Date: April 24, 2024

Project Description: Commercial Plaza – Phase 1 (1 Building Pad as per the LLWS + 5 Buildings Base building)

Project Address: 1300 Fanshawe Park Rd E, London, ON N5X 3Z8.

Westdell Development Corp. on behalf of "Stoney Creek Commons Inc." is requesting a written proposal for the Construction of *commercial buildings, consisting of three commercial one-story buildings and site servicing as per drawings and description below.*

1. GENERAL

1.1. Project Description:

- Buildings: CRU 1, 3, 5, 6 & 7.
- Site Servicing to all Buildings as per drawings.

1.2. Project priorities:

- Building 1A Pad, Site servicing, section 1 asphalt, Building 1 B & C, Buildings 7,6 5, and 3

1.3. Contractor to include all costs associated with temporary utilities and winter heat.

1.4. Contractor to arrange for and coordinate the required permanent utility hookups (i.e., gas, power, phone, water, etc.)

1.5. All materials, labour, and fees for all licenses and deposits, utility charges, applicable taxes, duties, design, and occupancy permits are to be included in the bid price.

1.6. Contract to be CCDC 02 - 2020 Stipulated Price Contract.

1.7. The contractor is to submit a construction schedule with the response to the RFP and Bid form.

1.8. Contractor to provide a Construction Progress Report Template

1.9. All work is to be warrantied as provided in CCDC for a minimum of one (1) year or in accordance with manufacturer warranties from the date of substantial performance.

1.10. The contractor is to provide all project closeout documents no later than four (4) weeks after the substantial completion date.

1.11. The Bidder shall, if requested by Landlord, provide evidence of experience, ability, capacity, financial resources, and reputation deemed necessary for the performance of the Contract.

1.12. Safety – Contractor to provide copies of all safety documentation required by MOL and company policy. These include but are not limited to proof of training, toolbox talks, weekly inspections, regular audits, field inspections, near-miss, and incident reports.

1.13. Landlord's standard method for measuring floor area complies with BOMA's Standard Method for Measuring Floor Area in Office Building – Store Area.

2. REQUEST FOR INFORMATION (RFI) DURING TENDERING PERIOD

All RFI's are to come through to Bassam Dahrouj & Khaled Mahmoud at Westdell Development Corp. via email only at bdahrouj@westdellcorp.com and kmahmoud@westdellcorp.com, No verbal or other means will be accepted.

RFIs will only be accepted up to 72 hours prior to closing.

3. PROPOSALS & CONTRACT TIME

Please refer to below "high-level milestone dates" provided:

- **Closing Date: 6th of May 2024, 2:00 PM**
- **Award Date: Approximately 3 weeks from Closing.**
- **Construction Start Date: ASAP**
- **Tentative Duration: Please provide a schedule.**

A full project schedule is due as part of the RFP response:

4. OWNER'S REQUIREMENTS LIST:

The Owner's Requirements list below describes the general requirements of the project. Your proposal should include an outline of the minimum specification proposed (Proposed alternates to be identified separately for review):

4.1. Project's priorities in order: Building 1A Pad, Site servicing, section 1 asphalt, Building 1 B & C, Buildings 7,6 5, and 3

4.2. Landlord work schedules, Tenants drawings, and specifications attached "If any" to be read in conjunction with the Request for Proposal and the Owner's Requirements List. In case of conflict, the tenant information governs.

4.3. All work is to be in accordance with the requirements (itemized and reasonably inferred) of the documents included within this RFP package. Where there is a conflict in scope, the more stringent shall apply.

4.4. All conflicts and vagaries of scope must be clarified with the Owner during the Proposal Period and specified in writing with the tender submittal.

4.5. All work including materials and execution to comply with the requirements of the applicable Building Code, latest revision, and all local Municipal Building Codes and Bylaws in effect at the date of execution of the contract.

4.6. All drywall is to be taken up to the deck, taped, sanded, primed, and ready for Tenant's paint.

4.7. Fire Protection to meet applicable codes.

4.8. Gas connection application and coordination with local gas utility by Contractor.

4.9. Hydro Service Connection coordination with local utilities by Contractor.

4.10. Contractor to meet all municipal and/or tenant requirements for fire alarm systems "If applicable".

4.11. Electrical scope to meet the requirements of codes, and as outlined in Drawings, Landlord's work schedules.

4.12. Contractor to Provide allowance for Winter Heat Charges, Mcdonald's Drive-Thru Infrastructure, and Starbuck's Drive-Thru Infrastructure.

4.13. Contractor to maintain an organized environment throughout the construction process with the help of construction/project management software to streamline communications such as RFI's, Change Orders, Shop Drawings, As-builts, etc.

5. DOCUMENTS ISSUED – CRU 1, 3, 5, 6 & 7.

5.1. Request for Proposal

5.2. Bid form with Cost breakdown "Please fill and submit Bid form for each building."

5.3. Site Plan Drawings (3 Drawings): Sheet# SP1, SP2, SP3. Issued for SPA, dated March 20, 2024, By SBM.

5.4. Existing conditions, removals, and sediment & erosion control Drawing (2 Drawings): Sheet#: C2.1, C2.2. Issued for SPA dated March 22, 2024, By SBM.

5.5. Site Servicing Drawings (5 Drawings): Sheet# C3.1, C3.2, C3.3, C3.4, C3.5. Issued for SPA, dated March 22, 2024, By SBM.

5.6. Site Grading Drawing (4 Drawings): Sheet# C4.1, C4.2, C4.3, C4.4. Issued for SPA, dated March 22, 2024, By SBM.

5.7. Traffic Management Drawing (1 Drawing): Sheet# C5. Issued for SPA, dated March 22, 2024, By SBM.

5.8. Standard Details Drawing (1 Drawing): Sheet# C6, Issued for SPA, dated March 22, 2024, By SBM.

5.9. Landscape Drawings (5 Drawings): Sheet # L1.1, L1.2, L1.3, L1.4, L2. Issued for SPA5, dated February 27, 2024, By SBM.

5.10. Photometrics Drawing (1 Drawing): Sheet# EP1. Issued for SPA5, dated February 28, 2024, By SBM.

5.11. Electric Site Plan Drawing (1 Drawing): Sheet# E100. Insured for Coordination, dated April 4, 2024, By Creative Structures.

5.12. **Building 1(Units B & C):**

- Unit 1B: Architectural (17 Drawings): A0.0 to A6.0. IFT, dated April 2, 2024, By Creative Structures.
- Units 1B & 1C: Structural (21 Drawings): S0.0 to S7.2. IFT, dated April 3, 2024, By IE Design.
- Unit 1B: Mechanical (9 Drawings) M0 to M8. IFT, dated March 25, 2024, By Metco.
- Unit 1B: Electrical (5 Drawings) E001 to E301. IFT, dated April 2, 2024, By Creative Structures.
- Unit 1B: Sprinklers (2 Drawings) FP-1, FP-2. IFP, dated April 6, 2024, By SDC.
- Unit 1B: Sprinklers Calculation (40 Pages) dated April 6, 2024, By SDC.
- Unit 1C: Architectural (12 Drawings): A0.0 to A6.0. IFT, dated April 2, 2024, By Creative Structures.
- Unit 1C: Mechanical (6 Drawings) M0 to M5. IFT, dated March 29, 2024, By Metco.
- Unit 1C: Electrical (4 Drawings) E001,E100,E101,E300. IFT, dated April 2, 2024, By Creative Structures.
- Unit 1C: Sprinklers (2 Drawings) FP-1, FP-2. IFP, dated April 2, 2024, By SDC.
- Unit 1C: Sprinklers Calculation (20 Pages) dated April 7, 2024, By SDC.

5.13. Building 3:

- Architectural (13 Drawings): A-0.0 to A-6.0. IFP, dated April 2, 2024, By Creative Structures.
- Structural (18 Drawings): S-0.0 to S-7.1. IFP, dated April 3, 2024, By IE Design.
- Mechanical (6 Drawings) M0 to M5. IFP, dated March 29, 2024, By Metco.
- Electrical (4 Drawings) E001 to E300. IFP, dated April 2, 2024, By Creative Structures.

5.14. Building 5:

- Architectural (13 Drawings): A-0.0 to A-6.0. IFP, dated April 2, 2024, By Creative Structures.
- Structural (18 Drawings): S-0.0 to S-7.1. IFP, dated April 3, 2024, By IE Design.
- Mechanical (6 Drawings) M0 to M5. IFP, dated March 25, 2024, By Metco.
- Electrical (4 Drawings) E001 to E300. IFP, dated April 2, 2024, By Creative Structures.

5.15. Building 6:

- Architectural (15 Drawings): A-0.0 to A-6.0. IFP, dated April 3, 2024, By Creative Structures.
- Structural (16 Drawings): S-0.0 to S-7.1. IFP, dated April 3, 2024, By IE Design.
- Mechanical (6 Drawings) M0 to M5. IFP, dated March 25, 2024, By Metco.
- Electrical (4 Drawings) E001 to E300. IFP, dated April 3, 2024, By Creative Structures.

5.16. Building 7:

- Architectural (12 Drawings): A-0.0 to A-6.0. IFP, dated April 3, 2024, By Creative Structures.
- Structural (19 Drawings): S0.0 to S7.1. IFP, dated April 3, 2024, By IE Design.
- Mechanical (6 Drawings) M0 to M5. IFP, dated March 25, 2024, By Metco.
- Electrical (3 Drawings) E001 to E300. IFP, dated April 3, 2024, By Creative Structures.

5.17. Landlord's Work Schedules

- Metro LLWS – For Coordination (Building 1 Unit A)
- Shoppers LLWS (Building 1 Unit B)
- Dollarama LLWS (Building 1 Unit C)
- Adelaide North Dental Care LLWS (Building 6 Unit B)
- Osmow's LLWS (Building 5 Unit A)
- Stacked LLWS (Building 5 Unit F)
- McDonald's LLWS (Building 3 Unit A)
- Starbuck LLWS (Building 7 Unit A).
- Contractor to request Tenant Drawings for coordination at a later date.

5.18. Addendum#1 : Including

- RFis response by IED
- Leasing plan
- Geotechnical report
- LLWS of Starbucks

6. PROVIDED BY OWNER

6.1. The owner will make all arrangements regarding the application for and payment of the Building Permit and associated costs.

6.2. Development costs and associated fees by Owner.

6.3. Cost and coordination of Testing and Inspection Consultant(s) as directed by the Owner.

6.4. Application of Hydro service is by Owner, coordination of service site works is by contractor.

6.5. Application of Gas Services is by Contractor, and coordination of gas site works is by contractor.

7. PROPOSAL PERIOD

You are requested to submit your proposals **(via E-mail only)** on your company letterhead along with the detailed breakdown sheet addressed to:

Stoney Creek Commons Inc. C/O Westdell Dev. Corp.
Attention: Khaled Mahmoud (kmahmoud@westdellcorp.com) & Bassam Dahrouj (bdahrouj@westdellcorp.com)

No later than Monday 6th May 2024, 2:00 PM

- The construction schedule showing the construction period must be submitted with the tender.
- The contractor is to hold the price for a minimum of 60 days from the closing date.
- The original complete and unaltered paper Bid Submission documents might be required later.
- Changes, revisions, or alterations made to the Bid Submission documents after sending may result in the Bid Submission being declared non-compliant.
- The Owner reserves the right to review and assess the bids and bidders from all perspectives: capability, capacity, technical, financial, schedule duration, alternatives proposed, etc., and ultimately decide the winner regardless of the lower bid price, and request for bonds if needed.

Stoney Creek Commons Inc.
C/O Westdell Dev. Corp.
1300 Fanshawe Park Rd E, London, ON N5X 3Z8

Addendum #1

Date: April 24, 2024

TENDER ADDENDUM #1

Project Description: Stoney Creek Commons Inc.

Project Address: 1300 Fanshawe Park Rd E, London, ON N5X 3Z8

The following items shall be incorporated as clarifications to the Tender Documents and shall be included, as applicable, in the Stipulated Sum Tender Amount. Acknowledgement of the receipt of this Addendum shall be indicated in the Tender Form. It is the responsibility of the bidder to bring this addendum to the attention of all subcontractors and material suppliers.

Based on RFIs received, and clarifications from consultants, please see below and Attached:

- **Closing Date: 6th of May 2024, 2:00 PM**

Attached :

1. **RFI responses by Creative Structures and IE Design.**
2. **Leasing plan " Again"**
3. **Geotechnical Report**
4. **LLWS for Starbucks**

END OF ADDENDUM #1

1701 Richmond Street – Unit 3A
London, Ontario, N5X 3Y2
CANADA
P: (519) 878-5488
cs@creativestr.ca

CS 2023-102

April 23, 2024

1300 Fanshawe Park Rd. E., Commercial Buildings, London, ON

Request for Information - Response

RFI #1

1. Question about CRU #3, half the building shows out of scope, and no termination of roofing/parapet shown.
   This is also the low spot where the roof drains are shown. It would be more beneficial for all the roofing to take place and then the tenant (McDonalds) does their fit-up work.

Can you please clarify?

Creative Structures Response: Second half building is not by owner and shared wall and joint roof detail to be coordinated with future adjacent building tenant - Client to confirm.

RFI #2

Forwarding a question regarding Curtain walls.

Could you please confirm if Windspec is an approved equivalent manufacturer. I am attaching the cutlist for Windspec 655 storefront series and universal HTP doors.

Creative Structures Response: alternative supplier/manufacturer/specs must be CSA approved and as per latest OBC Standards and requirements – samples to be provided and Client also to confirm. WD: Contractor is to propose alternatives as needed

RFI #3

I'm forwarding this question we are receiving for the foundation.

1. Do you have a schedule for this project? Can I put a note about charging extra for heated concrete? WD: Yes

IE Design Response: Owner / G.C. to provide and discuss schedule – Client to confirm.

WD: Each contractor to submit a proposed Schedule with the bid, considering the Start ASAP

2. For Building 1B and 1C, the chart calls for 2000 X 2000 X 600mm pad but then calls for 2'-5" thick pad. I think it's a typo and it should be 2' thick to match the metric dimension.

1701 Richmond Street – Unit 3A
London, Ontario, N5X 3Y2
CANADA
P: (519) 878-5488
cs@creativestr.ca

IE Design Response: The footing is 2000 X 2000 X 600mm, please follow the metric dimension or 6'7" x 6'7" x 2'

3. Is there a concrete upstand on the perimeter foundation wall? No upstand is shown on the architectural cross sections.

IE Design Response: Building B doesn't not have a concrete upstand on the perimeter foundation wall, unlike building C as shown in architectural wall section A-4.1

4. The strip footing dimensions are also off, they call for 1500mm X 400mm and in the same schedule they call for 3'-3" X 1'-7". Which dimension is correct? It should be 5'-0" X 16".

IE Design Response: The footing is 1500mm X 400mm, please follow the metric dimension or 4'-11" x 1'-4"

RFI #4

I have some questions about this dock lift?

One place they refer to 36" x 60" lip and then down below they say 36"x 72" split aluminum lip- which is it?
If this is an outside application, we don't recommend accordion bellows.
If they are asking for laminated bumpers this might be what they are using to stop the trucks from hitting the lift.
Looks like they want a gate on the fixed end (the end that goes into the warehouse)

I don't know why or where they want the laminated bumpers because there is no wall to mount these to where the scissor platform is.

Creative Structures Response: Client/Tenant to confirm. Refer to SDM standard drawing, December 2023 Shell Design Standards, page 12/47.

WD: Consider the more severe case

RFI #5

1. SITE:
   a. Need specs for site lighting.

Creative Structures Response: To be provided in future addendums.

   b. Need details for light standards.

Creative Structures Response: To be provided in future addendums.

   c. Need site conduit details. ie Encased in concrete/sand.

Creative Structures Response: To be provided in future addendums.

CREATIVE STRUCTURES

1701 Richmond Street – Unit 3A
London, Ontario, N5X 3Y2
CANADA
P: (519) 878-5488
cs@creativestr.ca

2. CRU1B:
    a. They keep referencing in slab conduits and in slab boxes, but I don't see any on prints.

Creative Structures Response: To be provided in future addendums.

    b. No lighting needed within the building?

Creative Structures Response: By Tennant WD: Only construction lighting for Tenants use

    c. Single line diagram (SLD) shows 8 RTU, the print shows 4, where are the other 4?

Creative Structures Response: To be provided in future addendums.

    d. SLD shows RTU as RTU1-8. The print shows RTU1A-1D, I need to know which is which for wire sizing.

Creative Structures Response: To be provided in future addendums.

    e. LLWS asks for a 400a service with disconnect and splitter, The prints show a panel w/main breaker, Which one?

Creative Structures Response: To be provided in future addendums.

    f. Need pull stations at all exits.

Creative Structures Response: Yes, correct.

3. CRU1C:
    a. Need SLD.

Creative Structures Response: To be provided in future addendums.

    b. LLWS states we need sufficient lighting in the receiving area, but there is none there.

Creative Structures Response: Refer to CRU#1 Unit C A-3.1 elevation for lighting location and refer to photometric drawing for sufficient information.

    c. does this unit have a LLWS tied to it?

Creative Structures Response: Client/Owner to provide. WD: 1C is Dollarama, please refer to leasing plan

4. CRU3:
    a. Identify if any units are in the LLWS.

Creative Structures Response: Client/Owner to provide. WD: please refer to leasing plan, Mcdonalds to be built by them, other unit is vacant

    b. SLD only shows 1 RTU, print shows 2 RTU.

Creative Structures Response: Yes, correct. WD: consider 2 units

5. CRU5:
    a. Identify if any units are in the LLWS.

1701 Richmond Street – Unit 3A
London, Ontario, N5X 3Y2
CANADA
P: (519) 878-5488
cs@creativestr.ca

Creative Structures Response: Client/Owner to provide.
WD: Pelase refer to provided Leasing plan

6. CRU6:
    a. Is unit A an empty shell or does it have a LLWS tied to it?

Creative Structures Response: Client/Owner to provide.
WD: Pelase refer to provided Leasing plan

7. CRU7:
    a. Identify if any units are in the LLWS.

Creative Structures Response: Client/Owner to provide.
WD: Pelase refer to provided Leasing plan

RFI #6

1. Is there a date we have to handover the Bldg 1A pad over to Food Basics?

Creative Structures Response: Client/Owner to confirm. WD: End of September 2024

2. Is there any irrigation required for the landscaping areas?

Creative Structures Response: No - Client/Owner to confirm. WD: Will be added later as a change

3. As we are only pricing Bldg 3B, are we to exclude the McDonalds roofing from our quote?

Creative Structures Response: Yes - Client/Owner to confirm. WD: Exclude all Mcdonalds building

4. Are we to include the exterior apron for the Food Basics, or is that in the tenant scope of work? WD: Please refer to the LLWS provided for metro

Creative Structures Response: Yes include - Client/Owner to confirm.

