TEST PITTING FACTUAL REPORT
PROPOSED DEVELOPMENT AT MULOCK HOUSE
33 MULOCK DRIVE
NEWMARKET, ONTARIO

Prepared for:

THE CORPORATION OF THE TOWN OF NEWMARKET

Prepared By:

SIRATI & PARTNERS CONSULTANTS LIMITED

SIRATI & PARTNERS
Geotechnical Hydrogeological & Environmental Solutions

Project: SP22-01170-00-B
August 30, 2023

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1. INTRODUCTION

Sirati & Partners Consultants Limited (SIRATI) was retained by the Corporation of The Town of Newmarket (the "Client") to undertake a geotechnical investigation at Mulock House situated at central area of Mulock Property located at 33 Mulock Drive in Newmarket, Ontario (the "Site").

The purpose of this geotechnical investigation was to determine depth and configuration of the existing foundation at two locations, pier foundation on the East Trace and the Southern stone stairs, throughout excavating two (2) test pits.

Based on information provided by the Client, two (2) test pit locations were proposed to be excavated by the client on the exterior of the existing buildings (Drawing A202, Investigative Opening Location Plan-1, prepared by +VG Architects, please refer to **Appendix A**).

This report has been prepared for the Client and its designers. Third party use of this report without Sirati & Partners Consultants Limited (SIRATI) consent is prohibited. The limitation conditions presented in **Appendix C** form an integral part of the report and they must be considered in conjunction with this report.

2. FIELD WORK

Client arranged to excavate two (2) test pits (TP1 and TP2, see Drawing 1 for location plan) using a mini excavator by an excavation sub-contractor under the direction and supervision of the Client. The test pits (TP1 and TP2) were excavated to depth ranging between 1.35 m and 1.68 m, below existing concrete floor slab.

All the excavated test pits were visually inspected by SIRATI personnel and photographs were taken along with measurement of depth of exposed foundation elements. Two (2) grab samples were taken from the bearing stratums of the excavated test pits. As well as visual examination in the laboratory, all the soil samples were tested for moisture content, hydrometer analyses and Atterberg Limits testing and the results will be provided in our final report.

3. FOUNDATION DEPTH AND CONFIGIRATION

The exposed foundation elements at the location of the excavated test pits were visually inspected along with measurement of the foundation depth. The visual inspection was carried out to gather information on foundation current condition as well as examining the foundation soil condition. Findings from this study are presented in Table 2 along with a photo log that is presented in **Appendix B** of this factual report.

4. BEARING STRATA SOIL CONDITION

The bearing stratums under the foundation elements at the excavated test pits were visually inspected and examined by SIRATI senior geotechnical engineer using pocket penetrometer readings. The findings from the visual inspection and pocket penetrometer measurements are provided in Table 1. It should be noted that due to limitation of the current investigation (e.g. limited depth and configuration of test pits, disturbance of bearing stratum, etc.) the following findings are preliminary and should be confirmed by further investigation.

Table 1. Bearing Strata Soil Condition Summary

Test Pit ID	Bearing Strata Soil Condition	Estimated Bearing Capacity at SLS (kPa)	Estimated Factored Geotechnical Resistance at ULS (kPa)
TP1	Clayey Silt possible Fill, trace sand and gravel, brown, stiff, moist	100	150
TP2	Clayey Silt possible Fill, trace sand and gravel, brown, stiff, moist	100	150

No groundwater seepage was observed during the test pit inspection; however, it should be noted that the groundwater levels can vary and are subject to seasonal fluctuations in response to major weather events. The groundwater level should be confirmed through a hydrogeological study on site.

SIRATI recommend performing a confirmatory geotechnical investigation on site.

4. FROST PROTECTION

All footings exposed to seasonal freezing conditions must have at least 1.2 m of soil cover for frost protection.

There is no official rule governing the required founding depth for footings below unheated basement floors. Certainly, it will not be greater than the 1.2 m required in Southern Ontario for exterior footings. Un-monitored experience indicates that a shallower depth ranging from 0.82 to 0.9 m for interior column footings and 0.4 m for wall footings has been successful where 2 or more basement levels apply. The 0.82 m depth is believed to be close to the minimum structural requirement for interior column footings. Adjacent to air shafts and entrance and exit doors, a footing depth of 1.2 m below floor level is required or, alternatively, insulation protection must be provided.

