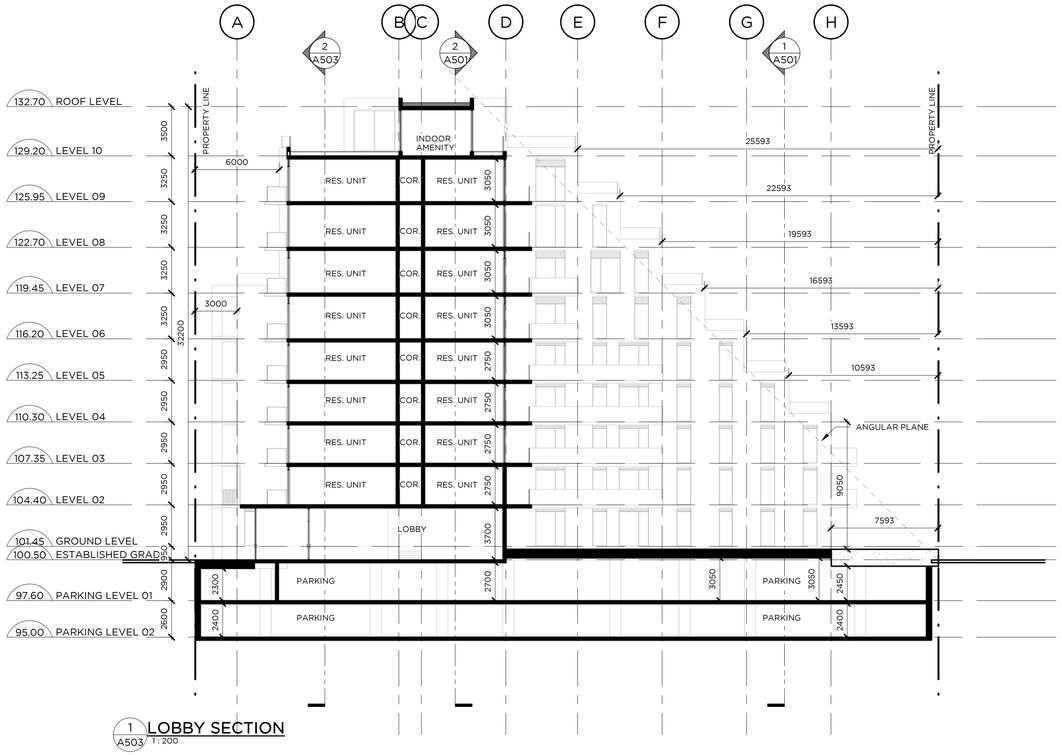
INFINITY 2NT GROUP

BUILDING SECTIONS

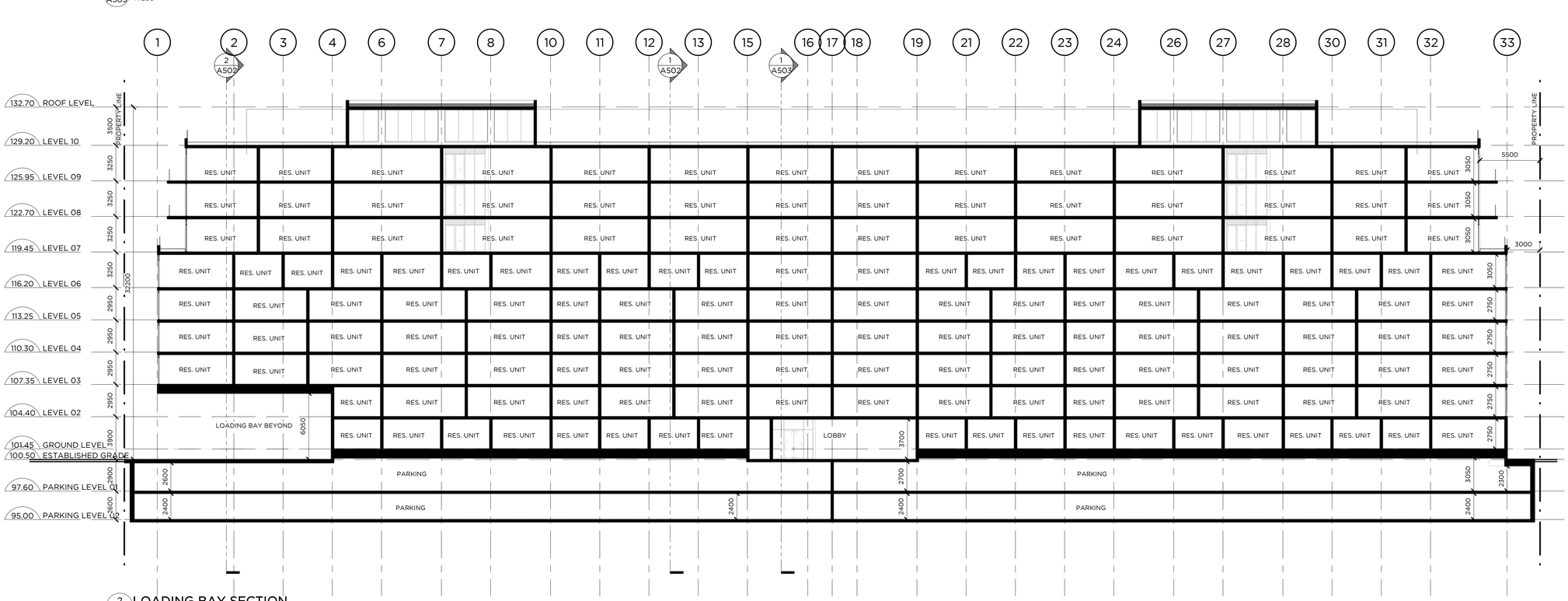
1 : 200

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1 A503 **LOBBY SECTION**
1 : 200



2 A503 **LOADING BAY SECTION**
1 : 200

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BUILDING SECTIONS

1 : 200

A503

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