5. Can you confirm where the section 1 asphalt area is located on a site plan & a date it is needed by?

Creative Structures Response: To be provided in future addendums
WD: End of October 2024

6. Are there any site reports (Geotech, HydroG, ESA)?

Creative Structures Response: Yes – refer to attached

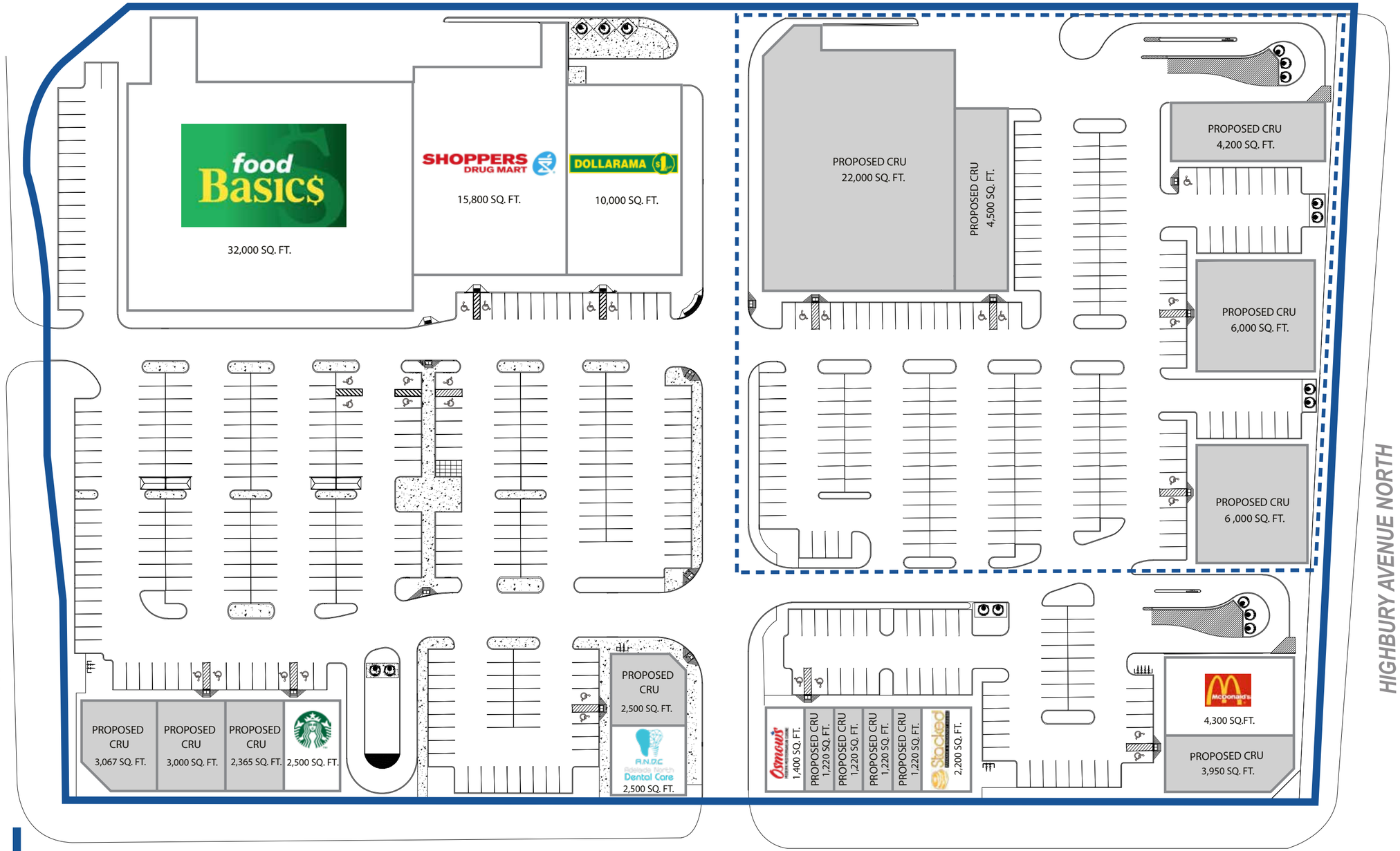
RFI #7

1. For Shopper Drug Mart Unit 1C – What type of doors needed for vestibule? Floor plan shows automatic swing doors (A2.1B). However, LLWS asking for automatic sliding doors. In addition, screen type S1 & S2 on dwg A6.0 showing vestibule glazing needs to be updated to show doors.

Creative Structures Response: Unit 1 C is not Shoppers Drug Mart - Refer to A-6.0 for automatic sliding door. Refer to A-2.1B for vestibule interior doors.

WD: Pelase refer to provided Leasing plan

STONEY CREEK COMMONS



WESTDELL DEVELOPMENT CORP

For leasing inquires please contact us | 1300 Fanshawe Park Rd E. London, ON | info@westdellcorp.com | 519.850.0000 Ext 208

GEOTECHNCIAL INVESTIGATION
REPORT # 2382

1300 Fanshawe Park Road East,
London, Ontario

Prepared by:
GSPrimo Design Inc.
London, ON, N6G 5E8
Cell: 519-871-3234
Tel: 226-503-3231
mheidari@gsprimo.com
www.gsprimo.com

March 20, 2024

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1.0 INTRODUCTION

GSPrimo Design Inc. (“GSPrimo”) was retained by Westdell Development Corp (the “Client”) to perform a geotechnical investigation for a proposed commercial development within a site (“Site”) located at 1300 Fanshawe Park Rd W, London, Ontario.

The purpose of this investigation was to determine the subsurface conditions at the Site by advancing seventeen (17) boreholes and associated laboratory testing. Based on the information obtained, geotechnical recommendations were provided for the design of foundation, site grading operations, site servicing, and pavement design.

The report addresses only the geotechnical aspects of the subsurface conditions. The information in this report is specific to the scope of this investigation and the scope of the proposed development and should not be used for any application or purpose other than that stated herein. Particularly, the hydrogeological and geo-environmental components are beyond the scope of this report.

The number of boreholes were selected to provide representative information sufficient to determine parameters needed for design, specifications, and construction of the proposed development. Conditions elsewhere near or beneath the footprint of the structures may be found to differ, during construction, from those at the borehole locations. Should this occur, the contractor should contact the design engineer for recommendations as how to best proceed and what changes if any, should be made.

2.0 PREVIOUS INVESTIGATIONS

Two previous investigations were conducted for the Site. Thorough examination was undertaken on reports from Trow Associates Inc. (now EXP) and EXP to gather relevant information about the Site. The reports and key details include:

- EXP Services Inc. "*Geotechnical Investigation: proposed commercial development Highbury Avenue North, London, Ontario*". EXP/TROW job number L06689AGI. September 2006.
    - Excavations were made in sixteen (16) test pits, reaching depths ranging from 2.4 to 4.0 meters. The soil stratigraphy observed in the test pits included topsoil and/or sand fill, transitioning to medium-grained sand with some gravel and occasional cobbles. Some test pits extended to clayey silt till.
- EXP Services Inc. "*Geotechnical Investigation: 1454 Highbury Avenue North, London, Ontario*". EXP job number LON-00018180-GE. August 2020. Located adjacent east of the Site.
    - Fieldwork encompassed the drilling of six (6) boreholes, reaching depths of 6.6 to 9.6 meters below ground surface. Measurement of the stabilized groundwater table depth was omitted due to time constraints. Boreholes were dry upon completion, but wet seams and layers were noted at depths of 1.5 to 6.1 meters below ground surface. The general stratigraphy comprised topsoil, sand/sand and gravel, and clayey silt extending to the borehole termination.

3.0 DESCIPRTION OF SITE AND PROJECT

3.1 Existing Conditions

The Site is a 108,685.5 m^2 parcel of land with a rectangular shape, situated at the northwest corner of the intersection of Fanshawe Park Road East and Highbury Avenue North in the City of London, Ontario. The approximate UTM coordinates for the site are Zone 17T, with an easting of 481347 m and a northing of 4765666 m.

At the time of the site visit, the property was vacant land with no structures present. The property had been graded and some fill piles and ponded water were present on Site. There were no existing structures on the site. The property is bordered by Fanshawe Park Road East to the north, Highbury Avenue North to the east, vacant land to the north, and Rob Panzer Road to the west followed by a commercial lot, as illustrated in Figure 1.

3.2 Proposed Development

Our understanding of the proposed site development indicates the following key features:

- The development will comprise seven 1-story and 2-story commercial buildings designated as Building 1 to 7, without an underground level, with a total gross floor area of 13,368.2 m^2.
- Parking spaces will be provided in the asphalt area, encompassing a total area of 23,112.9 m^2 surrounding the proposed buildings.
- The landscape area will cover a total area of 71,904.4 m^2.
- Access to the site will be facilitated through four entry points: one off Fanshawe Park Road East, one off Rob Panzer Road, one off Highbury Avenue North, and another off a proposed road to the north.

The overall layout of the proposed development is depicted in Figure 2, found in Appendix A.

3.3 Topography and Drainage

In the 500-meter radius of the "Study Area", a topographic map from Natural Resources Canada's Geological Survey displays elevations ranging from approximately 260 meters above sea level

(masl) in the east-northeast to 255 masl in the west-northwest, sloping towards the north-northwest. Surface water is anticipated to either infiltrate the permeable green area or flow over the ground towards Stoney Creek, located to the north of the property (refer to Figure 3).

In August 2021, LDS Consultants Inc. ("LDS") conducted a topographical survey of the Site. The Site was primarily level with a gentle slope towards the west-northwest. Along the Site's eastern boundary, elevations ranged from 259 meters above sea level (masl) in the north to 260 masl in the south. The western boundary displayed elevations ranging from 258 masl in the north to 257 masl in the south (refer to Figure 4). In recent years, the property had been graded, and some fill piles are present within the northwest portion of the Site.

3.4 Physiography

The physiography of southern Ontario was altered considerably by the glacial and interglacial episodes that took place throughout the Quaternary period (2 million years to present). The last continental scale glaciation in southern Ontario was during the Wisconsinan Ti me. When the glaciers began to retreat during the late Wisconsin glacial period, the melting glaciers released enormous amounts of water. Rivers, lakes and spillways created by the meltwater from the melting glaciers deposited massive amounts of glacial debris and shaped the landscape of Southern Ontario.

According to physiographic mapping for Southern Ontario (Chapman & Putnam, 2007), the Site is located within a region known as Stratford Till Plain. This physiographic landform is specifically categorized as Spillways.

3.5 Geology and Stratigraphy

The Ministry of Northern Development Mines and Forestry offers a feature for Google Earth™ that maps various geological types for Ontario:

- The "Surficial Geology" of the site is mainly characterized by Glaciofluvial deposits, specifically gravelly deposits comprised of river deposits and delta topset facies.
- The “Paleozoic Geology” of the Site can be described as Dundee Group, consisting of

mainly of limestone, minor dolostone; locally cherty.

- The "Quaternary Geology" of the site can be classified as Tavistock Till, which were formed during the Pleistocene period. These deposits mainly consist of sandy silt to silt matrix, silty clay matrix in south and in north, moderate to high carbonate content, clast content decreases from moderate to poor northward.
- The "Bedrock Geology" identifies the Site as being within the Dundee Formation, which is composed of limestone, dolostone, and shale.

4.0 INVESTIGATION PROCEDURES

4.1 Field Work

Prior to the commencement of the field work, GSPrimo personnel laid out the locations of the investigation boreholes based on coordinates derived from the provided site plans. Figure 5 in Appendix A depicts the locations of the boreholes. GSPrimo also obtained ground clearances from public and private underground utility locators.

The field drilling program was carried out On December 22 and 23, 2023. A total of seventeen boreholes designated as Borehole BH-1 to BH-17 were advanced to a maximum depth of 6.1 meters below ground level (mbgl). The boreholes were advanced using a Geoprobe 7822DT rig operated by Arrow Drilling Inc. Standard penetration tests (SPTs) were conducted at frequent depth intervals in accordance with ASTM Standard D1586-11, and the results are shown on the borehole logs as N-values. Throughout the drilling process, the team utilized split spoon samplers to perform standard penetration tests and collect soil samples from the boreholes. The locations of the boreholes in relation to the proposed development are depicted in Figure 6 of Appendix A.

The detailed stratigraphy of each borehole, which provides information about the subsurface layers encountered during drilling, is presented in Appendix B. The borehole log information in Appendix B offers a comprehensive understanding of the soil composition, depth of different strata, and other geological features observed in each borehole.

Groundwater observations were carried out in the boreholes prior to backfilling. The boreholes were backfilled upon completion of drilling in accordance with Ontario Regulation 903. The observations are summarized in the appended borehole logs.

The field work was monitored by an engineer of GSPrimo, who directed the drilling and sampling procedures, logged the boreholes, and examined and cared for the recovered soil samples. The samples obtained from the in-situ tests were identified in the field, placed in moisture-proof bags, appropriately labelled, and subsequently transported to a geotechnical laboratory for further examination and testing.

4.2 Laboratory Testing

Select samples recovered from the geotechnical investigation were submitted to Geotrust Engineering Ltd. ("Geotrust"), a certified geotechnical and materials testing laboratory. Samples submitted for analysis are to be representative of the boreholes and their location within the proposed development.

The laboratory test results are detailed in the main body of this report. Appendix C contains the outcomes of the Moisture Content test, Grain Size Distribution, and Atterberg Limit tests.

5.0 SUBSURFACE CONDITIONS

Details of the subsurface conditions encountered during the drilling program are summarized on the borehole logs presented in Appendix B. The stratigraphy in each borehole was recorded in the field at regular intervals and samples collected by the GSPrimo personnel.

The logs include textural descriptions of the subsoil and groundwater conditions and indicate the soil boundaries inferred from non-continuous sampling and observations during drilling. These boundaries reflect approximate transition zones for the purpose of geotechnical design and should not be interpreted as exact planes of geological change. The compactness condition or consistency of the soil strata has been inferred from the In-Situ test results.

5.1 Subsurface Stratigraphy

The boreholes were advanced through the existing vacant area within the footprint of the proposed buildings, parking areas, or access road. All boreholes were terminated due to being below the intended foundations of the proposed development. Bedrock was not encountered during the field investigation to the maximum termination depth of 6.1 mbgl in any of the boreholes. Details of the encountered materials are provided in the following:

- **Topsoil**

  All boreholes encountered a layer of topsoil at the ground surface. The thickness of the topsoil layer ranged from approximately 0.2—0.3 m. The topsoil was dark brown in colour, moist and had no odour in any of the boreholes.

- **Silty Sand/Sandy Slit Till**

  A layer of Silty Sand and/or Sandy Silt Till deposit with some Clay and trace Gravel underlaying the topsoil layer was encountered from a depth of 0.2—0.3 mbgl to an approximate depth of 1.5—2.5 mbgl in all of the boreholes. This was medium brown or gray in colour, moist to wet and had no odour in any of the boreholes. The SPT-N values within major stressing zone vary from 7 to 47 blows/foot. Based on the laboratory and in-situ test results, the soil of this composition will behave geotechnically like a loose to dense cohesionless soil.

- **Sand/ Gravelly Sand**

  A layer of Sand and/or Gravelly Sand deposit spreads across the Site, underlying the Sandy Silt/Silty Sand till layer in all of the boreholes. This layer was encountered in each borehole at an approximate depth of 1.5-2.5 meters below ground level (mbgl) to the termination depth. The Sand deposit ranged from medium to coarse, with some Silt, Gravel, and Cobbles. It was light to medium brown in color, dry to moist, and had no odor in any of the boreholes. The SPT-N values within the major stressing zone varied within a wide range from 5 to 68 blows/foot. The deepest boreholes were terminated within this layer due to being below the influence zone of the intended foundations. Based on the laboratory and in-situ test results, the soil of this composition will behave geotechnically like a loose to dense cohesionless soil.

The summary of the SPT test results, showcasing the variation of N-values with depth, is presented in Tables 1 to 3. Based on the in-situ testing measurements, the cohesionless soil of generally compact to dense in compactness condition was generally observed within the major stressing zone of the foundations for the proposed development.

Table 1 – Variation of N-Values With Depth

Depth (mbgl)		BH-1	BH-2	BH-3	BH-4	BH-5
Top Elev.	Bot. Elev.	SPT N-values (blows/300 mm penetration)				
0	0.61	22	17	17	11	17
0.76	1.37	16	14	19	26	21
1.52	2.13	12	18	47	14	15
2.29	2.90	22	28		33	27
3.05	3.66	13			38	12
3.81	4.42	24			46	18
4.57	5.18	26				27
5.33	5.94	35				

Table 2 – Variation of N-Values With Depth

Depth (mbgl)		BH-6	BH-7	BH-8	BH-9	BH-10
Top Elev.	Bot. Elev.	SPT N-values (blows/300 mm penetration)				
0	0.61	21	15	27	15	22
0.76	1.37	19	36	14	15	20
1.52	2.13	7	27	23	14	19
2.29	2.90	27	12	12		
3.05	3.66	19	5	32		
3.81	4.42	4	26	68		
4.57	5.18	5	28	45		
5.33	5.94	46				

Table 3 – Variation of N-Values With Depth

Depth (mbgl)		BH-11	BH-12	BH-13	BH-14	BH-15	BH-16	BH-17
Top Elev.	Bot. Elev.	SPT N-values (blows/300 mm penetration)						
0	0.61	12	11	26	7	6	19	8
0.76	1.37	23	9	24	9	19	16	20
1.52	2.13	27	21	16	14	11	19	24
2.29	2.90		13		15	21	28	14
3.05	3.66		15		13	21	20	48
3.81	4.42		44		13	14	17	3
4.57	5.18		39		19	20	31	20
5.33	5.94				33			25

5.2 Groundwater Conditions

During the time of our drilling, the water level was not found in any of the boreholes. Short-term groundwater level observations, recorded by EXP in open test pits and boreholes (April/May 2002), indicated that water levels fluctuated between elevations of 1.5 to 3.0 mbgl, corresponding to 250.5 to 253.0 masl. In addition, three monitoring wells were installed by EXP within the annulus of their boreholes designated as BH 101 (located off-site northeast of the Site), BH 103 (located on-site close to BH-4), and BH 104 (located on-site close to BH-14). EXP recorded water table readings in the monitoring wells between April 3, 2002, and April 9, 2002, which are summarized in Table 4. The water table was identified at an approximate depth of 1.5 to 4.3 mbgl, corresponding to 250.5 to 251.7 masl.

Note that seasonal variations in the water table should be anticipated, with higher levels occurring during wet weather conditions and lower levels occurring during dry weather conditions. Capillary rise effects should also be anticipated in fine-grained soil deposits. Additionally, underground infrastructure and building foundation drains can lower the water table in localized areas. Nearby construction dewatering can also temporarily lower water levels.

Table 4 – Monitoring Well Details

Monitoring Well Label	Location	03-Apr-02		09-Apr-02	
		Depth to Water (mbgl)	Water Elevation (masl)	Depth to Water (mbgl)	Water Elevation (masl)
BH 101	off-site northeast of the Site	3.00	253.00	2.37	253.63
BH 103	on-site close to BH-4	1.50	250.50	1.55	250.45
BH 104	on-site close to BH-14	3.00	253.00	4.27	251.73

6.0 GEOTECHNICAL COMMENTS AND RECOMMENDATIONS

6.1 Foundation Design Recommendations

In accordance with the 2010 National Building Code of Canada (NBCC), the use of Limit States Design (LSD) is required for the design of buildings and their structural components including foundations. The limit states of LSD design are classified into two groups: the Ultimate Limit States (ULS) and the Serviceability Limit States (SLS). The recommended geotechnical resistances for the building foundations are presented for ULS and SLS conditions.

For foundation design this ultimate resistance value is reduced using a Geotechnical Resistance Factor, Φ, which is based on the reliability index of the geotechnical data used to determine the ultimate resistance for the foundation loading case. The resistance factor values presented on Table 5 should be used for foundation design.

Table 5 – Geotechnical Resistance Factors for Foundations

Geotechnical Case	Resistance Factors, Φ
SHALLOW FOUNDATION	
Vertical resistance by semi-empirical analysis and in-situ test data	0.5
Horizontal resistance against sliding (based on friction)	0.8
DEEP FOUNDATIONS (PILES)	
Vertical resistance by semi-empirical analysis and in-situ test data	0.4
Vertical resistance from analysis of dynamic monitoring results	0.5
Vertical resistance from analysis of static load test results	0.6
Uplift resistance by semi-empirical analysis and in-situ test data	0.3
Uplift resistance from analysis of static load test results	0.4
Lateral load resistance	0.5

The values given for SLS geotechnical resistances are based on settlement values of less than 25 mm. Total differential settlements within a building should also be less than 19 mm.

The recommended geotechnical resistances for the building foundations are presented for Ultimate Limit State (ULS) and Serviceability Limit State (SLS) conditions. Given the conditions

encountered in the boreholes, the use of conventional spread or strip footing should provide a practical approach for the proposed buildings. The bearing capacity for a shallow spread foundation in the soil is calculated for a square footing with a minimum width of $B = 1.0\ m$. The proposed buildings may be designed for a factored ultimate bearing resistance of 345 kPa at ULS and a bearing resistance of 190 kPa at SLS (assuming 25 mm of settlement) on spread footing.

The bearing capacity for a strip footing in the soil is calculated for a footing with a minimum width of $B = 0.75\ m$. The proposed buildings may be designed for a factored ultimate bearing resistance of 260 kPa at ULS and a bearing resistance of 145 kPa at SLS (assuming 25 mm of settlement) on strip footing.

The recommended soil resistance values are determined under the assumption that all proposed buildings, with the exception of Building 2, will be built upon natural soil at approximately 1.2 meters below the final grade. However, for Building 2, the foundation may rest on natural soil at approximately 1.5 meters below the final grade. Should there be a consideration for raising the foundation level, engineered fill will be necessary to ensure proper support. This engineered fill must adhere to approved OPSS Granular A standards or equivalent materials, compacted to 100% SPMDD. The proof-rolled and compacted surface of the existing native soils will serve as a suitable base for the placement and compaction of the engineered fill.

Factored geotechnical bearing resistance at ULS is calculated by applying the geotechnical resistance factor of $\Phi = 0.5$ for shallow foundation designs. The un-factored horizontal resistance of the shallow foundations to sliding can be calculated using the following un-factored coefficient of friction:

- 0.30 between new engineered fill consisting of OPSS Granular A or B (Type II) and precast concrete.
- 24 kPa adhesion between precast concrete and the firm to stiff to cohesive soil. In accordance with Table 5, a resistance factor against sliding of $\Phi = 0.8$ should be applied to obtain the resistance at ULS.