Table 1. Test Pit Observation Summary

Test Pit ID	Excavation Depth (m)	Excavation Method	Buried Foundation Wall below the Grade (m)	Foundation Thickness (m)	Footing Projection from the Face of Foundation Wall (m)	Bearing Strata Soil Condition	Photo ID in Appendix A	Notes
TP1	1.35	Mini Excavator	0.40	0.50-0.55	0.05-0.10	Clayey silt, firm to stiff, in moist condition	Photos 1 to 3	The concrete foundation is highly segregated. The concrete foundation is tilted outward the building. No visible cracks were observed. Roots were present around the concrete foundation.
TP2	1.68	Mini Excavator	1.05	-	-	Clayey silt, firm to stiff, in moist condition	Photos 4 and 5	Some cracks were observed from the top of the foundation wall immediately below the concrete slab (stairs). The foundation was absent on this test pit and the wall was buried to 1.05 m below grade.

It is also emphasized that underfloor drainage and/or an adequate free draining gravel base is required to minimize the risk of floor dampness. Floor dampness could lead to temporary icing and the risk of accidents.

5. GENERAL COMMENTS ON REPORT

Sirati & Partners Consultants Limited should be retained for a general review of the final design and specifications to verify that this report has been properly interpreted and implemented. If not accorded the privilege of making this review, Sirati & Partners will assume no responsibility for interpretation of the recommendations in the report.

The comments given in this report are intended only for the guidance of design engineers. The number of boreholes required to determine the localized underground conditions between boreholes affecting construction costs, techniques, sequencing, equipment, scheduling, etc., would be much greater than has been carried out for design purposes. Contractors bidding on or undertaking the works should, in this light, decide on their own investigations, as well as their own interpretations of the factual borehole results, so that they may draw their own conclusions as to how the subsurface conditions may affect them.

The limitation conditions presented in Appendix B form an integral part of the report and they must be considered in conjunction with this report.

We trust that the information contained in this report is satisfactory. Should you have any questions, please do not hesitate to contact this office.

Yours truly,

SIRATI & PARTNERS CONSULTANTS LIMITED

Javad Sheikhtaheri, M.A.Sc., P.Eng.
Senior Geotechnical Engineer

LICENSED PROFESSIONAL ENGINEER
A. SIRATI
100186600
30/08/2023
PROVINCE OF ONTARIO

Archie Sirati, Ph.D., P.Eng.
Principal Geotechnical Engineer

Drawings

Source: Google Earth Map

0 10 m

SIRATI & PARTNERS
160 Konrad Crescent
Markham, ON. L3R 9T9
Phone# 905 940 1582, Fax# 905 940 2440

North:

N

Legend:

Test Pit

Project Title:

Geotechnical Investigation

Site Location:

16780 Yonge Street,
Newmarket, Ontario

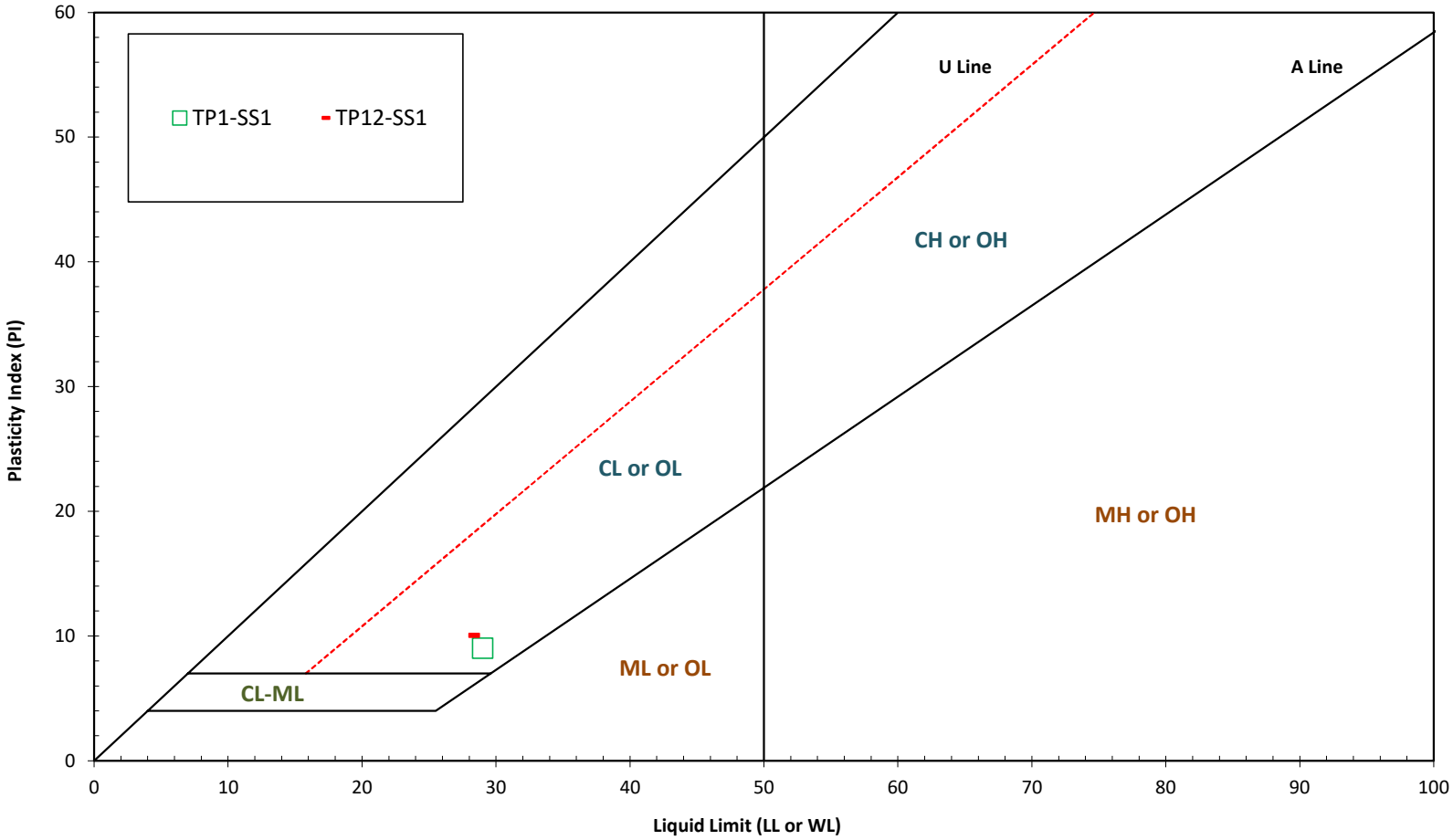
Figure Title:

Test Pit Location Plan

Scale:	Project Number:
As Shown	SP23-01170-00B
Date:	**Figure Number:**
August, 2023	1

