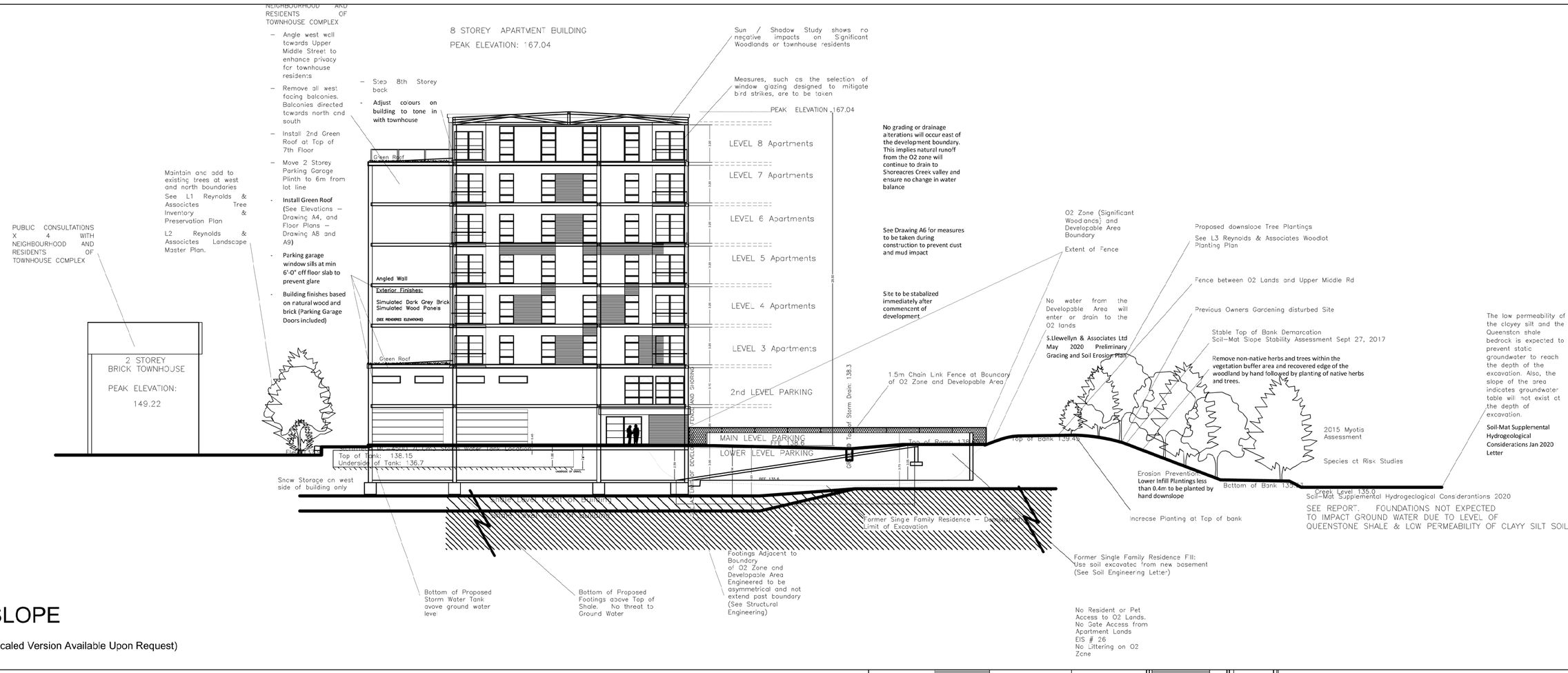
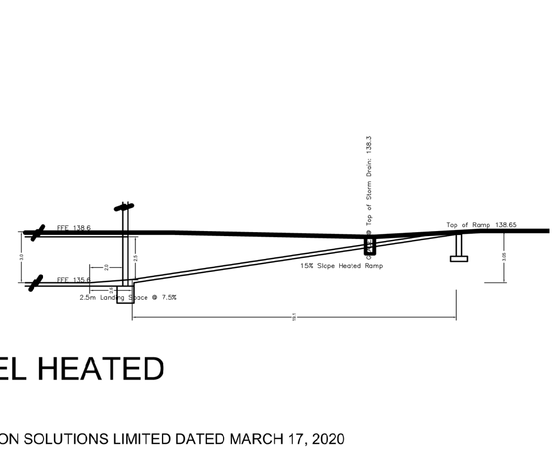
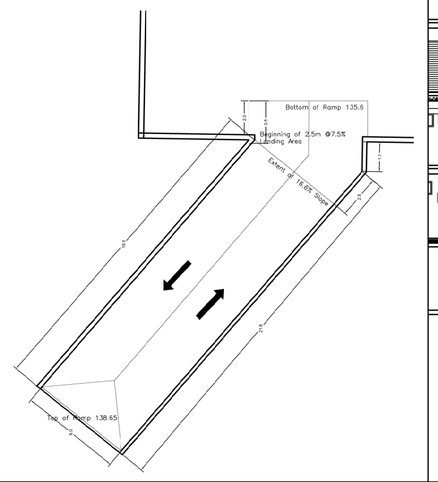