Prior to pouring concrete for the footings, the footing subgrade should be cleaned of all

deleterious materials such as topsoil, fill, softened, disturbed or caved materials, as well as any standing water. If construction proceeds during freezing weather conditions, adequate temporary frost protection for the footing bases and concrete must be provided. Native soils and engineered fill materials tend to weather rapidly and deteriorate on exposure to the atmosphere and surface water. Hence, foundation bases which remain open for an extended period of time should be protected by a skim coat of lean concrete. It is recommended that all excavated footing bases must be evaluated by a qualified geotechnical engineer to ensure that the founding soils exposed at the excavation base are consistent with the design bearing pressure intended by the geotechnical engineer.

For any shallow structures, all exterior foundations and foundations in unheated areas must be provided with a minimum soil cover of 1.2 m or equivalent insulation for frost protection. The foundation depths recommended below are with respect to final grading levels. A perimeter drain tile, leading to an outward discharge, should be placed at the exterior face of the foundation wall where any high-water table can cause freeze thaw damage or unacceptable infiltration to the foundation.

Backfilling of foundations shall be carried out with approved OPSS Granular B material provided. It can be placed in maximum 300 mm loose lifts and compacted to a minimum of 98% SPMDD. Filling should continue until the design subgrade elevations are obtained.

The exposed subgrade should be proof-rolled to minimize differential settlement and to increase the bearing capacity. During the excavation, if loose material is found at the foundation level, the contractor is to remove all the loose material (until the dense soil is reached) and replace it with engineering fill granular material. Given this scenario, a conventional spread footing placed at this level should be founded on engineered fill if it is to have appropriate support. This engineered fill must consist of approved OPSS Granular A or equivalent materials compacted to 100% SPMDD. A grade raise may be considered. If this is the case, the proof-rolled and compacted surface of the existing native soils will provide a satisfactory base for the placement and compaction of the engineered fill. Full-time supervision and in-situ density testing should be carried out by a geotechnical engineer during placement of engineered fill beneath all structures

and settlement sensitive areas.

6.2 Slab-On-Grade Floor Using Engineered Fill

Prior to construction of the floor slab, all topsoil, construction debris and deleterious materials must be removed from the ground surface. The floor area should then be raised to within 200 mm underside of the floor slab using OPSS Granular B engineered fill or equivalent, placed in maximum 300 mm loose lifts and compacted to 98% SPMDD. To create a stable working surface and to distribute loadings, compacted OPSS Granular A or equivalent should be placed over the Granular B materials, below all floor slabs. The compacted OPSS Granular A or equivalent should be 200 mm thick at minimum, compacted to 100% SPMDD.

Floor slabs below unheated buildings or equipment should be provided with adequate insulation to prevent cracking from potential frost heave unless the compacted Granular A base is placed on clean limestone bedrock. A 100 mm thickness of high-density Styrofoam insulation, extending horizontally 1.8 m beyond the building/slab footprint, should be adequate to prevent frost heave where necessary.

For preliminary design, the module of vertical subgrade reaction (K_s) for granular material over the encountered subgrade materials is approximated to be $20\ MN/m^3$. This value should be modified by appropriate shape and depth factors to determine the vertical sub grade modulus (K_s) for slabs and bases.

6.3 Seismic Considerations

The parameters for determination of the Site Classification for Seismic Site Response are set out in Table 4.1.8.4.A of the 2012 Ontario Building Code (OBC). The classification is based on the determination of the average shear wave velocity in the top 30 metres of the site stratigraphy, where shear wave velocity (V_s) measurements have been taken. In the absence of such measurements, the classification is estimated on the basis of empirical analysis of un-drained shear strength or penetration resistance. The applicable penetration resistance is that which has been corrected to a rod energy efficiency of 60% of the theoretical maximum or the (N_{60}) value.

Based on the SPT-N values from borehole information, the subsurface stratigraphy generally comprises of stiff soil. On this basis, the site designation for seismic analysis is **Class D**.

If a higher site class is sought, it is recommended to carry out a site-specific shear wave velocity testing by a specialist consultant.

6.4 Lateral Earth Pressure

All below grade walls and retaining walls should be designed to withstand lateral earth pressures. The Lateral earth pressures may be calculated using the following equation:

$$p = k(\gamma h + q)$$

Where p is lateral earth pressure, k is coefficient of lateral earth pressure, γ is backfill total unit weight, h is depth from the ground surface and q is surcharge at ground surface adjacent to the wall. Recommended design values are presented in Table 6. It is expected that all below grade wall would be rigid, as such, the at-rest coefficient of earth pressure, k_0, is recommended in the calculation of the lateral earth pressures. Where some movement can be accommodated for retaining walls, the active earth pressure coefficient, k_a, can be used.

The above expression assumes that backfill consisting of free-draining granular material with a drainage system to prevent the build-up of hydrostatic pressure behind the wall. If this is not possible, then combined hydrostatic and lateral earth pressures should be applied using water unit weight of 9.8 kN/m^3.

Table 6 – Lateral Earth Pressure Parameters

Backfill Type	Lateral Earth Pressure Coefficient			Total Unit Weight, kN/m^3
	Active, K_a	At-Rest, K_0	Passive, K_p	
Granular Material	0.33	0.50	3.0	20
Lean Clay	0.53	0.69	1.9	18

Backfill behind retaining walls should consist of non-frost susceptible, free-draining granular materials in accordance with OPSD 3101.150. The granular backfill should be compacted to at

least 98% SPMDD, placed in maximum 200 mm lifts. The backfill should be brought up around the exterior of the walls as evenly as possible to prevent differential pressures.

6.5 General Site Grading

According to the proposed development plan, grading operations are expected to require 'cut and fill' procedures, resulting in an estimated elevation change of approximately 1-2 meters across the site. It is recommended to construct engineered fill in areas to be raised to suitably support the future roadway, infrastructure servicing, and lightly loaded building structures.

As of January 1, 2023, it's important to highlight the full implementation of new regulations and procedures governing excess soil management under Ontario Regulation (O.Reg.) 406/19 (On-Site and Excess Soil Management), enacted under the Ontario Environmental Protection Act (O.EPA). These regulations significantly impact the transport and re-use of excess soils off-site. For the proposed development on the Site, any soil removed should undergo analysis to determine suitable disposal or re-use options. All soil and fill material transportation off-site must adhere to Ontario Regulation 347 (as amended) and other relevant regulations, meeting the requirements of the receiving site.

Inorganic onsite native soil deposits from potential "cut" areas may potentially be reused to construct engineered fill capable of supporting building structures, infrastructure servicing and future roadways. The natural moisture content of the "cut" soils to be used as engineered fill should be within 2% below their optimum moisture contents to achieve the specified degree of compaction.

Any shortfall of fill material required for site grading operations may be made with similarly graded imported soils for the various purposes described above. It is recommended that any proposed imported source materials be tested prior to importing, in order to ensure that the environmental quality of the imported fill meets all environmental approval criteria and to ensure that the natural moisture content of the fill is suitable for compaction.

It is recommended that engineered fill construction be conducted during the summer and early fall months when drier warmer weather conditions typically exist as the onsite soils are sensitive

to moisture and will become difficult to handle and compact to the specified degree of compaction when wet.

The onsite deposits are frost susceptible. Constructing engineered fill, backfilling footings, foundation walls and service trenches using these finer grained soils during the winter months is not advisable, unless suitable weather conditions prevail, the soils are at suitable moisture content, and strict procedures are followed and monitored on a full-time basis by the geotechnical engineer.

The onsite soils are susceptible to softening and deformation when exposed to excessive moisture and construction traffic. As a result, it is imperative that the grading/filling operations are planned and maintained to direct surface water run-off to low points and then be positively drained by suitable means. During periods of wet weather, construction traffic should be directed along the designated construction routes so as not to disturb and rut the exposed subgrade soil. Temporary construction roads consisting of clear crushed material (such as crushed stone or recycled concrete) may be required during poor weather conditions such as wet spring or fall.

All imported borrow fill material from local sources should be free from organic material and foreign objects (i.e., trees, roots, debris, etc.) and should be approved by GSPrimo prior to transport to the site.

6.6 Groundwater Control or Dewatering

For foundation excavations extending below the groundwater level, it will be necessary to lower and maintain the groundwater level beneath the excavation base. Based on the results of previous geotechnical investigations, groundwater infiltration should be anticipated within building and service trench excavations, particularly below depths of about 1.5 mbgl. It is important to note that the water levels observed in the boreholes during the previous investigation by EXP in 2012 are expected to be indicative of seasonal (spring) high conditions. If required, appropriate dewatering techniques, such as a sump pump or sewer with a check valve, should be employed to ensure that the construction area remains dry. In cases where groundwater infiltration persists, more extensive dewatering measures may be necessary, and consultation with a specialist dewatering contractor is recommended.

The groundwater table must be lowered a minimum of 0.5 m below the lowest excavation elevation prior to any excavation and maintained at that level during construction. If the subgrade soils are not dewatered before excavation and maintained throughout construction, the subgrade soils will become disturbed; hence, the recommendations provided for bearing resistance will not be valid. It is recommended to engage a professional contractor to develop and implement a dewatering plan for the site. Successful dewatering operations will depend on the contractor's experience, construction technique, seasonal fluctuations, and the sequencing and scheduling of the workforce.

Perimeter foundation drains should be provided consisting of perforated pipe with filter fabric (minimum 100 mm diameter) surrounded by a granular filter (minimum 150 mm thick), and freely out-letting. The granular filter should consist of HL8 Coarse Aggregate or OPSS 1004 19 mm Clear Stone surrounded by a filter fabric (see Appendix D for Details). The perimeter drain installation and outlet provisions must conform to the plumbing code requirements. The size of the sump should be adequate to accommodate the anticipated ground seepage and stormwater inflow. A duplex pumping arrangement (main pump with a provision of a backup pump) on emergency backup power is recommended. The pumps should have sufficient capacity to accommodate a maximum peak flow of water. This flow is not anticipated to be a sustained flow but could be achieved under certain peak flow conditions.

6.7 Site Servicing Excavations

It is anticipated that municipal water-main and sewer servicing will generally be in the range of 2 to 4 m below final design grades. Excavation side slopes should comply with the current "Regulations for Construction Projects under the Ontario Occupational Health and Safety Act." The native or re-compacted fill soils can be generally classified as Type 3 soils. Excavation in the Type 3 soils may be sloped not steeper than 1 vertical to 1 horizontal throughout. The excavation side slopes should be suitably protected from erosion processes. For the conventional excavation depth, it is anticipated to encounter water flow into the excavation. Should unstable conditions be encountered, side slopes are to be flattened to a stable configuration. The geotechnical engineer should be retained to examine and inspect cut slopes to ensure construction safety.

6.8 Pipe Bedding

The native and re-compacted fill soil will generally provide suitable subgrade support to sewer and watermain servicing provided that the integrity of the base of the trench excavations can be maintained during construction. Any unsuitable soils exposed at the pipe subgrade should be sub-excavated and replaced with a minimum 150 mm bedding thickness of OPSS Granular A, compacted to at least 98% SPMDD. The bedding requirements for the services should be in accordance with Ontario Provincial Standard Drawings (OPSD) standards and the local town's Standards. Granular "A" should be used to backfill around the pipe to at least 150 mm above the top of the pipe. From the springline to 300 mm above the obvert of the pipe, sand cover shall be used. Particular attention should be given to ensure material placed beneath the haunches of the pipe is adequately compacted.

6.9 Backfill

Excavated inorganic materials are considered suitable for reuse as trench backfill. If necessary, potential mixing of drier and wetter excavated soils in proper ratios can be done to produce a suitable mixture at or near the optimum water content for compaction in order to achieve the required compaction specification. Conversely, judicious addition of water may be required if the soils are significantly drier than their optimum moisture content in order to facilitate suitable compaction.

Backfilling of service trenches under proposed pavement areas shall be carried out using approved imported soils or imported OPSS approved Granular B materials provided it can be placed in maximum 300 mm lifts and compacted to a minimum of 98% SPMDD. The onsite fill materials may not meet compaction requirements or may contain substantial amounts of silt or clay and therefore, are not considered suitable to be used as backfill. It is expected that most material will have to be imported. Materials such as organic soils, overly wet soils, boulders and frozen materials (if work is carried out in the winter months) should not be used for backfilling. Backfilling operations should follow closely after excavation so that only a minimal length of trench slope is exposed at any one time to minimize potential problems. This will potentially minimize over-wetting of the subgrade material. Particular attention should be given to make

sure frozen material is not used as backfill should construction extend into the winter season.

Proctor compaction tests must show that the soil is capable of being compacted to a satisfactory density; results submitted to GSPrimo for approval and then be delivered onsite within 2% of its optimum moisture content. Materials that have been imported and approved for use that are stored onsite should be maintained within 2% of their optimum moisture content. They should also be protected from the weather with tarps.

6.10 Preliminary Pavement Design

It is our understanding from the proposed development that a new access roads and parking areas will be constructed for this project. The recommended pavement structure is outlined in Table 7, based on the anticipated traffic volume and subgrade conditions. No traffic study was available at the time of this report, consequently, the recommended pavement structure should be considered for preliminary design purposes only.

It is assumed that pavement construction will be carried out under dry periods and the subgrade will be stable under the load of construction equipment. If the subgrade is unstable or wet, additional thickness of subbase course material may be required. It should be noted that the recommended pavement structure is not intended to support heavy construction vehicles such as concrete trucks. Consequently, heavy construction traffic should be limited to areas with suitable temporary access roads. The access roads shall consist of a minimum of 450 mm of stony Granular B material placed on a woven geogrid to preclude mixing of the subgrade into the Granular B. A surface coat of recycled asphalt shall be placed on the surface to provide a seal.

Table 7 – Minimum Pavement Structure Requirements

Pavement layer	Material	Local Road Thickness (mm)	Collector Road Thickness (mm)
Surface Course Asphalt	OPSS H. L3	35	50
Binder Course Asphalt	OPSS H. L8	45	60
Base Layer	OPSS Granular A	150	150
Subbase Layer	OPSS Granular B	350	400

The granular base and sub-base layers should be uniformly compacted to 100% SPMDD. The

asphalt materials should be compacted to a minimum of 92% of the Marshal Maximum Relative Density (MRD), as tested by using nuclear density gauge.

Prior to placing the pavement subbase layer, the subgrade should be prepared and heavily proof-rolled under the supervision of the geotechnical engineer. Any weak or soft areas encountered at the original surface must be further sub-excavated and replaced with suitable approved backfill compacted to 98% SPMDD to provide uniform subgrade support condition. The subgrade should be compacted to 98% SPMDD for at least the upper 500 mm. Stringent compaction and placement control procedures shall be maintained to ensure uniform subgrade moisture and density conditions are achieved.

It should be noted that even with well-compacted trench backfill, some settlement can be expected after construction. In this regard, surface course asphalt shall be placed at least one year after trench backfill is completed.

The finished pavement surface should be graded to promote runoff to designated surface drainage areas and catch basins. Subdrains should be installed to intercept excess subsurface moisture and prevent subgrade softening. To minimize problems of differential movement between the pavement and catch basins/manholes due to frost action, the backfill around the structures should consist of free draining granular. It is recommended to install longitudinal subdrain with positive drainage outlets at the subgrade level along the edges of the roadway construction. The subdrain stubs should be extended at least ten m from catch basins, along the uphill sides.

7.0 STATEMENT OF LIMITATIONS

This report has been prepared for Westdell Development Corp, who retained the services of GSPrimo to conduct a geotechnical investigation for the proposed commercial development within a property located at 1300 Fanshawe Park Road East, London, Ontario. Further dissemination of this report is not permitted without GSPrimo's prior written approval. GSPrimo has carefully assessed all information provided to them during this investigation but makes no guarantees or warranties as to the accuracy or completeness of this provided information.

The comments given in this report are intended only for the guidance of design engineers and architects. Contractors bidding on or undertaking the work, should in this light, decide that further field investigations, and interpretations of the factual borehole results are necessary to draw their own conclusions as to how the subsurface conditions may affect them. Should soil conditions during excavation for the foundations prove to be different than what have been described in this report, the author of this report should be notified as soon as possible. No liability or claims may be made by owners or third parties against GSPrimo for factors outside (GSPrimo 's) control. An independent quality control firm must be made available for all concrete and compaction testing associated with construction. All testing results should be made available to the owner, designers, consultant, and general contractor.

March 20, 2024

Mehdi Heidari, Ph.D., P.Eng.

8.0 REFERENCES

MNR 1997), *River & Stream Systems:Erosion Hazard Limit.*

(USACE 1991), Hydraulic design of flood control channels. *Engineer Manual, EM 1110-2-1601, Department of the Army, Washington, DC*

Bowles, & E., J. (1996). *Foundation Analysis and Design.* McGraw Hill Inc.

Canadian foundation engineering manual. 4th Edition. (2006). Richmond, B.C : Canadian Geotechnical Society.

Ontario Ministry of Municipal Affair and Housing (OMMAH). 2012. Supplementary Guidance to the Ontario Building Code 2012. SG-6 Percolation Time and Soil Description. Toronto, Ontario.

Sowers, G. (1979). *Introductory Soil Mechanics and Foundations: Geotechnical Engineering.* New York: MacMillan.

Terzaghi, K., & Peck, R. (1967). *Soil Mechanics in Engineering Practice.* New York: John Wiley.