Atterberg's Limits Test Report

ASTM D4318-10



SIRATI & PARTNERS

Geotechnical Hydrogeological & Environmental Solutions

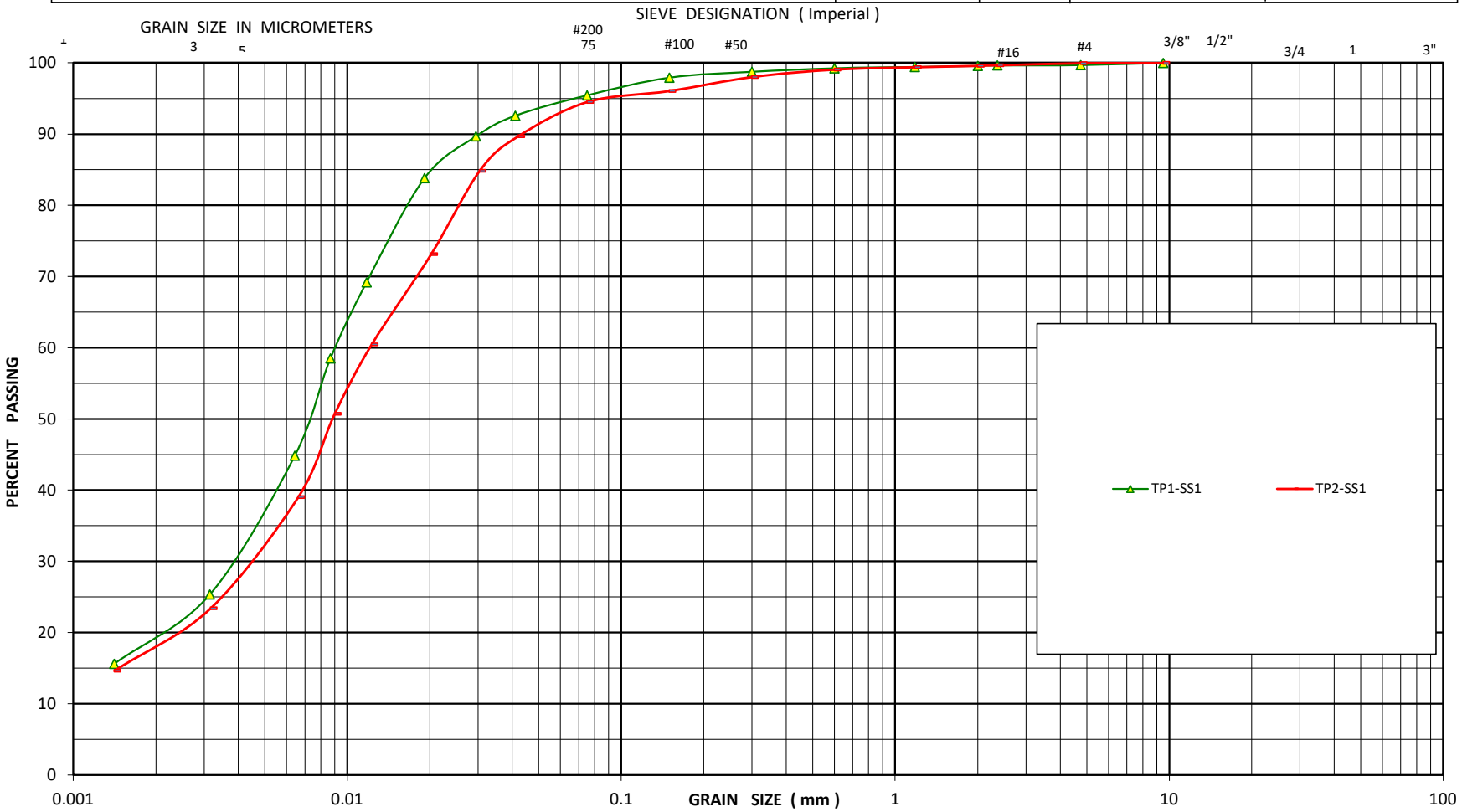
Date	:	30 August 2023
Project No.	:	SP23-01170-00B
Figure No.	:	2