APPENDIX A – Site Drawings

Figure 1 – Site location map

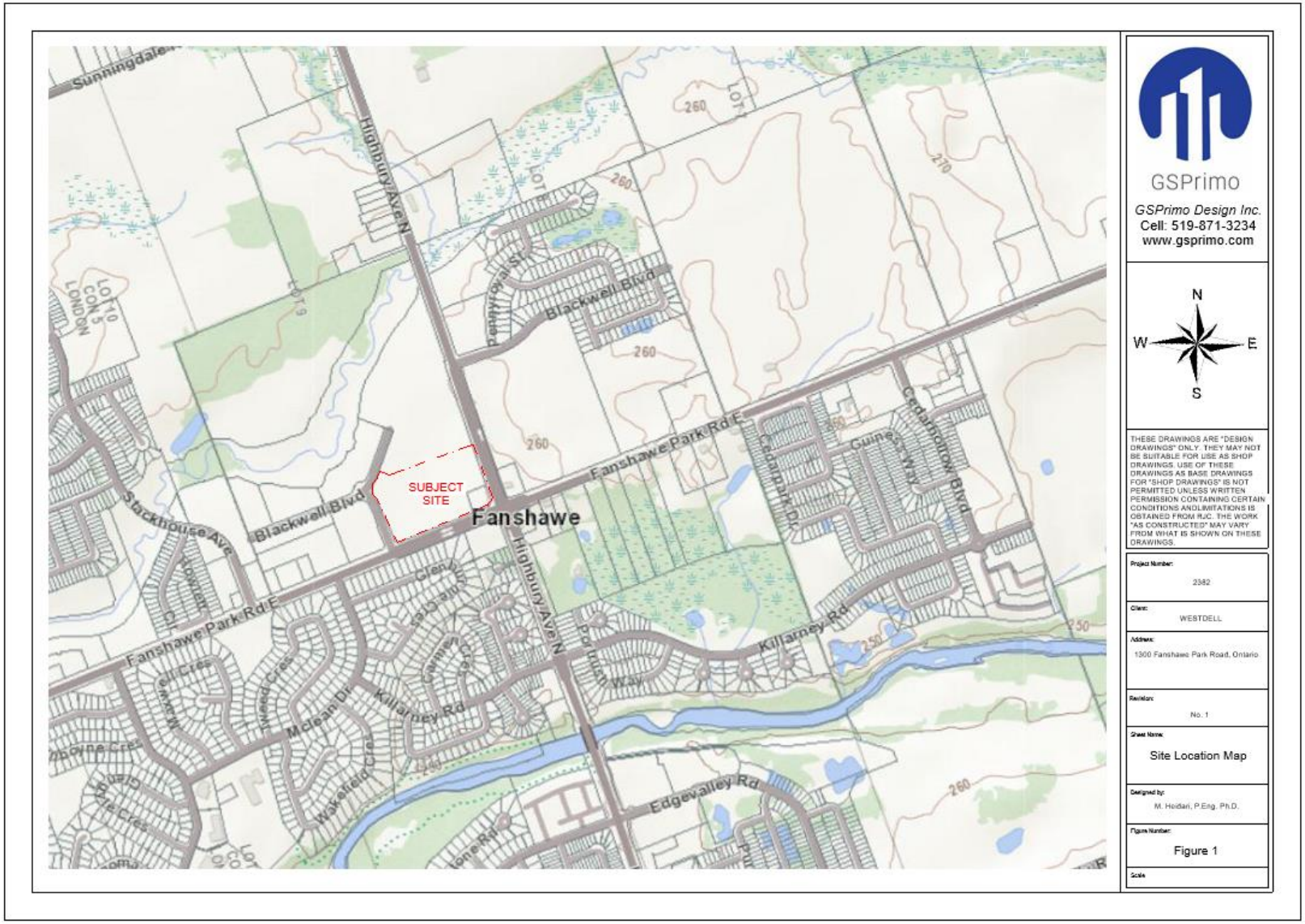


Figure 2 – Proposed development

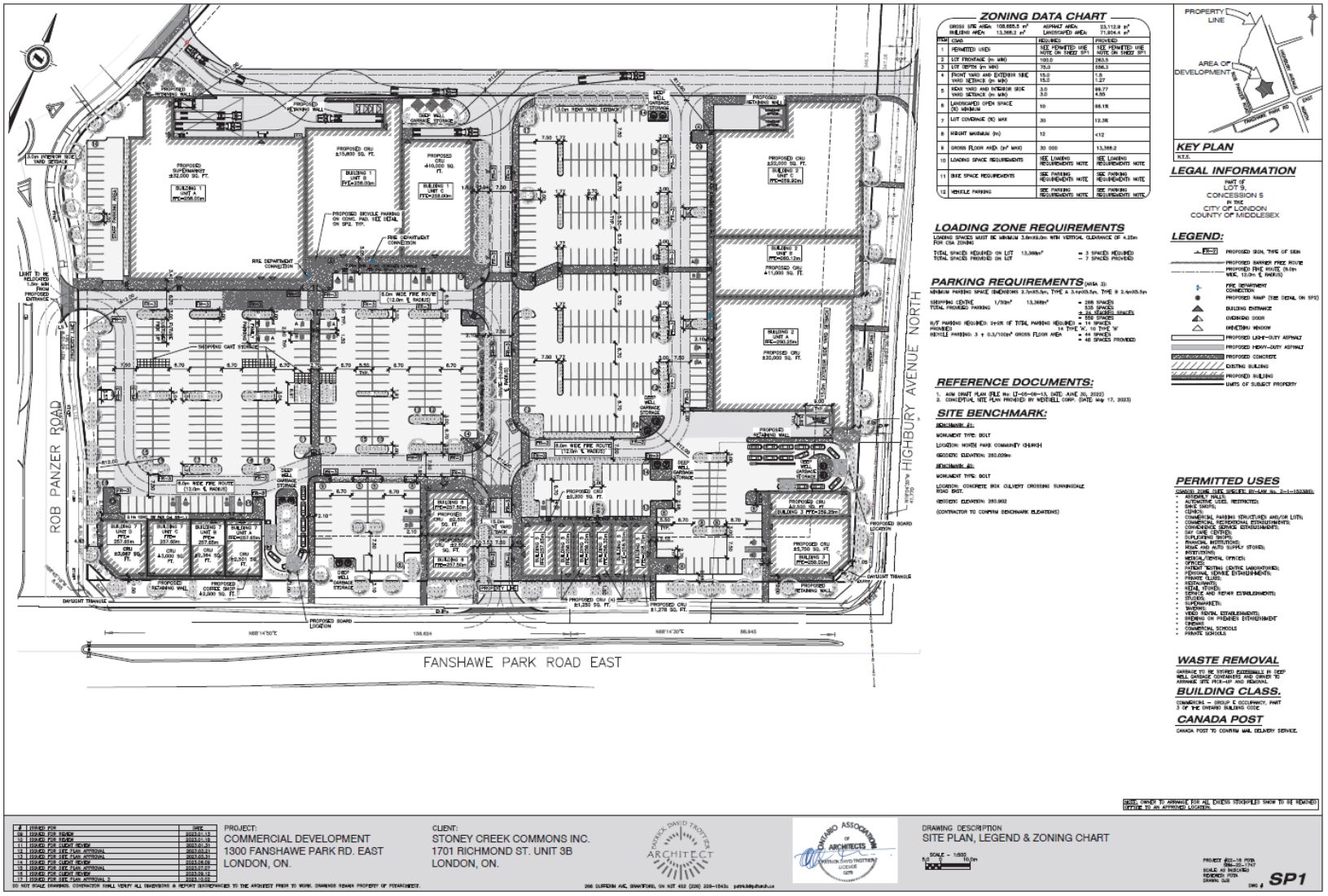


Figure 3 – Topographic map

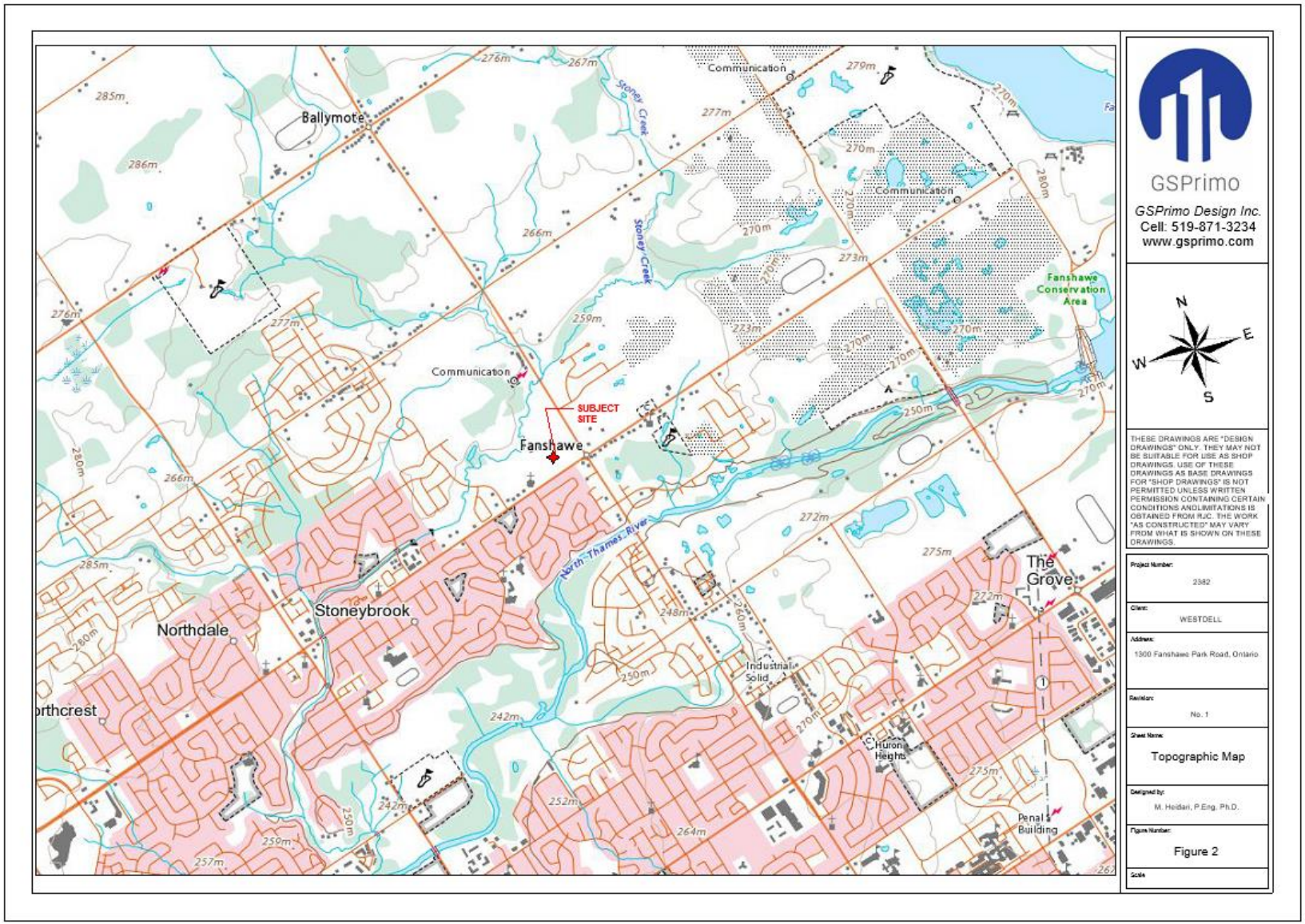


Figure 4 – Topographic Survey

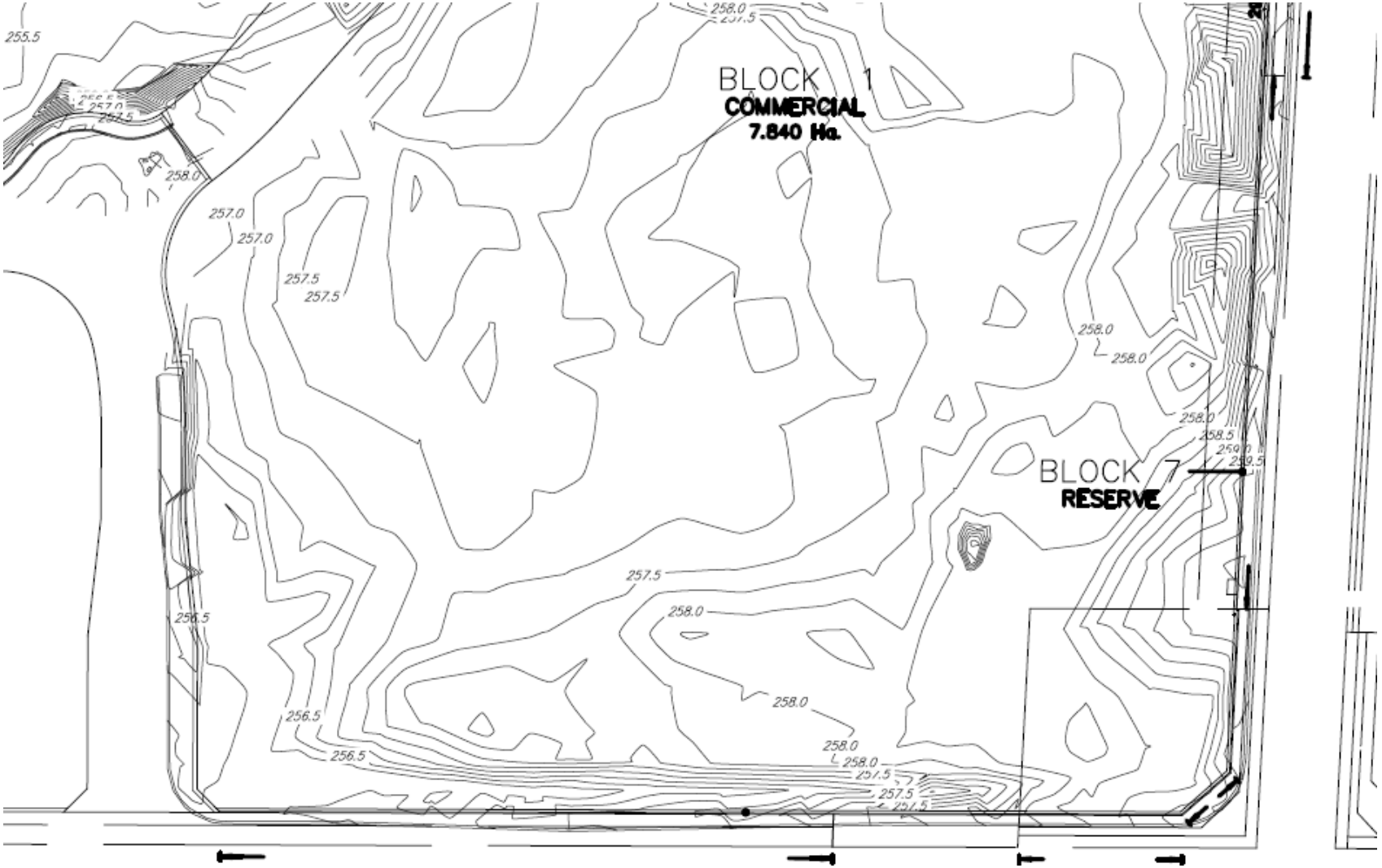
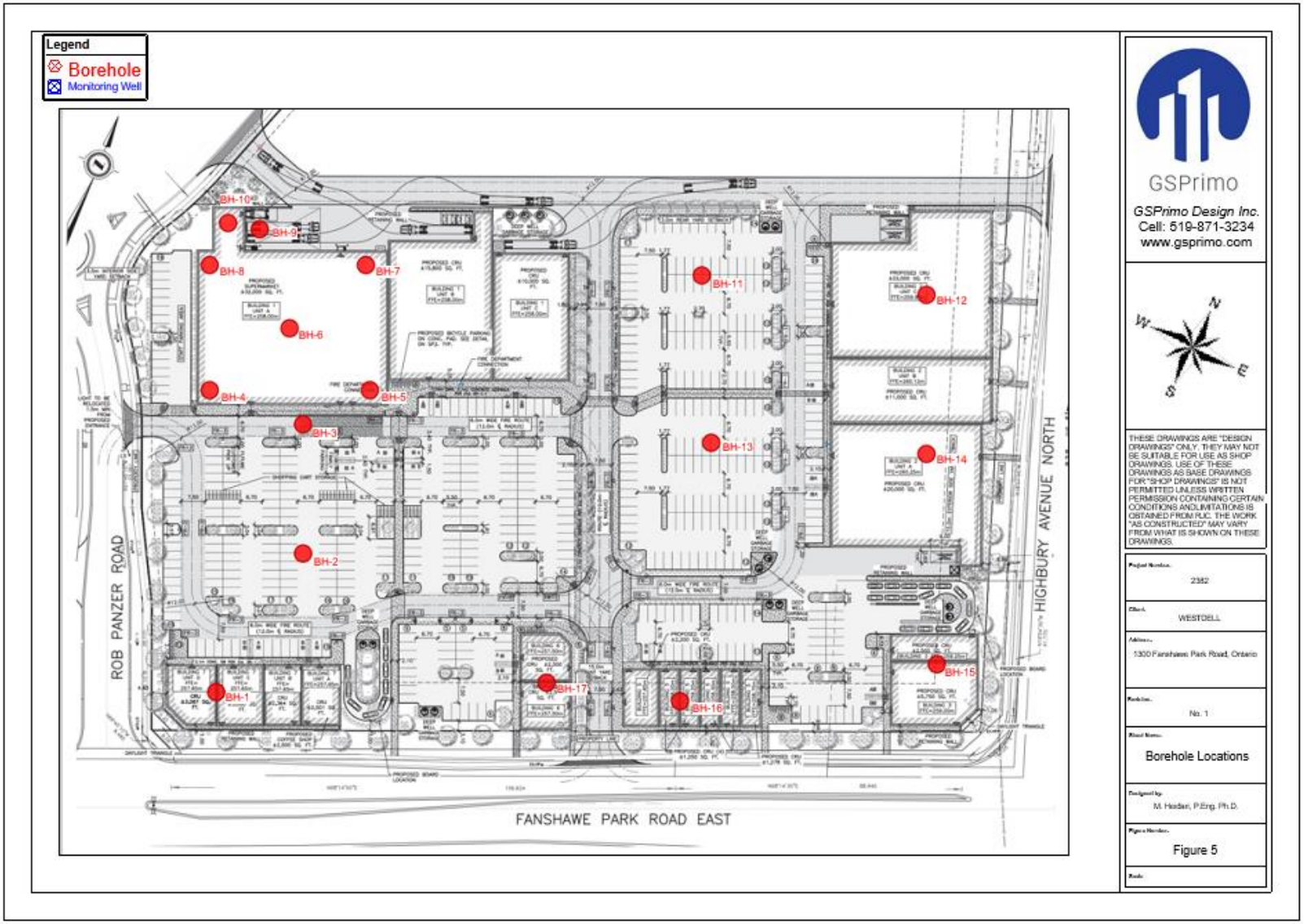


Figure 5 – Geotechnical boreholes location, Satellite Image



p

Figure 6 – Geotechnical boreholes location, Site Plan

APPENDIX B – Borehole Logs and Explanation of Terms and Symbols

GSPrimo

Project Number: 2382	**Borehole:** BH-1
Company: GSPrimo Design Inc.	**Drilling Date:** December 22 & 23, 2023
Project's Location: 1300 Fanshawe Park Road, London, Ontario	**Drilling Depth:** 5.94 m
	Drill Method: HS Augur
Project Manager: M. Heidari, P.Eng.	**Logged By:** M. Heidari, P.Eng.

Depth (m)	Elevation (masl)	Strata Plot	Strata Profile	Water Level	Depth (ft)	Sample Type	Sample Number	Sample Recovery	SPT N-Value
0	256.5		Ground		0				
0			Topsoil		1		1		1 12 10
1			Medium to Dark Brown No Odor Moist to Wet Sandy Silt, some Clay, trace Gravel		2 3 4		2		6 8 8
2					5 6 7		3		6 6 6
3					8 9		4		3 11 11
3			Medium Brown No Odor Moist to Wet Gravel & Sand, some Silt, trace Clay		10 11 12		5		10 8 5
4					13 14		6		8 12 12
5					15 16 17		7		9 12 14
6					18 19		8		7 13 21
6					20 21 22 23 24 25 26 27 28 29				
7 8 9									

SPT Blow Counts/300mm

10 20 30 40 50 60 70 80 90 100

Solid Stem (SS) Augur

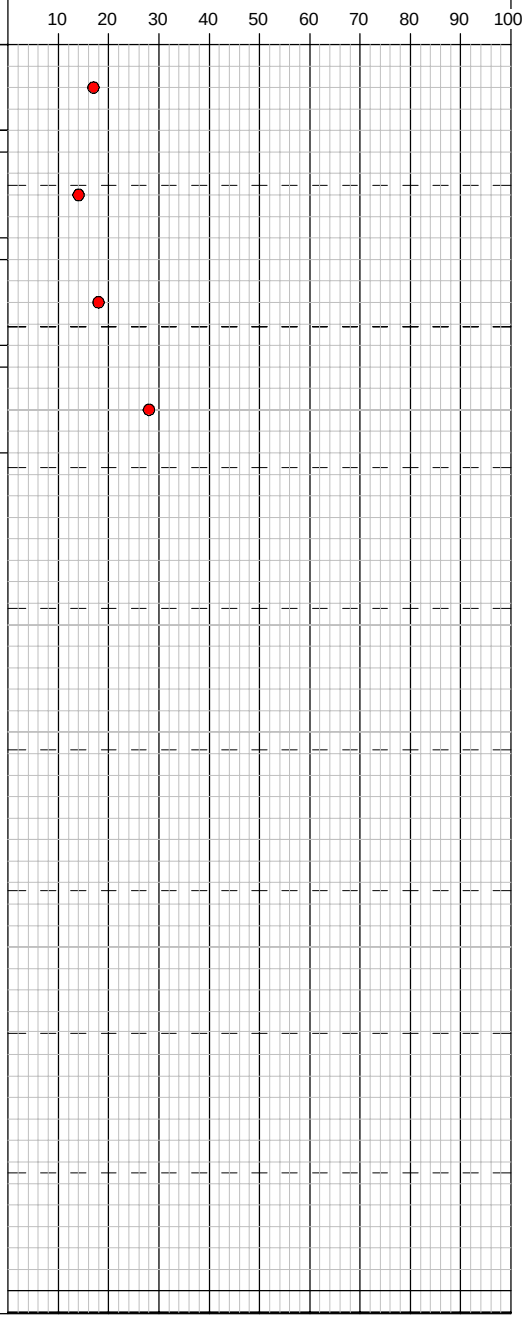
Hollow Stem (HS) Augur

Water Level

GSPrimo

Project Number: 2382	**Borehole:** BH-2
Company: GSPrimo Design Inc.	**Drilling Date:** December 22 & 23, 2023
Project's Location: 1300 Fanshawe Park Road, London, Ontario	**Drilling Depth:** 2.90 m
	Drill Method: HS Augur
Project Manager: M. Heidari, P.Eng.	**Logged By:** M. Heidari, P.Eng.

Depth (m)	Elevation (masl)	Strata Plot	Strata Profile	Water Level	Depth (ft)	Sample Type	Sample Number	Sample Recovery	SPT N-Value	SPT Blow Counts/300mm
0	256.8		Ground		0					
0			Topsoil		0					
0 – 2			Medium Brown No Odor Moist to Wet Sandy Silt, trace Clay and Gravel		0 – 6		1		7 9 8	
					3 – 6		2		8 7 7	
					5 – 7		3		5 7 11	
2 – 3			Medium Brown No Odor Moist to Wet Gravel & Sand, some Silt, trace Clay		7 – 9		4		8 10 16	



Solid Stem (SS) Augur **Hollow Stem (HS) Augur** **Water Level**

GSPrimo

Project Number: 2382	**Borehole:** BH-3
Company: GSPrimo Design Inc.	**Drilling Date:** December 22 & 23, 2023
Project's Location: 1300 Fanshawe Park Road, London, Ontario	**Drilling Depth:** 2.13 m
	Drill Method: HS Augur
Project Manager: M. Heidari, P.Eng.	**Logged By:** M. Heidari, P.Eng.