SIRATI & PARTNERS

GRAIN SIZE DISTRIBUTION

UNIFIED SOIL CLASSIFICATION SYSTEM

CLAY AND SILT	SAND			GRAVEL	
	Fine	Medium	Coarse	Fine	Coarse



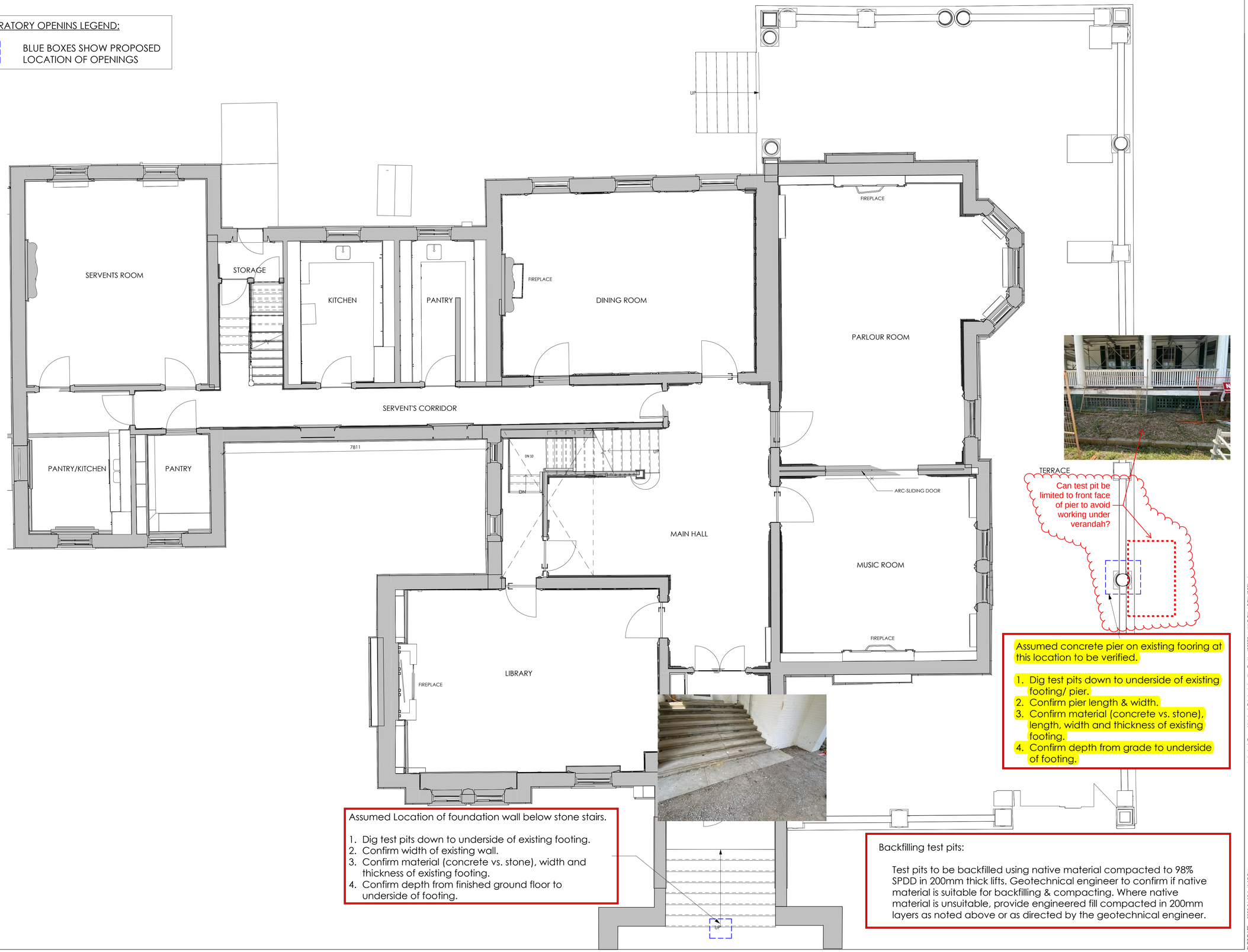
Project No.	:	SP23-01170-00B
Date	:	30 August 2023
Figure No.	:	3

APPENDIX A

DRAWING A202

EXPLORATORY OPENINS LEGEND:

BLUE BOXES SHOW PROPOSED LOCATION OF OPENINGS



Assumed concrete pier on existing fooring at this location to be verified.

1. Dig test pits down to underside of existing footing/ pier.
2. Confirm pier length & width.
3. Confirm material (concrete vs. stone), length, width and thickness of existing footing.
4. Confirm depth from grade to underside of footing.

Assumed Location of foundation wall below stone stairs.

1. Dig test pits down to underside of existing footing.
2. Confirm width of existing wall.
3. Confirm material (concrete vs. stone), width and thickness of existing footing.
4. Confirm depth from finished ground floor to underside of footing.

Backfilling test pits:

Test pits to be backfilled using native material compacted to 98% SPDD in 200mm thick lifts. Geotechnical engineer to confirm if native material is suitable for backfilling & compacting. Where native material is unsuitable, provide engineered fill compacted in 200mm layers as noted above or as directed by the geotechnical engineer.