Depth (m)	Elevation (masl)	Strata Plot	Strata Profile	Water Level	Depth (ft)	Sample Type	Sample Number	Sample Recovery	SPT N-Value	SPT Blow Counts/300mm
0	257.3		Ground		0					
0			Topsoil		1		1		7 10 7	
1			Medium Brown No Odor Moist Sandy Silt, some Clay, trace Gravel		2					
2					3		2		6 8 11	
3					4					
4					5					
5					6		3		15 25 22	
6					7					
7					8					
8					9					
9					10					
					11					
					12					
					13					
					14					
					15					
					16					
					17					
					18					
					19					
					20					
					21					
					22					
					23					
					24					
					25					
					26					
					27					
					28					
					29					

10 20 30 40 50 60 70 80 90 100

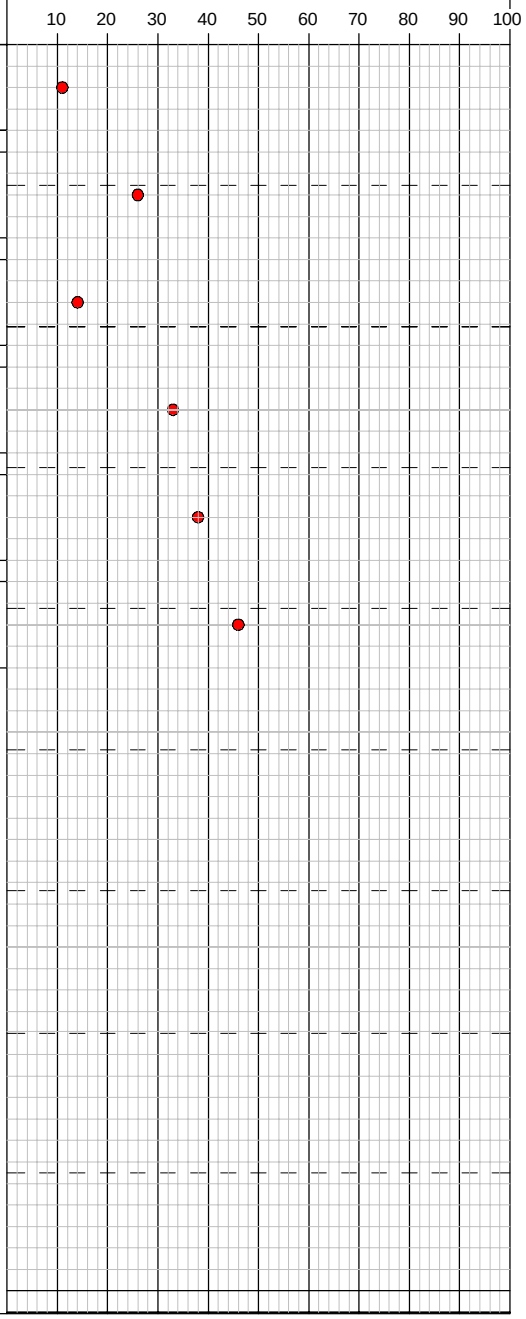
Solid Stem (SS) Augur **Hollow Stem (HS) Augur** **Water Level**

GSPrimo

Project Number: 2382	**Borehole:** BH-4
Company: GSPrimo Design Inc.	**Drilling Date:** December 22 & 23, 2023
Project's Location: 1300 Fanshawe Park Road, London, Ontario	**Drilling Depth:** 4.42 m
	Drill Method: HS Augur
Project Manager: M. Heidari, P.Eng.	**Logged By:** M. Heidari, P.Eng.

Depth (m)	Elevation (masl)	Strata Plot	Strata Profile	Water Level	Depth (ft)	Sample Type	Sample Number	Sample Recovery	SPT N-Value
0	257.1		Ground		0				
0			Topsoil		0				
0			Medium Brown, Wet Silty Sand, some Clay, trace Gravel		1		1		4 2 9
1					2				
1					3		2		14 16 10
2			Medium Brown No Odor Moist to Wet Silty Sand, some Clay trace Gravel		4				
2					5				
2					6		3		6 6 8
3					7				
3					8		4		8 17 16
3					9				
4					10				
4					11		5		15 19 19
4					12				
4					13		6		13 21 25
5					14				
5					15				
5					16				
6					17				
6					18				
6					19				
7					20				
7					21				
7					22				
8					23				
8					24				
8					25				
9					26				
					27				
					28				
					29				

SPT Blow Counts/300mm



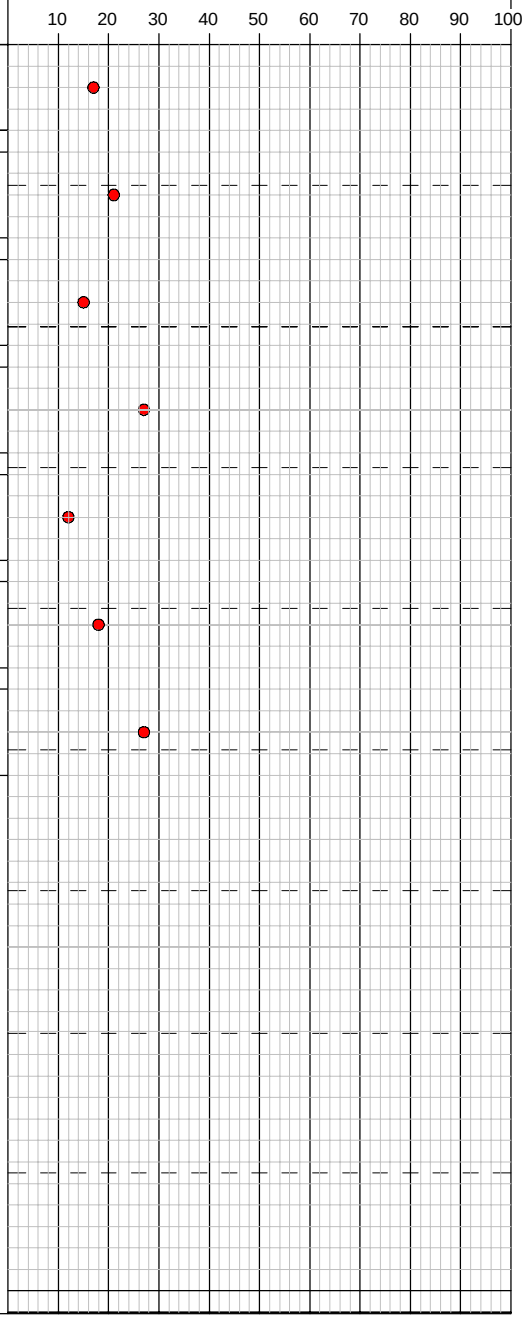
Solid Stem (SS) Augur | **Hollow Stem (HS) Augur** | **Water Level**

GSPrimo

Project Number: 2382	**Borehole:** BH-5
Company: GSPrimo Design Inc.	**Drilling Date:** December 22 & 23, 2023
Project's Location: 1300 Fanshawe Park Road, London, Ontario	**Drilling Depth:** 5.18 m
	Drill Method: HS Augur
Project Manager: M. Heidari, P.Eng.	**Logged By:** M. Heidari, P.Eng.

Depth (m)	Elevation (masl)	Strata Plot	Strata Profile	Water Level	Depth (ft)	Sample Type	Sample Number	Sample Recovery	SPT N-Value
0	257.5		Ground		0				
0			Topsoil		0				
0 – 2			Medium Brown, No Odor Moist to Wet Silty Sand, some Clay, trace Gravel		0 – 6		1		6, 6, 11
					3 – 6		2		6, 10, 11
					6 – 7		3		6, 7, 8
2 – 5			Medium Brown No Odor Moist to Wet Silty Sand, some Clay trace Gravel		8 – 9		4		9, 15, 12
					10 – 11		5		5, 6, 6
					13 – 14		6		8, 9, 9
					15 – 16		7		9, 15, 12
5 – 9					17 – 29				

SPT Blow Counts/300mm



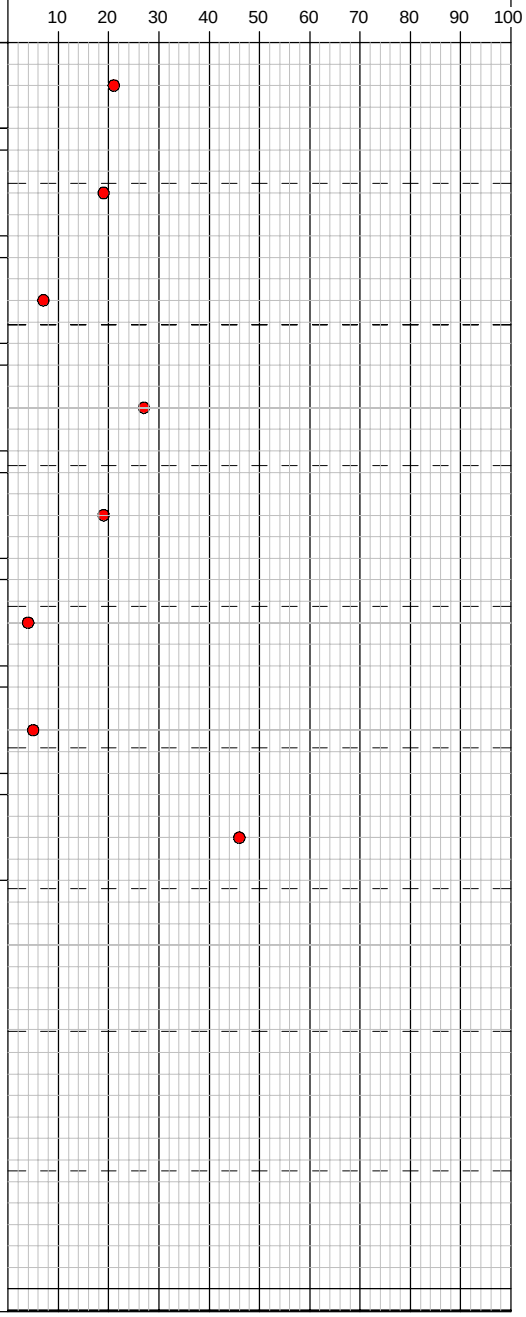
Solid Stem (SS) Augur | **Hollow Stem (HS) Augur** | **Water Level**

GSPrimo

Project Number: 2382	**Borehole:** BH-6
Company: GSPrimo Design Inc.	**Drilling Date:** December 22 & 23, 2023
Project's Location: 1300 Fanshawe Park Road, London, Ontario	**Drilling Depth:** 5.95 m
	Drill Method: HS Augur
Project Manager: M. Heidari, P.Eng.	**Logged By:** M. Heidari, P.Eng.

Depth (m)	Elevation (masl)	Strata Plot	Strata Profile	Water Level	Depth (ft)	Sample Type	Sample Number	Sample Recovery	SPT N-Value
0	257.5		Ground		0				
0			Topsoil		1		1		1 11 10
1			Medium Brown, No Odor Moist to Wet Silty Sand, some Clay and Gravel		2 3 4		2		3 10 9
2					5 6 7		3		3 3 4
3					8 9		4		11 14 13
4			Light to Medium Brown No Odor Moist to Wet Sand, some Gravel and Silt, trace Clay		10 11 12		5		7 10 9
5					13 14		6		0 2 2
6					15 16 17		7		2 2 3
7					18 19		8		6 16 30
8					20 21 22 23 24 25 26 27 28 29				
9									

SPT Blow Counts/300mm



Solid Stem (SS) Augur **Hollow Stem (HS) Augur** **Water Level**

GSPrimo

Project Number: 2382	**Borehole:** BH-7
Company: GSPrimo Design Inc.	**Drilling Date:** December 22 & 23, 2023
Project's Location: 1300 Fanshawe Park Road, London, Ontario	**Drilling Depth:** 5.18 m
	Drill Method: HS Augur
Project Manager: M. Heidari, P.Eng.	**Logged By:** M. Heidari, P.Eng.

Depth (m)	Elevation (masl)	Strata Plot	Strata Profile	Water Level	Depth (ft)	Sample Type	Sample Number	Sample Recovery	SPT N-Value
0	257.5		Ground		0				
0			Topsoil		0		1		2 8 7
1			Medium Brown No Odor Moist to Wet Sandy Silt, some Clay, trace Gravel		2		2		16 20 16
2					5		3		10 13 14
3			Light to Medium Brown No Odor Moist Sand, some Gravel and Silt, trace Clay		8		4		3 6 6
4					10		5		3 2 3
5					13		6		8 11 15
6					15		7		5 10 18
7					18				
8					20				
9					23				
					25				
					28				

SPT Blow Counts/300mm

10 20 30 40 50 60 70 80 90 100

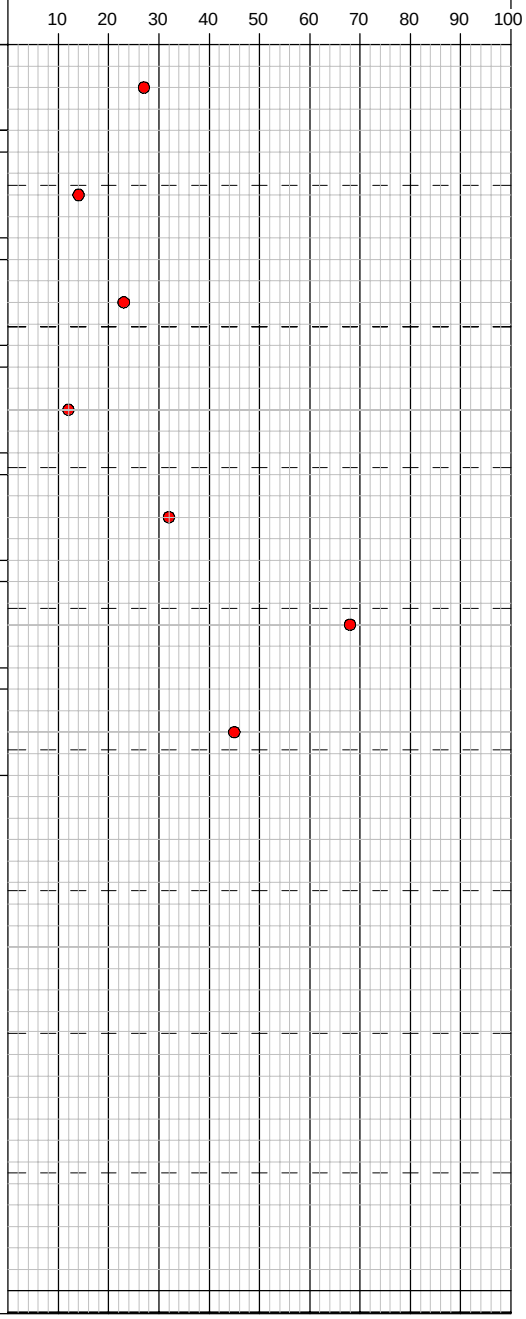
Solid Stem (SS) Augur **Hollow Stem (HS) Augur** **Water Level**

GSPrimo

Project Number: 2382	**Borehole:** BH-8
Company: GSPrimo Design Inc.	**Drilling Date:** December 22 & 23, 2023
Project's Location: 1300 Fanshawe Park Road, London, Ontario	**Drilling Depth:** 5.18 m
	Drill Method: HS Augur
Project Manager: M. Heidari, P.Eng.	**Logged By:** M. Heidari, P.Eng.

Depth (m)	Elevation (masl)	Strata Plot	Strata Profile	Water Level	Depth (ft)	Sample Type	Sample Number	Sample Recovery	SPT N-Value
0	257.1		Ground		0				
0			Topsoil		0		1		10 15 12
1			Dark Gray No Odor Moist to Wet Sandy Silt, some Clay, trace Gravel		2				
					3		2		5 8 6
2					5				
					6		3		13 12 11
					7				
3			Light to Medium Brown No Odor Moist Sand and Gravel, some Silt, trace Clay		8		4		4 4 8
					9				
					10				
4					11		5		11 15 17
					12				
					13				
					14		6		11 18 50
5					15				
					16		7		18 20 25
					17				
6					18				
					19				
					20				
					21				
7					22				
					23				
					24				
					25				
8					26				
					27				
					28				
9					29				

SPT Blow Counts/300mm



Solid Stem (SS) Augur

Hollow Stem (HS) Augur

Water Level

GSPrimo

Project Number: 2382	**Borehole:** BH-9
Company: GSPrimo Design Inc.	**Drilling Date:** December 22 & 23, 2023
Project's Location: 1300 Fanshawe Park Road, London, Ontario	**Drilling Depth:** 2.13 m
	Drill Method: HS Augur
Project Manager: M. Heidari, P.Eng.	**Logged By:** M. Heidari, P.Eng.

Depth (m)	Elevation (masl)	Strata Plot	Strata Profile	Water Level	Depth (ft)	Sample Type	Sample Number	Sample Recovery	SPT N-Value	SPT Blow Counts/300mm
0	257.1		Ground		0					
0			Topsoil		0					
0			Light Brown, No Odor, Moist, Fill		1		1		18 8 7	
1			Medium to Dark Gray No Odor Moist Sandy Silt, some Clay, trace Gravel		3		2		4 7 8	
2					6		3		7 7 7	

10 20 30 40 50 60 70 80 90 100

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

Solid Stem (SS) Augur **Hollow Stem (HS) Augur** **Water Level**

GSPrimo

Project Number: 2382	**Borehole:** BH-10
Company: GSPrimo Design Inc.	**Drilling Date:** December 22 & 23, 2023
Project's Location: 1300 Fanshawe Park Road, London, Ontario	**Drilling Depth:** 2.13 m
	Drill Method: HS Augur
Project Manager: M. Heidari, P.Eng.	**Logged By:** M. Heidari, P.Eng.

Depth (m)	Elevation (masl)	Strata Plot	Strata Profile	Water Level	Depth (ft)	Sample Type	Sample Number	Sample Recovery	SPT N-Value
0	257.0		Ground		0				
0			Topsoil		0				
1			Medium to Dark Gray No Odor Moist Sandy Silt, some Clay, trace Gravel		1		1		13 10 12
2					3		2		8 10 10
3					5		3		12 10 9
4					7				
5					8				
6					9				
7					10				
8					11				
9					12				
					13				
					14				
					15				
					16				
					17				
					18				
					19				
					20				
					21				
					22				
					23				
					24				
					25				
					26				
					27				
					28				
					29				

SPT Blow Counts/300mm

10 20 30 40 50 60 70 80 90 100

Solid Stem (SS) Augur **Hollow Stem (HS) Augur** **Water Level**

GSPrimo

Project Number: 2382	**Borehole:** BH-11
Company: GSPrimo Design Inc.	**Drilling Date:** December 22 & 23, 2023
Project's Location: 1300 Fanshawe Park Road, London, Ontario	**Drilling Depth:** 2.13 m
	Drill Method: HS Augur
Project Manager: M. Heidari, P.Eng.	**Logged By:** M. Heidari, P.Eng.

Depth (m)	Elevation (masl)	Strata Plot	Strata Profile	Water Level	Depth (ft)	Sample Type	Sample Number	Sample Recovery	SPT N-Value	SPT Blow Counts/300mm
0	257.5		Ground		0					
0			Topsoil		1		1		6 5 7	
1			Medium Gray No Odor Moist to Wet Sandy Silt, some Clay and Gravel		3		2		8 10 13	
2			Medium Brown to Gray No Odor Wet to Saturated Sand, some Gravel and Silt, trace Clay		6		3		12 14 13	

SPT Blow Counts/300mm: 10 20 30 40 50 60 70 80 90 100

Solid Stem (SS) Augur

Hollow Stem (HS) Augur

Water Level

GSPrimo

Project Number: 2382	**Borehole:** BH-12
Company: GSPrimo Design Inc.	**Drilling Date:** December 22 & 23, 2023
Project's Location: 1300 Fanshawe Park Road, London, Ontario	**Drilling Depth:** 5.18 m
	Drill Method: HS Augur
Project Manager: M. Heidari, P.Eng.	**Logged By:** M. Heidari, P.Eng.

Depth (m)	Elevation (masl)	Strata Plot	Strata Profile	Water Level	Depth (ft)	Sample Type	Sample Number	Sample Recovery	SPT N-Value	SPT Blow Counts/300mm
0	258.3		Ground		0					
0			Topsoil		0					
0 – 1.8			Medium to Dark Brown No Odor Moist Silty Gravelly Sand, some Clay		0 – 6		1		5 6 5	
					3 – 4		2		2 2 7	
					6 – 7		3		8 11 10	
1.8 – 5.2			Light to Medium Brown No Odor Moist Sand, some Gravel and Silt, trace Clay		8 – 9		4		5 6 7	
					10 – 11		5		4 7 8	
					13 – 14		6		7 18 26	
					15 – 16		7		15 20 19	
5.2 – 9					17 – 29					

10 20 30 40 50 60 70 80 90 100

Solid Stem (SS) Augur

Hollow Stem (HS) Augur

Water Level

GSPrimo

Project Number: 2382	**Borehole:** BH-13
Company: GSPrimo Design Inc.	**Drilling Date:** December 22 & 23, 2023
Project's Location: 1300 Fanshawe Park Road, London, Ontario	**Drilling Depth:** 2.13 m
	Drill Method: HS Augur
Project Manager: M. Heidari, P.Eng.	**Logged By:** M. Heidari, P.Eng.