REVISIONS:

NO.	DATE	PARTICULAR

NOTES:

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All dimensions and measurements must be checked and verified by the General Contractor

KEY PLAN:

CLIENT:
NEWMARKET

PROJECT:
22275

MULOCK ESTATE ADAPTIVE RE-USE

16780 Yonge Street,
Newmarket, Ontario.

ORIGINAL PAGE SIZE: ARCH D - 24" x 36"

KEY TO DETAIL LOCATION:
A - DETAIL NO.
B - DETAIL NO. ORIGIN

VG ARCHITECTS
THE VENTIN GROUP LTD

CN
TN

INVESTIGATIVE OPENING LOCATION PLAN - 1

SCALE: 1 : 50

A202

Autodesk Docs://Mulock Estate Adaptive Re-Use/22275 - MULOCK_ARCH (R22).rvt

PLOT DATE: 2023-06-12 1:41:17 PM

DRAWN BY: Author

CHECKED BY: Checker

EXPLORATORY OPENINS LEGEND:

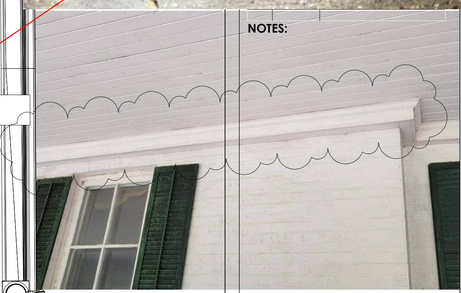
BLUE BOXES SHOW PROPOSED LOCATION OF OPENINGS

1. Cut 24"x 24" hole in ceiling to confirm joist direction over hallway.
2. Confirm joist direction, depth & width as well as spacing between joists.
3. Confirm whether joists bear on hallway wall (highlighted green).

Note: This area appears to have a dropped ceiling, so to verify the second floor framing two openings are assumed to be required (one in the dropped ceiling and one through the ceiling finishes on the underside of the second floor framing above)

Assumed dropped wood beam at this location to be verified. Beam is assumed to extend to bear on dining room wall (highlighted pink).

1. Remove finish on side and underside of dropped beam to confirm beam depth & width (approx 24" long x depth of beam). **if beam size can be adequately verified through openings in the ceiling and that is preferred, that is acceptable**
2. Opening to be located adjacent to corner of hallway wall to confirm whether the beam extends past the corner.
3. If beam appears to extend to the dining room wall, cut additional 24" x 24" hole in ceiling finish adjacent to the corner to allow for confirmation that beam bears on dining room wall (highlighted pink)



We made an opening further out from exterior masonry wall. Advise if this is adequate or opening still required.

1. Cut opening (approx. 30" long x 24" wide) in ceiling finishes. Also remove 30" long length of the capping around the assumed ledgerboard (below ceiling - refer to photo above).
2. Confirm ledger depth & width
3. Confirm ledger connection to wall (anchor size, spacing & location/height within ledger)
4. Confirm whether joists are notched around the ledger. If joists are notched, verify notch geometry (length of notch & height of notch from underside of joist)

NOTE 1

EXISTING BEAM (ASSUMED)

EXISTING BEAM (ASSUMED)

Assumed flush wood beam at this location to be verified. Beam is assumed to bear on the hallway wall that is highlighted in green

1. Cut hole in ceiling (approx 24" x 24") adjacent to hallway wall
2. Confirm the size of the existing beam along edge of stairwell (confirm beam depth and width)
3. Confirm whether beam bears on hallway wall (highlighted green).
4. If beam extends past hallway wall to bear on the dining room wall report that to Tacoma Engineers.

EXISTING BEAM (ASSUMED)

NOTE 1

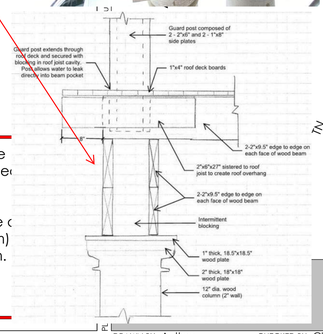
Assumed flush wood beam at this location to be verified.

1. Cut hole in ceiling finish (approx 24" x 24") centered on assumed location of beam.
2. Confirm beam depth & width
3. If no existing beam is found, report observations to Tacoma Engineers.

Assumed half-flush wood beam at this location to be verified.

1. Carefully remove finishing board on underside of beam to confirm presence of existing beam under finishes (opening assumed to be 24" long x width of beam)
2. If beam is found, remove 24" long section of ceiling along length of beam.
3. Confirm beam depth & width

See Section figure and photo. Is this opening still required?