Depth (m)	Elevation (masl)	Strata Plot	Strata Profile	Water Level	Depth (ft)	Sample Type	Sample Number	Sample Recovery	SPT N-Value	SPT Blow Counts/300mm
0	257.6		Ground		0					
0			Topsoil		0					
1			Medium Brown or Gray No Odor Moist to Wet Sandy Silt, some Clay, trace Gravel		1		1		5 11 15	
2					3		2		5 12 12	
3					5		3		6 7 9	
4					7					
5					9					
6					11					
7					13					
8					15					
9					17					
					19					
					21					
					23					
					25					
					27					
					29					

SPT Blow Counts/300mm: 10 20 30 40 50 60 70 80 90 100

Solid Stem (SS) Augur

Hollow Stem (HS) Augur

Water Level

GSPrimo

Project Number: 2382	**Borehole:** BH-14
Company: GSPrimo Design Inc.	**Drilling Date:** December 22 & 23, 2023
Project's Location: 1300 Fanshawe Park Road, London, Ontario	**Drilling Depth:** 5.94 m
	Drill Method: HS Augur
Project Manager: M. Heidari, P.Eng.	**Logged By:** M. Heidari, P.Eng.

Depth (m)	Elevation (masl)	Strata Plot	Strata Profile	Water Level	Depth (ft)	Sample Type	Sample Number	Sample Recovery	SPT N-Value	SPT Blow Counts/300mm
0	258.0		Ground		0					
0			Topsoil		1		1		0 3 4	
1			Medium Brown No Odor Moist to Wet Sandy Silt, some Clay, trace Gravel		3		2		3 3 6	
2					5		3		4 6 8	
2			Medium Brown No Odor Moist Sand, some Gravel and Silt, trace Clay		8		4		7 7 8	
3					10		5		6 7 6	
4					13		6		5 6 7	
5					15		7		6 9 10	
6					18		8		9 15 18	
6					20					
7					23					
8					26					
9					29					

SPT Blow Counts/300mm: 10 20 30 40 50 60 70 80 90 100

Solid Stem (SS) Augur **Hollow Stem (HS) Augur** **Water Level**

GSPrimo

Project Number: 2382	**Borehole:** BH-15
Company: GSPrimo Design Inc.	**Drilling Date:** December 22 & 23, 2023
Project's Location: 1300 Fanshawe Park Road, London, Ontario	**Drilling Depth:** 5.18 m
	Drill Method: HS Augur
Project Manager: M. Heidari, P.Eng.	**Logged By:** M. Heidari, P.Eng.

Depth (m)	Elevation (masl)	Strata Plot	Strata Profile	Water Level	Depth (ft)	Sample Type	Sample Number	Sample Recovery	SPT N-Value
0	258.5		Ground		0				
0			Topsoil		0		1		1 3 3
1					3		2		7 11 8
2			Light to Medium Brown No Odor Moist Sand, some Gravel and Silt, trace Clay		6		3		4 5 6
3					8		4		7 11 10
4					10		5		9 11 10
5					13		6		5 7 7
6					15		7		7 10 10
7					17				
8					18				
9					20				
					21				
					23				
					24				
					25				
					26				
					27				
					28				
					29				

SPT Blow Counts/300mm

10 20 30 40 50 60 70 80 90 100

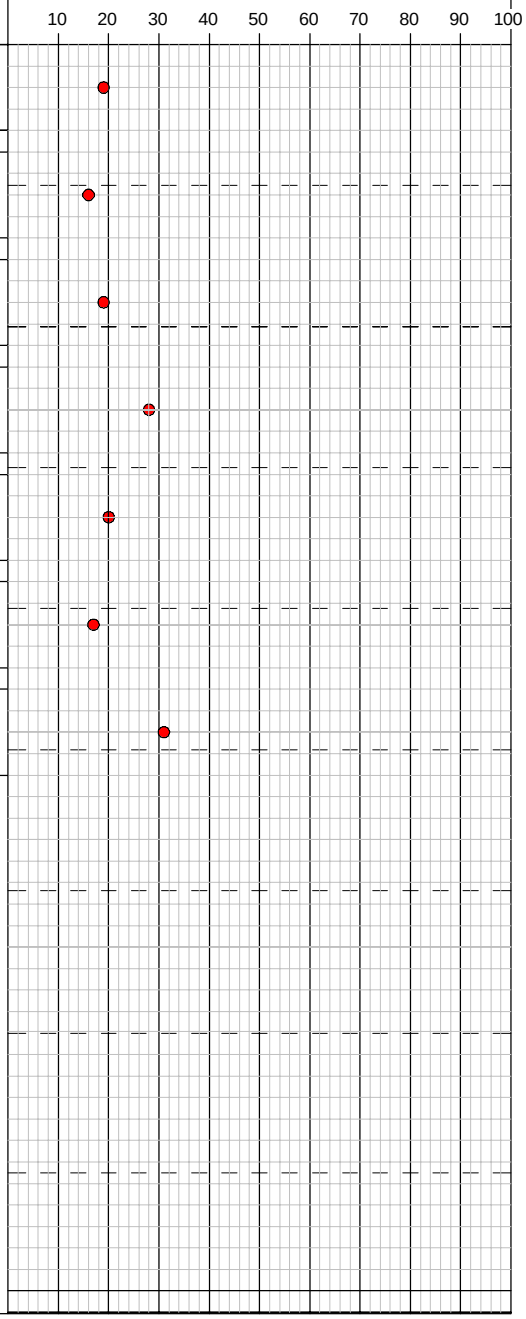
Solid Stem (SS) Augur **Hollow Stem (HS) Augur** **Water Level**

GSPrimo

Project Number: 2382	**Borehole:** BH-16
Company: GSPrimo Design Inc.	**Drilling Date:** December 22 & 23, 2023
Project's Location: 1300 Fanshawe Park Road, London, Ontario	**Drilling Depth:** 5.18 m
	Drill Method: HS Augur
Project Manager: M. Heidari, P.Eng.	**Logged By:** M. Heidari, P.Eng.

Depth (m)	Elevation (masl)	Strata Plot	Strata Profile	Water Level	Depth (ft)	Sample Type	Sample Number	Sample Recovery	SPT N-Value
0	258.1		Ground		0				
0			Topsoil		0				
0 – 1.8			Medium Brown or Gray No Odor Moist to Wet Sandy Silt, some Clay, trace Gravel		0 – 6		1		4 7 12
					3 – 8		2		6 8 8
					6 – 9		3		9 10 9
1.8 – 5.2			Medium Brown No Odor Moist Sand, some Gravel and Silt, trace Clay		8 – 12		4		7 8 20
					10 – 12		5		9 10 10
					13 – 15		6		5 8 9
					15 – 17		7		7 15 16
5.2 – 9					17 – 29				

SPT Blow Counts/300mm



Solid Stem (SS) Augur

Hollow Stem (HS) Augur

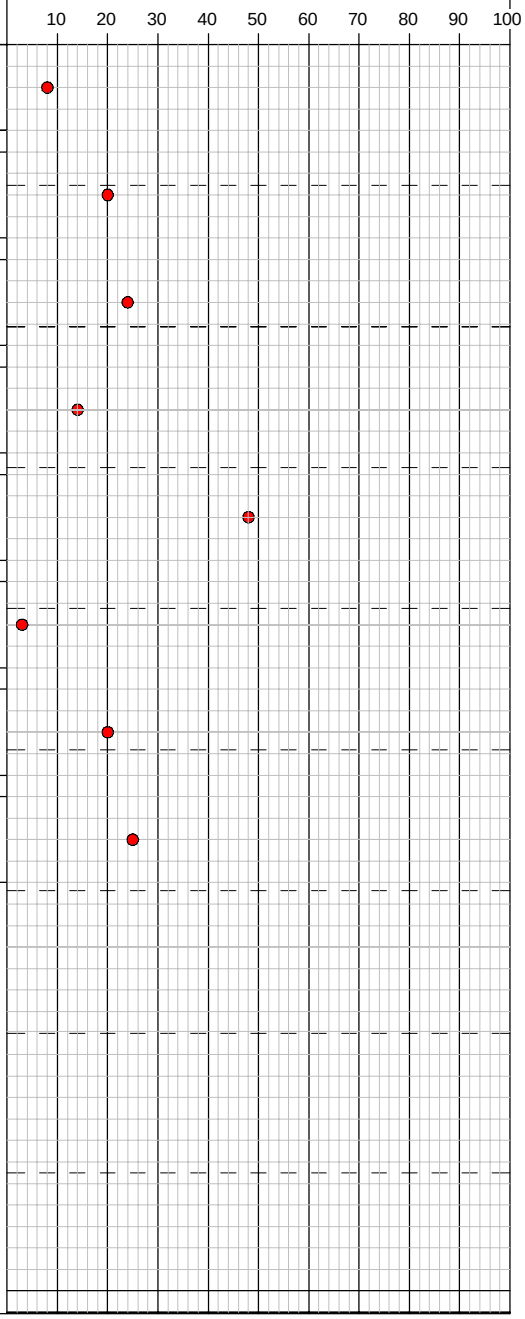
Water Level

GSPrimo

Project Number: 2382	**Borehole:** BH-17
Company: GSPrimo Design Inc.	**Drilling Date:** December 22 & 23, 2023
Project's Location: 1300 Fanshawe Park Road, London, Ontario	**Drilling Depth:** 5.94 m
	Drill Method: HS Augur
Project Manager: M. Heidari, P.Eng.	**Logged By:** M. Heidari, P.Eng.

Depth (m)	Elevation (masl)	Strata Plot	Strata Profile	Water Level	Depth (ft)	Sample Type	Sample Number	Sample Recovery	SPT N-Value
0	257.8		Ground		0				
0			Topsoil		0				
0 – 3			Medium Brown No Odor Dry to Wet Silty Sand, some Clay, trace Gravel		0 – 10				
3 – 6			Medium Brown No Odor Moist Sand, some Gravel and Silt, trace Clay		10 – 20				
0					0		1		1 4 4
0					3		2		11 12 8
0					5		3		9 12 12
0					8		4		7 6 8
0					10		5		18 28 20
0					13		6		1 1 2
0					15		7		9 10 10
0					18		8		8 11 14

SPT Blow Counts/300mm



Solid Stem (SS) Augur **Hollow Stem (HS) Augur** **Water Level**

Explanation of Terms and Symbols

The terms and symbols used on the borehole logs to summarize the results of field investigation and subsequent laboratory testing are described in these pages.

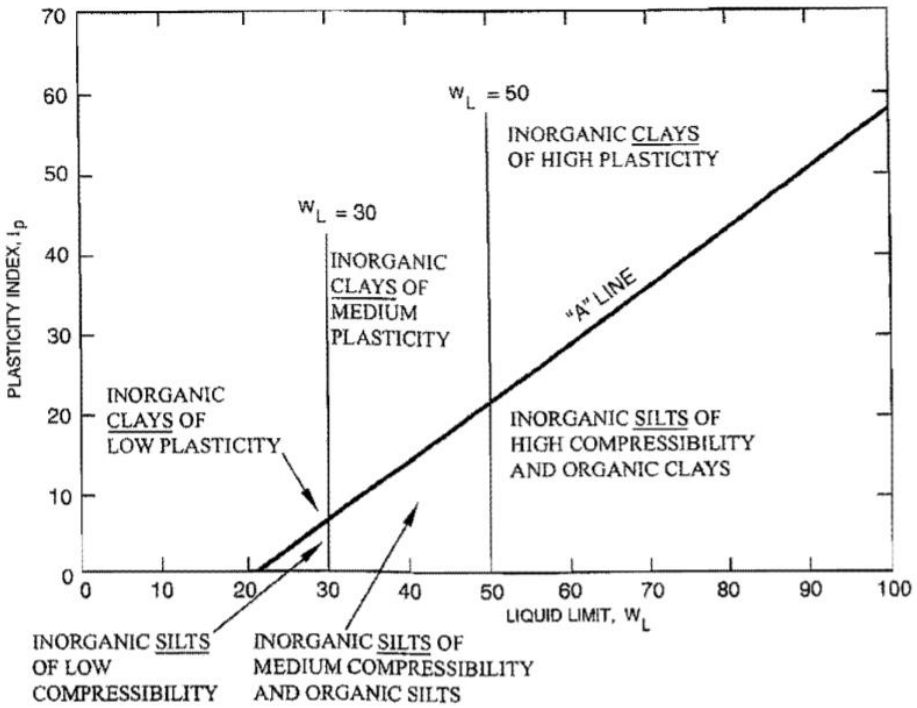
Abbreviations, graphic symbols, and relevant test method designations are as follows:

w	Water Content
w_L, LL	Liquid Limit
w_p, PL	Plastic Limit
I_p	Plasticity Index
γ	Soil unit weight
K	Coefficient of Lateral earth pressure
K_s	Module of vertical subgrade reaction
P	hydrostatic uplift pressure
γ_w	Unit weight of water
d	depth of structures' base below water level
p	Lateral earth pressure
q	Surcharge load
h	Depth from the ground surface
B	Width of rectangular footing
Φ	Geotechnical resistance factor
ϕ	Internal friction angle of soil
c	Cohesion
c_u, S_u	Undrained shear strength
V_s	Shear wave velocity
SPT-N	Penetration resistance
SPMMD	Standard Proctor Maximum Dry Density
MRD	Marshal Maximum Relative Density

Soils are classified and described according to their engineering properties and behaviours.

noun	gravel, sand, silt, clay	**> 35 % and main fraction**
"and"	and gravel, and silt, etc.	**>35 %**
adjective	gravelly, sandy, silty, clayey, etc.	**20 to 35 %**
"some"	some sand, some silt, etc.	**10 to 20%**
"trace"	trace sand, trace silt, etc.	**1 to 10 %**

The plasticity chart (after Casagrande, 1948):



Correlation of soil parameters with uncorrected SPT values for: a) cohesionless soils and b) cohesive soil

Compactness Condition	SPT N-INDEX (blows per 0.3 m)
Very Loose	0 to 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very Dense	>50

(a)

Consistency	Undrained Shear Strength (kPa)	SPT N-INDEX (blows per 0.3 m)
Very soft	< 12	0 to 2
Soft	12 - 25	2 to 4
Firm	25-50	4 to 8
Stiff	50 - 100	8 to 15
Very stiff	100 - 200	15 to 30
Hard	>200	>30

(b)

- *Standard Penetration Tests (SPT); followed the methods described in ASTM Standard D1586-08a. The number of blows by a 63.5 kg (140 lb) hammer dropped from 760 mm (30 in.) is recorded for a depth of 460 mm (18"). The last two 150 mm distances (total = 300 mm) are used to calculate the SPT-N index.*

APPENDIX C – Laboratory Test Results

GEOTRUST ENGINEERING LIMITED

GEOTRUST Engineering Limited
71 Chepstow, London, ON, N6G 3S5
Tel: +1 647-870-6903
www.geotrustengineering.ca
aly.ahmed@geotrustengineering.ca

GEOTECHNICAL TESTING REPORT DATA

Project No.: 2382

Prepared for:

A & A Environmental Consultants Inc.

By:

GeoTrust Engineering Limited

Project No. GT23002TA

Jan 11, 2024

GEOTRUST ENGINEERING LIMITED

GEOTRUST Engineering Limited
71 Chepstow, London, ON, N6G 3S5
Tel: +1 647-870-6903
www.geotrustengineering.ca
aly.ahmed@geotrustengineering.ca

Jan 11, 2024

GSPrimo Design Inc.
1804 Downes Court,
London, ON
N6G 5E8
Email: mheidari@gsprimo.com

Attention : **Dr. Mehdi Heidari, Ph D., P Eng.**

RE: **LABORATORY TEST RESULTS - Project: 2382 – Located at 1300 Fanshawe Park Rd. W., London, ON**

Dear Dr. Heidari,

GeoTrust Engineering Limited (GeoTrust) is pleased to provide the Final Laboratory Testing Report Data for the project mentioned above. This report presents the results of laboratory testing conducted on soil samples received at GeoTrust Laboratory on January 5, 2024. The laboratory testing included the following.

1. Water Moisture Content - ASTM D2216
2. Particle Size Analysis (Hydrometer) - ASTM D422 - D2217

The results of the testing are summarized in the attached **Table 1**. Grain size distribution curves are presented in **Appendix A**.

We trust that this information meets your present requirements. If we can be of additional assistance in this regard, please contact this office.

For and on behalf of GeoTrust Engineering Limited,

Aly Ahmed

Aly Ahmed, Ph D, P.Eng.,
General Manager

GEOTRUST ENGINEERING LIMITED

GEOTRUST Engineering Limited
71 Chepstow, London, ON, N6G 3S5
Tel: +1 647-870-6903
www.geotrustengineering.ca
aly.ahmed@geotrustengineering.ca

Table 1: Summary of Moisture Content and Grain Size Distribution Results

BH No.	Depth (ft)	Moisture Content, (%)	Soil Compositions (%)				Soil Description
			Gravel	Sand	Silt	Clay	
BH7	12.5 – 14.5	3.5	18	64	12	6	Sand, some Gravel and Silt, trace Clay
BH8	15 – 17	2.7	40	46	11	3	Sand and Gravel, some Silt, trace Clay
BH12	2.5 – 4.5	11.2	26	35	28	11	Silty Gravelly Sand, some Clay
BH17	7.5 – 9.5	9.5	10	48	30	12	Silty Sand, trace Gravel, some Clay
BH2	2.5 – 4.5	9.3	5	29	57	9	Sandy Silt, trace Clay and Gravel
BH3	5 - 7	12.5	9	21	55	15	Sandy Silt, some Clay, trace Gravel
BH15	10 -12	5.5	18	64	12	6	Sand, some Gravel and Silt, trace Clay
BH1	10 -12	6.1	41	35	17	7	Gravel and Sand, some Silt, trace Clay

CLOSURE

We trust that this information is satisfactory for your present requirements. Should you have any questions or require additional information, please do not hesitate to contact this office.

For and Behalf of GeoTrust Engineering Limited,

Aly Ahmed

Aly Ahmed, Ph D., P.Eng.
General Manager

GEOTRUST ENGINEERING LIMITED

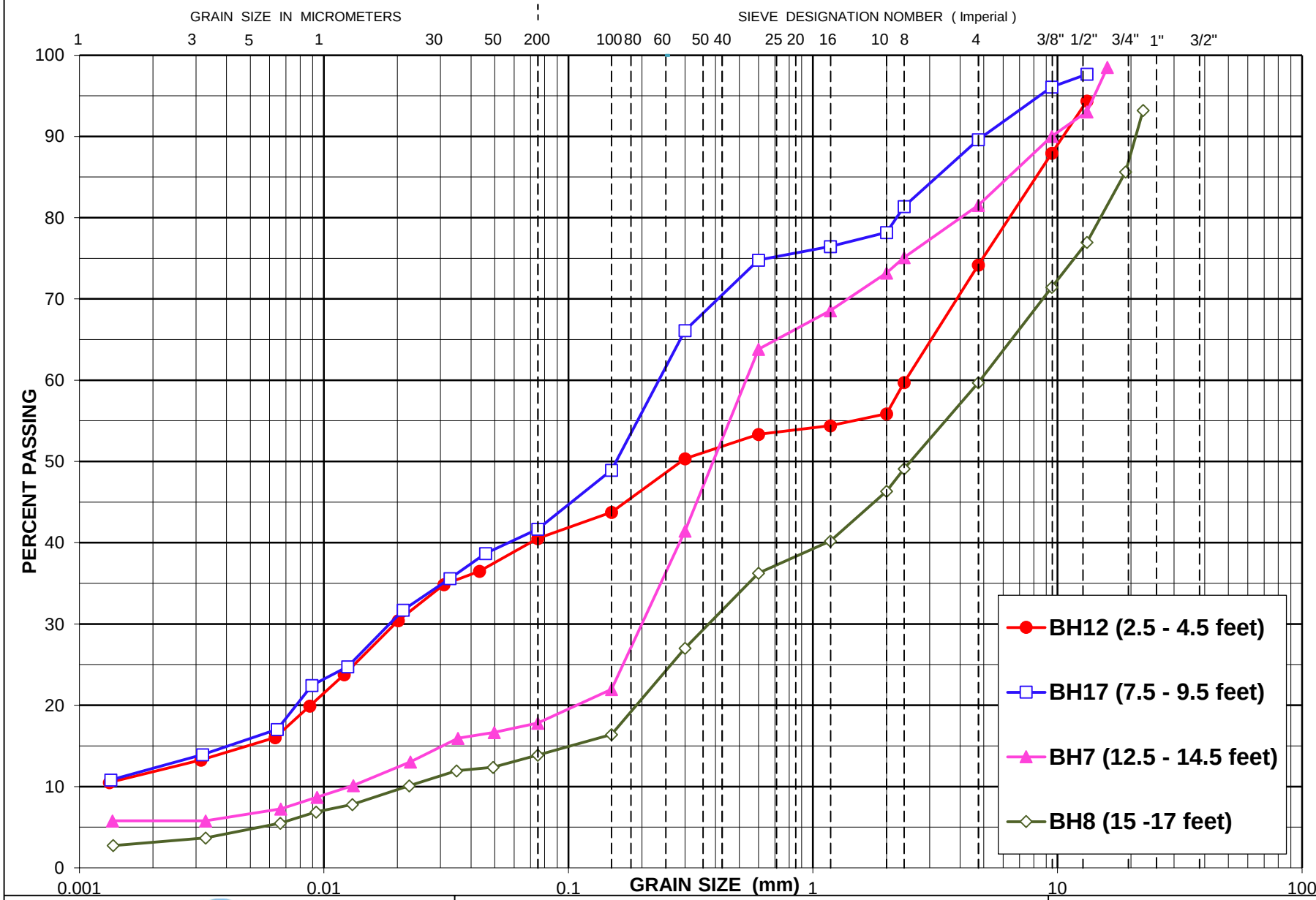
GEOTRUST Engineering Limited
71 Chepstow, London, ON, N6G 3S5
Tel: +1 647-870-6903
www.geotrustengineering.ca
aly.ahmed@geotrustengineering.ca

APPENDIX A

LS 702/D 422

UNIFIED SOIL CLASSIFICATION SYSTEM

CLAY AND SILT	SAND			GRAVEL	
	Fine	Medium	Coarse	Fine	Coarse



GEOTRUST ENGINEERING LIMITED

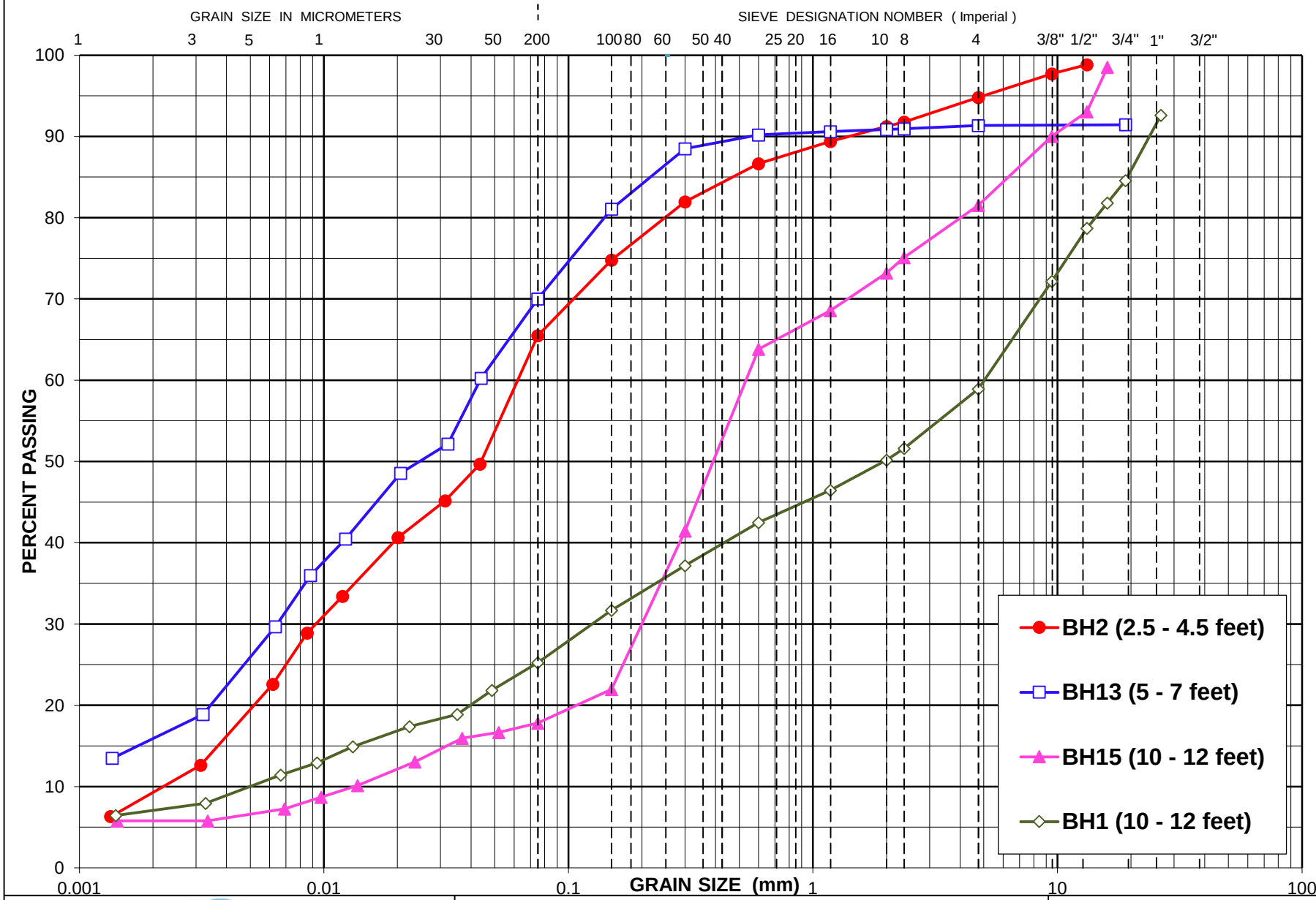
GRAIN SIZE DISTRIBUTION

Figure No.:	1
PROJECT No. :	GT23002TA
DATE :	Jan 11, 2024

LS 702/D 422

UNIFIED SOIL CLASSIFICATION SYSTEM

CLAY AND SILT	SAND			GRAVEL	
	Fine	Medium	Coarse	Fine	Coarse

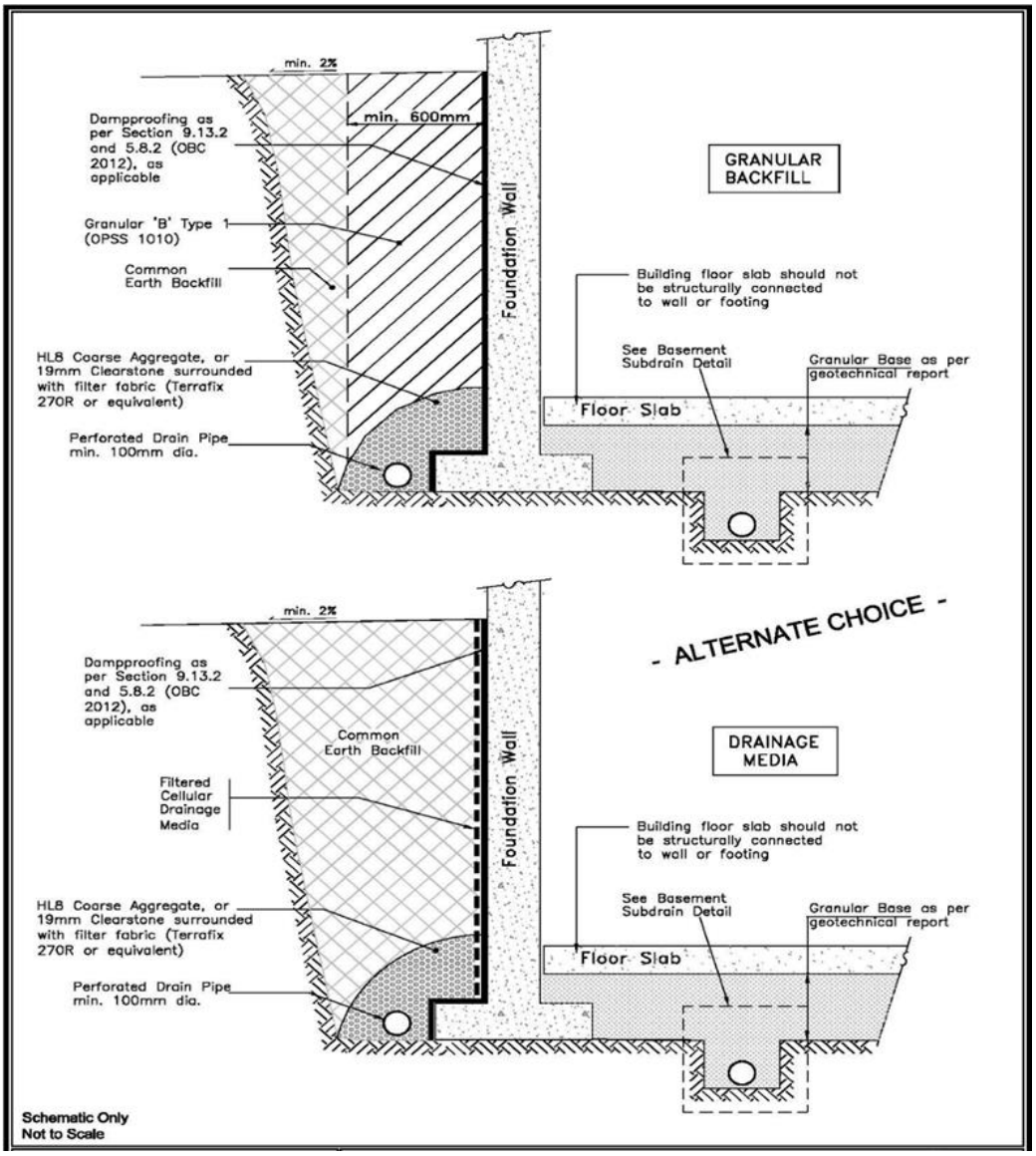


GEOTRUST ENGINEERING LIMITED

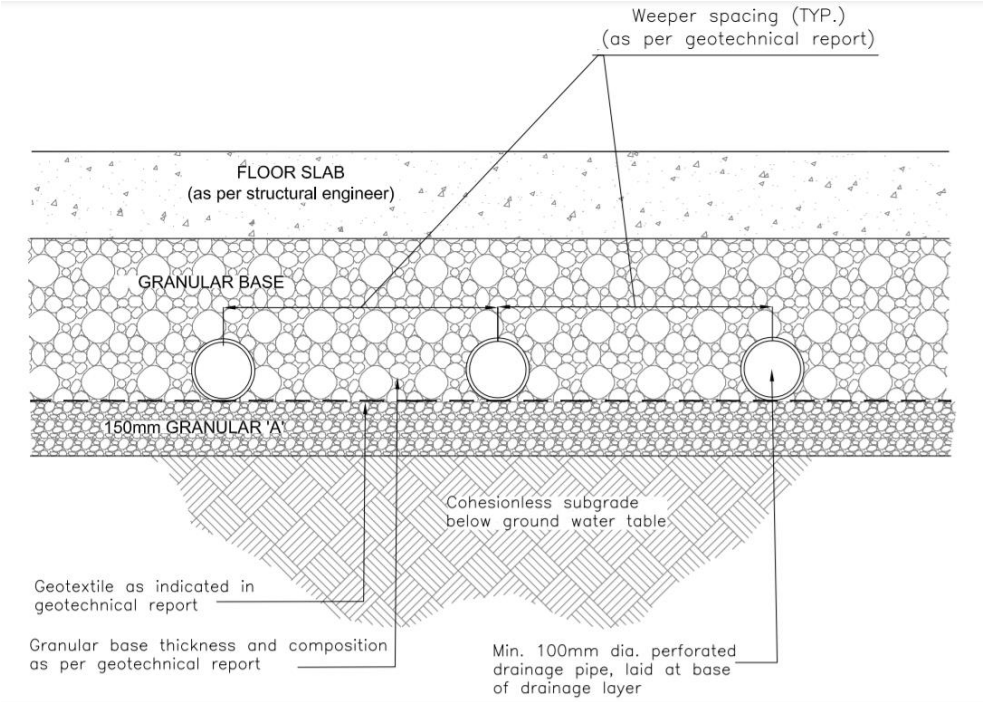
GRAIN SIZE DISTRIBUTION

Figure No.: 2	1
PROJECT No. :	GT23002TA
DATE :	Jan 11, 2024

APPENDIX D – Drainage Details



Basement Drainage Details



Subfloor Drainage Details

LANDLORD WORKLETTER
EXHIBIT C-1
TENANT'S CONSTRUCTION REQUIREMENTS

1. Landlord Construction

Tenant has provided Landlord with Tenant's Requirements for Landlord Workletter, which is a package of information that includes Tenant's standards, specifications and other details or documents pertaining to Landlord's Work (defined below) in the leased premises (the "Tenant's Requirements"). Additionally, Landlord will be required to coordinate certain aspects of the work with Tenant and/or Tenant's Construction Documents as defined in this Workletter.

Landlord will provide the Tenant with a copy of Landlord's construction schedule, including the name, phone number and address of Landlord's contractor and project manager, and copies of all Tenant and governmentally approved Landlord's Plans (as defined in the Lease, or, if not defined in the Lease, "Landlord's Plans" will mean the Tenant and governmentally approved plans for Landlord's configuration of the leased premises and any other portions of the building and the shopping center of which such leased premises are a part, coordination of Landlord's Work, Tenant's drive-through facility, if any, and the parking area, if any), and copies of all changes to such Plans as shall have been approved by Tenant. The foregoing shall be provided to Tenant by the delivery date for such items as set forth in the Lease (or, if no such delivery date is set forth in the Lease, at least ninety (90) days prior to the Scheduled Delivery Date as defined in the Lease, or, if the Scheduled Delivery Date is not defined in the Lease, the date set forth in Landlord's construction schedule for completion of all Landlord's Work, which date shall be referred to herein as the "Scheduled Delivery Date". The construction schedule must include completion dates for key construction milestones, which milestones shall include completion of access/egress, completion of Tenant parking field, installation of permanent utility services, and a Certificate of Occupancy for the building and the shopping center of which the leased premises are a part, all of which must occur prior to the Scheduled Delivery Date.

The Tenant's Requirements, together with the provisions of the Lease governing Landlord's Work, this Landlord's Workletter, and the Landlord's Plans, are referred to herein, collectively, as the "Landlord's Work Documents."

If not otherwise defined or expressly described in the Lease, "Landlord's Work" shall mean all items described in the Landlord's Work Documents and any work necessary to bring the leased premises and the building and the shopping center of which the leased premises are a part, in each case, into the condition required under the Landlord's Work Documents; together with obtaining, at Landlord's sole cost, all approvals to finalize a master sign program (if required or necessary) acceptable to Tenant by the date that Landlord delivers Landlord's Plans to Tenant; together with, if applicable to the leased premises, obtaining, at Landlord's sole cost, all permits and/or government approvals for the construction and operation of Tenant's drive-through facility.

Landlord's Work shall be completed in compliance with the Landlord's Work Documents, standard construction practices, and all applicable Federal, State and local laws, rules, codes and regulations. Landlord shall provide Tenant with a weekly construction status report with digital progress photos. During construction of all Landlord's Work, Tenant's project manager, or its designated representative, may enter upon the leased premises and the building and the shopping center of which the leased premises are a part to inspect progress, take progress photos, and to determine if Landlord's Work is being completed in accordance with the description of Landlord's Work and the Landlord's Work Documents. Upon the completion of Landlord's Work, Landlord shall provide Tenant with completed as-builts for the leased premises.

2. Parties Obligations upon Delivery and Possession

Landlord shall notify Tenant in writing at least ten (10) days (if not otherwise set forth in the Lease) prior to the date that Landlord anticipates that the leased premises will be ready for Tenant's occupancy and Tenant shall arrange promptly to inspect the leased premises to determine whether Landlord's Work has been completed in accordance with the Landlord's Work Documents. At the time of Tenant's inspection, Landlord shall demonstrate that all of Landlord's Work and all mechanical systems of the leased premises are in good working order; provided, however, that if electrical service is not connected at the time of Tenant's inspection, then, notwithstanding anything to the contrary in any other Landlord's Work Documents, Tenant's inspection shall not be deemed complete and Landlord shall not be deemed to have satisfied all conditions to the delivery of the leased premises until such electrical service is completed and Landlord shall have demonstrated that all of Landlord's Work that requires completed electrical service is in good working order, including, without limitation, HVAC, the Drive Thru Window, if applicable, and rooftop fan.

DT

DS

56

Upon completion of Tenant's inspections, Tenant shall deliver to Landlord a written punch list of all incomplete or faulty items of construction or mechanical installation, and any necessary mechanical adjustments and finish work needed to bring the leased premises and the building and the shopping center of which the leased premises are a part into the condition required by the Landlord's Work Documents. Except as expressly provided to the contrary in the Lease, Landlord shall repair all punch list items as a condition to Tenant's acceptance of the leased premises, or if Tenant chooses to accept delivery of the leased premises prior to completion, within fourteen (14) days of the date Tenant delivers the punchlist to Landlord, unless another date is specified in the Lease. Upon Tenant's acceptance of delivery of possession of the Premises, Landlord and Tenant shall execute the delivery of possession form in accordance with the Lease or a written acknowledgement of delivery and acceptance if a delivery of possession form is not a part of the Lease.

If on the Scheduled Delivery Date, leased premises and the building of which the leased premises are a part are not in the condition required by the Landlord's Work Documents, and/or if Landlord fails to repair all punch list items at the time and in the manner described in the preceding paragraph, and if, in either case, Tenant elects to accept possession of the leased premises, then, in addition to any remedy provided in the Lease and without limitation thereof, and except as expressly provided to the contrary in the Lease, Tenant is hereby authorized to complete all or any portion of the outstanding Landlord's Work and/or punchlist items necessary to bring the leased premises into the required condition and Landlord shall reimburse Tenant for the actual cost of such work plus an administrative surcharge of fifteen percent (15%) of the amount otherwise due Tenant, to compensate Tenant for its employees' time, within thirty (30) days of receipt of an invoice for such sums. Landlord agrees that the Tenant's and its contractor's determination of the scope of all work that is necessary to bring the leased premises into the required condition is deemed appropriate and the cost thereof plus the surcharge referred to above shall be final and binding on Landlord. If Landlord does not reimburse Tenant as required by this Landlord Workletter then in addition to any remedy provided in the Lease and without limitation thereof, Tenant may offset such sum against the monthly base rent and all other charges payable by Tenant under the Lease until such sum has been fully recouped. Nothing herein shall limit or impair any of Tenant's rights and remedies set forth in the Lease or Landlord's obligations thereunder, including, without limitation, requirements for the condition of the leased premises and the building and the shopping center of which the leased premises are a part and Landlord's obligation to construct and complete all Landlord's Work.

3. Incorporation With Lease

This Landlord Workletter is attached to and forms a part of the Lease and is intended by the Landlord and Tenant to be interpreted in all respects in a manner that is consistent with the terms, conditions and provisions of such Lease. Notwithstanding the foregoing, the express terms, conditions and provisions of the Lease (including, without limitation, those terms, conditions and provisions of the Lease, if any, governing delivery dates and the rights and obligations of the parties in the event that on the Scheduled Delivery Date, the premises are not delivered to Tenant in the required condition) shall control in the event of any conflict or inconsistency between the express terms, conditions and provisions of the Lease and this Landlord Workletter.

DS

EXHIBIT C-2
Description of Landlord Work

STANDARD/DRIVE-THRU COMPONENTS	
Scope Category	**Details**
Bldgs. Domestic Water Distribution	Furnish and install one domestic water [DW] service sized per local code (minimum 1 ½"), and a meter independently designated for Tenant's use, stubbed via copper piping into the Premises with shut off valve, in accordance with Tenant construction documents.
	The domestic water service must be capable of providing a minimum operating flow rate of 50 gallons per minute [gpm]; at a minimum operating pressure of 50 psig and a maximum of 80 psig dynamic pressure at all times If the flow rate or pressure is not sufficient, Landlord shall engineer, furnish and install a booster pump in a location agreed upon with the Tenant. Furnish and install a certified backflow prevention assembly per local code in a location to be mutually agreed to between the Tenant and Landlord. The backflow prevention assembly must have a maximum water pressure drop of 15 psig at 50 gpm.
	Permit and distribute all under-slab domestic water lines per Tenant's under-slab penetration drawings and/or Construction Documents. Notify Tenant a minimum of two weeks prior to slab pour for coordination.
	If permanent utility service is not available at the Scheduled Delivery Date as defined in the lease, temporary service must be provided by Landlord. Permanent water service must be provided by no later than two (2) weeks into Tenant's construction in the space.
Bldgs. Electrical Distribution	Provide Electrical service from the separate meter to Tenants Electrical Panel. The service drop from the utility company shall be a minimum of 600 Amps, 120/208 Volt 3 phase 4 wire power service connected to Tenant's main Double Tub electrical panel. If only 120/240 Volt service is available, advise Tenant immediately. Electrical utilities to be installed using properly sized kVA electrical transformer including all electrical meter pans. Furnish and install one 150kVA voltage step down transformer if converting from high voltage to 600 Amps 120/208. Location of transformers shall be per Tenant's construction documents. Provide a separately metered utility, including the current transformer [CT] block and enclosure, meter base, distribution panel, meter, conduit wiring from the utility service point to Tenant's main electrical panel. Location of the main panel shall be specified by the Tenant.
	Permit and distribute all under-slab electrical distribution lines per Tenant's under-slab penetration drawings and/or construction documents. Notify Tenant a minimum of two weeks prior to slab pour for coordination.
	If permanent electrical service is not available at the Scheduled Delivery Date as defined by the lease, temporary service adequate of supplying full service per Tenants Electrical requirements must be provided by Landlord. Permanent Electrical service must be provided no later than two (2) weeks into Tenant's construction in the Tenants premises.