Opening was made at corner but our focus was more on the perimeter and guard detailing. Advise if these photos are adequate or opening required.

Assumed dropped wood beam at this location to be verified. Opening can be
ted near location where underside finish is rotten if that is preferred provide
beam size can be adequately verified.

arefully remove finishing board on underside of beam to confirm presence
ng beam under finishes (opening assumed to be 24" long x width of beam)
beam is found, remove 12" long section of finishing board on side of beam.
onfirm beam depth & width
4. If no existing beam is found behind finishing boards, report observations to Tacoma Engineers

REVISIONS:

NOTES:

KEY PLAN:

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NEWMARKET

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MULOCK ESTATE ADAPTIVE RE-USE

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MULOCK_ARCH (R23).rvt

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INVESTIGATIVE OPENING LOCATION PLAN - 2

SCALE: 1 : 50

DRAWN BY: Author

CHECKED BY: Checker

APPENDIX B

TEST PIT PHOTO LOGS

Photo 1: Test Pit TP1

Photo 2: Test Pit TP1

Photo 3: Test Pit TP1

Photo 4: Test Pit TP2

Photo 5: Test Pit TP2

Appendix C: Limitation and Use of the Report

This report is intended solely for the Client named. The material in it reflects our best judgment in light of the information available to Sirati & Partners Consultants Limited (SIRATI) at the time of preparation. Unless otherwise agreed in writing by SIRATI, it shall not be used to express or imply warranty as to the fitness of the property for a particular purpose. No portion of this report may be used as a separate entity, it is written to be read in its entirety.

The conclusions and recommendations given in this report are based on information determined at the borehole locations. The information contained herein in no way reflects on the environment aspects of the project, unless otherwise stated. Subsurface and groundwater conditions between and beyond the boreholes may differ from those encountered at the borehole locations, and conditions may become apparent during construction, which could not be detected or anticipated at the time of the site investigation. The benchmark and elevations used in this report are primarily to establish relative elevation differences between the borehole locations and should not be used for other purposes, such as grading, excavating, planning, development, etc. Professional judgement was exercised in gathering and analyzing data and formulation of recommendations using current industry guidelines and standards. Similar to all professional persons rendering advice, SIRATI cannot act as absolute insurer of the conclusion we have reached. No additional warranty or representation, expressed or implied, is included or intended in this report other than stated herein the report.

The design recommendations given in this report are applicable only to the project described in the text and then only if constructed substantially in accordance with the details stated in this report.

The comments made in this report on potential construction problems and possible methods are intended only for the guidance of the designer. The number of boreholes may not be sufficient to determine all the factors that may affect construction methods and costs. For example, the thickness of surficial topsoil or fill layers may vary markedly and unpredictably. The contractors bidding on this project or undertaking the construction should, therefore, make their own interpretation of the factual information presented and draw their own conclusions as to how the subsurface conditions may affect their work. This work has been undertaken in accordance with normally accepted geotechnical engineering practices.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. SIRATI accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

We accept no responsibility for any decisions made or actions taken as a result of this report unless we are specifically advised of and participate in such action, in which case our responsibility will be as agreed to at that time. Any user of this report specifically denies any right to claims against the Consultant, Sub-Consultants, their officers, agents and employees in excess of the fee paid for professional services.

SIRATI engagement hereunder is subject to and condition upon, that SIRATI not being required by the Client, or any other third party to provide evidence or testimony in any legal proceedings pertaining to this finding of this report or providing litigations support services which may arise to be required in respect of the work produced herein by SIRATI. It is prohibited to publish, release or disclose to any third party the report produced by SIRATI pursuant to this engagement and such report is produced solely for the Client own internal purposes and which shall remain the confidential proprietary property of SIRATI for use by the Client, within the context of the work agreement. The Client will and does hereby remise and forever absolutely release SIRATI, its directors, officers, agents and shareholders of and from any and all claims, obligations, liabilities, expenses, costs, charges or other demands or requirements of any nature pertaining to the report produced by SIRATI hereunder. The Client will not commence any claims against any Person who may make a claim against SIRATI in respect of work produced under this engagement.