STANDARD/DRIVE-THRU COMPONENTS	
Bldgs. Electrical Panels	Provide and install electrical panels in an agreed upon location in Tenants workroom.
	Furnish and install two (2) each 'Square-D' or equal (with prior approval by Tenant) NEMA PB1, Type 1, 600 Amp rated panels (in accordance with ESA code regarding transformer amperage output) with lockable, hinged door-in-door construction. Main panels shall include feed-thru lugs to serve downstream panel. All panels shall be mounted flush with wall, in a location identified by the Tenant.
	Each (of qty 2) electrical panel shall be sized 68"H x 20"W x 5.75"D, furnished with 72 poles and breakers, for a total of 144CCTs, as per Tenant's construction documents and panel schedule.
	Panels shall have Amps Interrupting Current (AIC) rating sufficient to withstand available fault current at the electrical service entry.
Bldgs. Exterior and Site Lighting	Furnish and install pole lights in the parking lot and at site ingress and egress to provide a minimum lighting level of 1.5-foot candles at grade.
	Any parking lot lighting dedicated to Tenant occupancy shall require conduit and wire stub-up to within five feet (5') of the building pad at the rear service door for integration with Tenants lighting control system.
	Furnish and install a security light, consisting of a compact fluorescent or metal halide lamping sufficient to provide at minimum of 5000 lumens or higher or per local code requirement at exterior rear door at a minimum dimension 10' above finished floor [AFF] and controlled in Tenant's space. [Sustainable Element]
	Any exterior building lighting dedicated to Tenant occupancy shall require control within Tenants space.
	Provide battery back-up within exterior building light fixtures per code to provide emergency illumination of the exterior egress discharge.
Bldgs. Fire Alarm	If required by applicable codes for Tenant's use, Permit, furnish and install a building monitoring and fire protection alarm in Tenant's space.
	The system must be programmed, functional and tied into the building smoke detectors. Landlord shall provide central station monitoring.
	Provide all coordination, testing and inspections for a fully functional fire alarm system able to obtain Tenant's temporary or permanent Certificate of Occupancy and to meet Tenant's opening schedule. [NTD: TT will relocate heads and connect to fire panel. The term 'shell building', techinically isn't a demised space. Which is the issue with the wording.]
Bldgs. Fire Protection	If required, permit, furnish and install a primary fire sprinkler system to Tenant's space. Include all system components, except for modifications required to accommodate Tenant's design. [NTD: LL needs to ensure that fire panel is big enough for all Tenants to add modifications.]
	System must be pressure tested, fully operational, inspected and approved by any local agencies having jurisdiction.
Bldgs. Gas Distribution	If required, per Tenants construction documents, deliver gas service, per applicable local code, to a location determined by the Tenant per Tenants construction documents inside the Premises with shut off valve and tee. Piping size shall be based on pressure distribution and local availability and shall be coordinated with Tenant's MEP Consultant. This scope of work must include, local utility approved, piping manifold sized and ready to receive utility gas meter.
Bldgs. Gypsum Wall Board	Provide demised and perimeter walls finished to level 4 finish from floor to underside of roof deck with gypsum wall board (GWB) per Tenant's Outline Specifications. Demising walls to be fire rated if required by local jurisdiction.

STANDARD/DRIVE-THRU COMPONENTS	
	GWB wall assemblies shall be insulated and framed. Tenant's wall side shall be provided with GWB; fire taped and bedded, plumb and square, sanded and primed, ready to accept Tenant's wall finishes from floor to underside of roof deck per Tenant's Outline Specifications.
	Seal around joists and all penetrations airtight, with properly rated fire stopping materials, as required.
	If required by Local Jurisdiction to secure Tenant's Certificate of Occupancy, Landlord shall complete the assembly by finishing the opposite side of the demising wall from the Tenant's space.
	All CMU walls must be furred-out, insulated, and GWB finished in accordance with Tenant's Outline Specifications.
	Landlord shall coordinate the installation of GWB with Tenant wall rough in.
	Properly seal around all penetrations, including but not limited to, roof or exterior wall penetrations.
Bldgs. HVAC System	Furnish and install HVAC System including HVAC Unit(s), all electrical connections, gas connections , temporary thermostats/HVAC controls and collar drops Furnish no less than one (1) ton per 125SF of mechanical cooling capacity, comprised of at least two HVAC units to allow adequate space zoning, subject to Tenant's construction documents. Furnish heating capacity per Tenant's construction documents.
	Provide outside air in accordance with Starbucks Mechanical Design Guidelines.
	Structural support for the HVAC System shall be provided, including all structural engineering design and permitting.
Bldgs. HVAC System CON'T	HVAC Unit(s) shall be tested and operable. Coordinate initial mechanical start-up per manufacturer's recommendation and provide Tenant with validation/documentation of Mechanical start-up as needed to support Tenant's Commissioning requirements.
	A minimum one year manufacturer's warranty shall be supplied and transferred to Tenant at Punch and Delivery of Possession to Tenant.
	Provide appropriate repair and maintenance documentation including but not limited to unit specifications, operations manual, testing and balancing documentation, and equipment serial numbers.
Bldgs. LEED Certified Building	If Landlord constructs, or has constructed, a LEED certified building, Tenant requests that Landlord provide certification documentation to Tenant, per Starbucks LEED Program Document. Tenant plans to use this documentation, in conjunction with Tenants own LEED documentation, in support of Tenant's Volume Build LEED Certification Program with the US Green Building Council.
Bldgs. Plumbing Fixtures	Provide one (1) exterior hose bib per Starbucks Plumbing Design Guidelines and Outline Specifications. Furnish and install all plumbing vents from the roof through flashing to a location above the proposed Tenant ceiling in the Premises per Tenant's construction documents.
	If hose bib(s) are dedicated to Tenant, Landlord shall run water usage through Tenants water meter.
Bldgs. Rear Service Door and Hardware	Furnish and install a commercial grade Exterior Hollow Metal rear service door including threshold, weather stripping, door sweep and drip edge in accordance with Tenant's Outline Specifications.
	Furnish and install door hardware including alarmed panic hardware, door closure system, 180-degree peep hole and removable lock core per Tenant's Rear Door Hardware Specifications.
Bldgs. Roof	Provide all necessary penetrations, curbs, sleepers, and/or pads to accommodate rooftop mechanical equipment

DS

DS

SG

STANDARD/DRIVE-THRU COMPONENTS	
	Provide flashed roof penetrations for all Tenants venting requirements per Tenant's Outline Specifications.
Bldgs. Sanitary Sewer Distribution	Permit and distribute all under-slab sanitary sewer waste lines per Tenant's under-slab drawings and/or construction documents, and vent(s) per Starbucks Plumbing Design Guidelines. Notify Tenant a minimum of two weeks prior to slab pour for coordination.
Bldgs. Selective Demolition	Tenant shall identify any real and personal property items to remain and be protected prior to demolition.
	Demolish, remove and legally discard all site and building improvements that impede placement and operation of Tenant's business, including but not limited to, hazardous substances, sidewalks, paving, site storm drains, landscaping, partitions, ceilings, floor coverings (including adhesive and grout), building foundations, encroachments, signs, electrical conduit, plumbing, rooftop equipment, and other existing fixtures and equipment, per Tenant's Outline Specifications. Restore all impacted areas and surfaces to a condition ready to receive tenant's construction and scope. Interior spaces shall be left in a "broom clean" condition.
Bldgs. Storefront Windows and Doors	Provide exterior doors and windows in accordance with Tenants Outline Specifications
	Storefront glazing is to be clear, non-tinted, non-reflective, double glazed and low-e with U-value complying with the appropriate climatic zone in the International Energy Conservation Code (ICC) or per local Jurisdictional requirements, whichever is greater.
Bldgs. Subfloor / Floor Slab	Landlord is to provide a smooth, level sub-floor / floor slab structure ready to receive Tenant's flooring. Landlord shall coordinate with Tenant on type of flooring Tenant will be installing.
	All sub-flooring / floor slab must meet applicable dead and live load code requirements. All transitions shall comply with barrier free and accessibility regulations and local municipal guidelines.
Drive Thru Awnings and Canopies	Furnish and install an exterior awning or canopy above the drive-thru window at a minimum (9' - 6") clear above the drive lane, with a (4'-6") projection from the building per Starbucks Drive-Thru Standards and Guidelines. Furnish and install Tenant specific height restrictive bar, as specified and located by Tenant's plans and specifications.
Drive Thru Electrical Distribution Drive Thru Electrical Distribution CON'T	Furnish and install a 1 and 1/2-inch conduit with pull string from Tenant's Electrical Panel stubbed-up to a location designated by Tenant and/or Tenant's Site Electrical Drawings, for its' Drive-Thru electrical sub-panel (aka Digital Control Box)
	Furnish and install all underground electrical conduits for Tenants Drive-Thru signage and ordering components, labeled with pull strings, per Tenant's Electrical Guidelines. Conduits shall be run from Tenant's drive-thru sub-panel (aka Digital Control Box) and stubbed-up to locations identified by Tenant and/or per Tenant's Site Electrical Drawings.

STANDARD/DRIVE-THRU COMPONENTS	
Drive Thru Component Footings	Furnish and install concrete footings for the following items: 1) Pre-Menu Board 2) Order Menu Board 3) Order Confirmation System (OCS) or Speaker Post, if jurisdictionally required. 4) Directional Signage 5) Clearance Bar 6) Tenant's Monument Sign and/or Pylon Sign 7) Tenant's drive-thru electrical sub-panel (aka digital control box), as applicable 8) Protection and Illumination bollards Landlord shall coordinate this work with Tenant and Tenant's Signage vendor. Tenant and Tenant's signage vendor will provide footing locations and anchor bolt patterns to Landlord. For clarity, Landlord shall be responsible as part of its work to install the sign bases for the bases for 1 – 8 above. So long as the Landlord provides a final, city approved site plan six (6) months prior to possesion, then the Tenant or Tenant's sign vendor shall provide the engineered drawings and permit(s) required for 1 – 8 above, the anchor bolts and the installation pattern to Landlord minimum 2 weeks prior to installation of the sign bases. The Tenant's signage vendor shall be responsible to supply and install the signage and order boards described by 1 – 8 above.
Drive Thru Paving	• Provide pad constructed of 6" thick reinforced concrete (preferred) or asphalt. The width of the pad shall be the width of the drive-thru lane or no less than 12' wide and the length shall extend 18'. • Provide two (2) areas of porous paving per Tenant's construction document. The first porous paving area shall be; 1. The width of the drive-thru lane or no less than 12' wide and the length shall extend from entry to drive thru lane (as indicated on Tenant's design drawings) to 16' beyond this point. The second porous paving area shall be; 2. The width of the drive-thru lane or no less than 12' wide and the length shall extend 8' in either direction from the centerline of the order confirmation system (OCS). • Lane to have a 20-foot (610 cm) inside turning radius • Drive-Thru lineup 4+ cars (or 80+ ft.) from order point to lease line, 7 cars (or 140 ft.) from order point to DT pick up window • Furnish and install 6" diameter steel pipe bollards, filled with concrete, painted and located per Tenant's construction documents.
	Install two (2) Tenant provided detector loop conduits. One conduit at the order point and one conduit at the drive thru window prior to installation of the drive lane surface, per Starbucks Drive Thru Global Standards and Guidelines and per Starbucks Vendor (HME) Detector Loop cut sheets.

DS

STANDARD/DRIVE-THRU COMPONENTS	
Drive Thru Window	• Furnish and install the Tenant specified Ready Access Model 275 MOER (Insulated) drive-thru service window with all connections fully operational per manufacturer's specifications, as well as directionally oriented as per Tenant's construction documents. • Start-up D/T window and provide field report from authorized service provider that all features/functions are with-in specified range. • Furnish and install a 110-volt 15A electrical supply, transoms and sidelights, including bump out and stainless-steel exterior shelf, per Tenant's construction documents. • Height of service window must be 36" on the inside above finished floor and 42" on the outside measured from drive-thru lane. • Furnish and install air curtain/fly fan at drive thru window per Tenant's construction documents or local code.
Site Irrigation Systems	Furnish and install an irrigation system that is designed to maximize delivery of water to planted areas and minimize run-off per Tenant's Plumbing Design Guidelines.
	The irrigation system shall include a backflow prevention device, a time clock or moisture sensor based controller and is separately metered. Controls and valves must be accessible by Tenant on any Tenant dedicated system.
	If a permanent irrigation system is NOT required due to landscape type then a temporary system can be installed until plants are established.
	Cover drip irrigation systems with two inches (2") of mulch.
	Landscaping controls shall be set to run at optimal times of the day to minimize evaporation loss and business disruption. Broadcast systems should not be run during Tenant's normal business hours.
Site Landscaping	Provide Landscaping with drought tolerant and/or native vegetation as appropriate for the specific region per Tenant's Drive Thru Guidelines.
	Design should minimize rain and irrigation run-off. Conserve and utilize any existing plants/soil/material as appropriate.
	Provide a mixture of trees, shrubs and ground cover to retain soil moisture and mitigate solar heat gain without blocking visual access to prominent store windows, entrance, Tenant signage, and directional signage.
	Provide twelve inches (12') of amended topsoil to planting areas to ensure optimum plant health.
	Provide a minimum of two inches (2") of mulch over planting beds to hide drip irrigation system, retain soil moisture and minimize weed growth.
	Stake trees for the first year until established. Remove stakes after one year to ensure proper root development.
	All planters should have proper drainage and automated irrigation as necessary.
Site Patio	Where possible, provide an outdoor seating area adjacent to Tenant's space designated as occupiable and accessible. Patio surface must be broom finished and sealed in accordance with Tenant's Outline Specifications.
	If required by the local jurisdiction, Landlord shall also obtain an outdoor seating permit.
	Supply and install keyed, frost-free recessed hose bib accessible to trash enclosure and patio, if applicable. The hose bib must be connected to ½" copper pipe. Pipe must be exposed and visible for Tenant's connection within the Premises per Tenant's construction documents.

STANDARD/DRIVE-THRU COMPONENTS	
	Provide adequate separation and barriers from vehicular traffic per Tenant's Drive Thru Design Guidelines, including but not limited to, a railing to enclose the patio seating area as approved by Tenant, and wheel stops at all parking spaces adjacent to the sidewalk and patio.
	Provide lighting to the exterior patio per Tenant's Electrical Design Guidelines.
Site Paving and Striping	Landlord shall construct all paving on the premises outside the building area per jurisdictionally approved Civil Engineering plans.
	Landlord shall provide parking lot striping including accessible stalls, pedestrian access markings, and wheel stops at all parking spaces adjacent to Tenants sidewalk and/or patio.
	In locations where parking lots and striping already exist, Landlord shall reconfigure parking lot traffic flow as necessary to accommodate Tenant access.
Site Primary Utilities	Design, permit and install distribution from the service point to a separate meter to a location designated by Tenant and in accordance with Starbucks MEP (Mechanical, Electrical and Plumbing) Guidelines and Outline Specifications for Gas, Water and Electrical service.
	Design, permit and install distribution from the service point to a location designated by Tenant and in accordance with Starbucks MEP Guidelines and Outline Specifications for Data and Telephone service.
Site Sidewalk and Curbs	Landlord shall provide and install all curbs and sidewalks including site perimeter curbs and sidewalks. Sidewalks are to slope away from all points of building entry.
	All curbs and gutters are to be formed concrete. Extruded asphalt or extruded concrete curbs and gutters may not be used.
	Sidewalks and curbs shall be provided per jurisdictionally approved engineering plans.
	Landlord shall furnish and install a bike rack for the premises. Location to be coordinated with Tenant.
General Site & Drive Thru Exterior	All concrete, concrete curbing, concrete footings, loops, asphalt, sidewalks, and any other exterior elements to be completed prior to October 1st in any given year. If not completed by aforementioned date, Tenant is not required to accept possession of the Premises until the above noted are completed in full.
Site Storm Water	Provide a new or relocate existing storm water system to accommodate Tenant's building configuration and site circulation.
	Location of storm water detention/retention ponds, if required, shall be coordinated with Tenant.
Site Telephone and Data Systems	Landlord to initiate installation of telephone facilities with Local Exchange Carrier (LEC) or telephone service provider.
	Provide one conduit pathway for telephone wiring and one conduit for broadband cabling from demarcation point to Tenant's space. Terminate conduit in Tenant's space at the ceiling above the Manager's Workstation in the Back of House, or as otherwise designated by Tenant.
	Utilize minimum 2" conduit, or size per requirements of the local service providers. Provide labeled, end to end pull strings in all conduits. Refer to Tenant's Outline Specifications.
Site Data Infrastructure	Landlord shall use best efforts to ensure data communications infrastructure in the form of broadband cable or broadband fiber is available on Landlords site for Tenants use.
	If this data infrastructure is NOT on Landlords site at the time of signing the LOI and/or this Landlord Work letter, Landlord shall immediately notify Tenant of such and coordinate with Tenant and the local service provider to identify if these services are readily available and extendable to Landlords site, including a timeline for when services will be available and extended to the site for approval by Tenant.

DS SG

STANDARD/DRIVE-THRU COMPONENTS	
	Upon Tenant approval of the service providers timeline to extend services, Landlord shall immediately coordinate with the local service provider to pay for and extend broadband services to Landlords demarcation point on site.[NTD: When the data folks get back to the LL, he should have a cost associated. The big box will likely want data/internet/wifi. We are asking to add to demarcation connection and we will extend to our space.Please refer to 'site internet & voice systems' language within email containing LOI]
	These services must be in place and available in time for Landlord to successfully and timely execute against the remainder of the Data Communications work identified in this landlord Work letter.
	In the event broadband cable or broadband fiber is not readily available to extend to Landlords site at the time of Delivery of Possession Landlord shall, at a minimum, extend 2" conduit from the utility easement to Landlords demarcation point on site.
Site Data Communications	If broadband cable or broadband fiber is available on Landlords site, landlord shall establish 2 (two) 2" conduit pathways from Landlords demarcation point to Tenants space.
	Utilize minimum 2" conduit, or size per requirements of the local service provider. Provide labeled end to end pull strings in all conduits. Refer to Tenants MEP Guidelines.
	Terminate conduit in Tenants space at the ceiling above the Managers Workstation in the back of house, or as otherwise designated by Tenant.
Site Telephone	Landlord shall establish a conduit pathway from Landlords demarcation point to Tenants space.
	Terminate conduit in Tenants space at the ceiling above the Managers Workstation in the back of house, or as otherwise designated by Tenant.
	Utilize 2" conduit, or size per requirements of Local Service Providers. Provide labeled end to end pull strings in all conduits. Refer to Tenants Outline Specifications and MEP Guidelines.
Site Trash Enclosure	Provide a trash enclosure sized at least to 18' x 9' or equivalent deep earth bins to accommodate a 4-cubic yard trash container and a 4-cubic yard recycling container and a container for composting service. Provide enough clearance in the enclosure for the waste removal vehicles to safely pick-up and replace containers to limit damage to the enclosure.
	The trash enclosure shall be physically located on the site no greater than 500 feet from the entrance to Tenant's premises in a location depicted on the site plan and mutually agreed upon by Tenant and Landlord. The pathway to the enclosure and the enclosure itself shall be well lit. The enclosure shall be sited to provide proper access and clearance for waste removal vehicles including a 90-degree turning radius, as per mutually agreed to site plan.
	Provide a hose bib accessible to the trash enclosure per Tenants Plumbing Design Guidelines.
	If Tenant is required to share trash removal or recycling containers with other tenants, such shared container shall be adequately sized and serviced to handle Tenant's trash, recycling and composting requirements, equivalent to a 4-cubic yard trash container, 4 cubic yard recycling container and a container for composting service.

Landlord:	[signature]	Tenant:	DocuSigned by: Stephen Goddard
Print Name:	David Traker	Print Name:	Stephen Goddard
Title:	V.P.	Title:	Real Estate Manager
Date:	June 14/21	Date:	6/11/2021