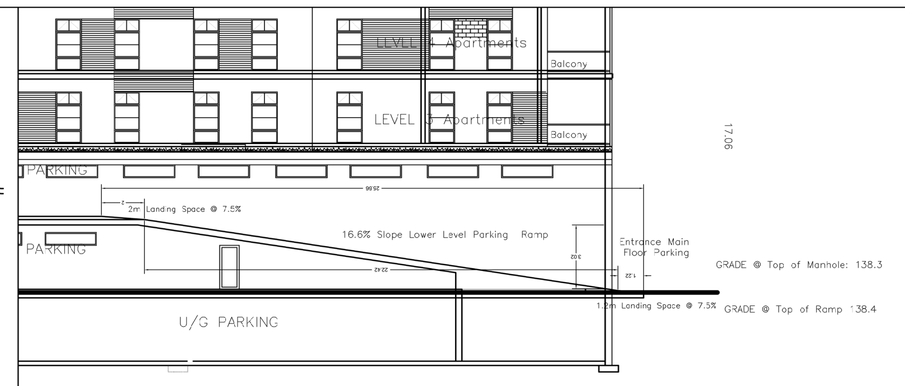
BUILDING & SLOPE SECTION (1:200 Scaled Version Available Upon Request)



16.6% SLOPE LOWER LEVEL HEATED RAMP PLAN & SECTION

SEE LETTER REPORT FROM PARADIGM TRANSPORTATION SOLUTIONS LIMITED DATED MARCH 17, 2020





15% SLOPE INDOOR UPPER LEVEL RAMP PLAN & SECTION

SEE LETTER REPORT FROM PARADIGM TRANSPORTATION SOLUTIONS LIMITED DATED MARCH 17, 2020

SOILMAT GEOTECHNICAL INVESTIGATION

PROJECT NO.: SM 135055-G See Full Report

A total of four (4) sampleboreholes were advanced at the locations illustrated on the attached Drawing No. 1, Borehole Location Plan. The borings were advanced using solid stem continuous flight auger equipment on May 13,2017 under the direction and supervision of a staff member of Sol-Mat Engineering Corporation Ltd. The boreholes encountered a surficial layer of topsoil and fill materials to depths of between about 3.5 and 6.1 metres below the existing surface, in practical auger and/or sampling spoon refusal on the underlying Queenston Shale. Upon completion of drilling, the boreholes were backfilled with the auger cuttings and tamped with the auger flights. Representative samples of the subsoils were recovered from the borehole locations at selected depth intervals. After undergoing a general field examination, the soil samples were returned to our laboratory where they will be further examined and tested to confirm effective classifications. Bedrock resistance content tests were performed on all soil samples recovered from the boreholes.

All boreholes were located in the field by a representative of Sol-Mat Engineering Corporation Ltd. The ground surface elevations were referenced to a site-specific benchmark, which was taken as the top of the sanitary manhole located at the southern edge of the lot, immediately north of the sidewalk, in front of the existing house. This manhole grate was noted to have Elevation 138.31 metres, as seen on the survey plan prepared for the site and completed by Archenhurst Nouwens Limited dated January 24, 2013 (File No. 1208.T2PO-BLS).

SEISMIC DESIGN CONSIDERATIONS

The structure shall be designed according to Section 4.1.8 of the Ontario Building Code, 2012 (Supplementary Standard SB-1). Based on the subsoil conditions encountered in our investigation, the applicable Site Classification for the seismic design is recommended as Site Class B – Rock

The seismic data from Supplementary Standard SB-1 of the Ontario Building Code, for Burlington are as follows:

S(0.2)=S(0.5)=S(1.0)=S(2.0)=PGA
0.363 0.089 0.063 0.0310.270

The soil conditions encountered in the boreholes are such that the proposed building may be supported on conventional spread footings founded in the native very stiff to hard clayey silt soils or compact to dense silty sand till soils. Footings founded on very stiff to hard clayey silt may be designed using a factored Ultimate Limit State (ULS) bearing capacity of 450 kPa (~9,000 psf). The allowable bearing stress at Serviceability Limit State (SLS) will be controlled by the 25 mm (1.0 inch) of total settlement. Footings on weathered Queenston Shale, within the upper few metres they may be designed on the basis of a factored ULS and SLS of 750 kPa (15,000 psf). Where the footings extend through the overburden soils and are founded directly on the competent Queenston Shale bedrock, they may be designed using a factored Ultimate Limit State (ULS) bearing capacity 1,500 kPa (~30,000 psf). The allowable bearing stress at Serviceability Limit State (SLS) will be controlled be the structure, as the bedrock would have to fail before the Serviceo Limit deflections, typical for the type of building envisioned, would be in the order of 12 mm (0.5 inch) or less. Footings founded on the weathered Queenston Shale at increased depth, however such increased values would require review and approval by this office, and possibly additional field investigations and coring of the bedrock.

7. LATERAL EARTH PRESSURES

The lateral earth pressure on the partial basement walls can be estimated on the basis of backfill (free draining granular material) unit weight (γ) of 20 kN/m. The coefficient of active earth pressure (Ka) of 0.33 for flexible walls that are free to deflect at the top (cantilever walls), and Ko = 0.5 for rigid walls (garage walls) that are restrained. Any additional pressure due to surcharge loading, such as parked vehicles, floor slab loading, etc., must be included in the design.

BACKFILL CONSIDERATIONS

The majority of excavated materials will consist of the native brown clay silt and Queenston Shale sediments encountered in the boreholes as described above. It is anticipated that the footings for the proposed building will be founded on native soils. In order to accommodate the basement level, we would recommend that any exposed Queenston Shale sediments be excluded from re-use as service trench backfill on the project site. The clayey silt is considered suitable for use as backfill in the service trenches. Depending on the weather conditions at the time of construction, some drying of the excavated clayey silt soils may be required prior to re-use. The in-situ clayey silt soils are generally considered to be 'dry' of their optimum moisture content. The cohesive soils encountered are sensitive to moisture absorption and will become unstable when exposed to excessive moisture. Exposed subgrade surfaces will tend to become wet/soft and during extended periods of precipitation. After a period of heavy precipitation, any near-surface wet or softened material should be allowed to air dry, or be removed and stockpiled. The clayey silt soils encountered are considered to be 'free draining' and should not be used where frost characteristics is required.

The use of free draining, well-graded granular material, such as an Ontario Provincial Standard Specification (OPSS) Granular S, Type B, is recommended for use as backfill against foundation walls or to raise the interior grade to the design subgrade level. This material should be placed in maximum 300 mm thick lifts and be compacted to at least 95 percent of its standard Proctor maximum dry density using suitable compaction equipment. Where backfilling and compaction operations to confirm uniform compaction of the backfill material to project specification requirements. Close supervision is prudent in areas that are not readily accessible to compaction equipment, such as in the vicinity of footings and in the service trenches, the backfill material should be compacted to 95 percent of its standard Proctor maximum dry density to within about one metre below final grade, and to 100 percent of its standard Proctor value above this level in exterior parking areas and to 100 percent within the building area.

PROJECT NO.: SM 135055-G
DATE: MAY 13, 2017 (FIELDWORK)
PROPOSED EIGHT STOREY BUILDING
4063 UPPER MIDDLE ROAD, BURLINGTON, ONTARIO

condition. The clayey silt soils may require high compaction energy to achieve acceptable density as if the moisture content is not close to their standard Proctor optimum value. The clayey silt soils encountered in the boreholes are 'dry' of optimum. If the backfill soils to within 3 percent of its standard Proctor optimum moisture content during placement and compaction.

All fill material should be conditioned to within 3 percent of its optimum moisture content, to achieve an efficient compaction t oavoidan and to minimize long term subsidence movements of the fill soils. Where the fill material is placed on a prepared surface and the subgrade elevation should lower its moisture content within 3 percent of its optimum moisture content and meet the necessary environmental guidelines.

Consideration should be given to the use of proper moisture conditioning and compaction operations to confirm uniform compaction of the backfill material to project specification requirements. Close supervision is prudent in areas that are not readily accessible to compaction equipment, such as in the vicinity of footings and in the service trenches, the backfill material should be compacted to 95 percent of its standard Proctor maximum dry density to within about one metre below finalgrade, and to 100 percent of its standard Proctor value above this levr in exterior parking areas and to 100 percent within the building area.

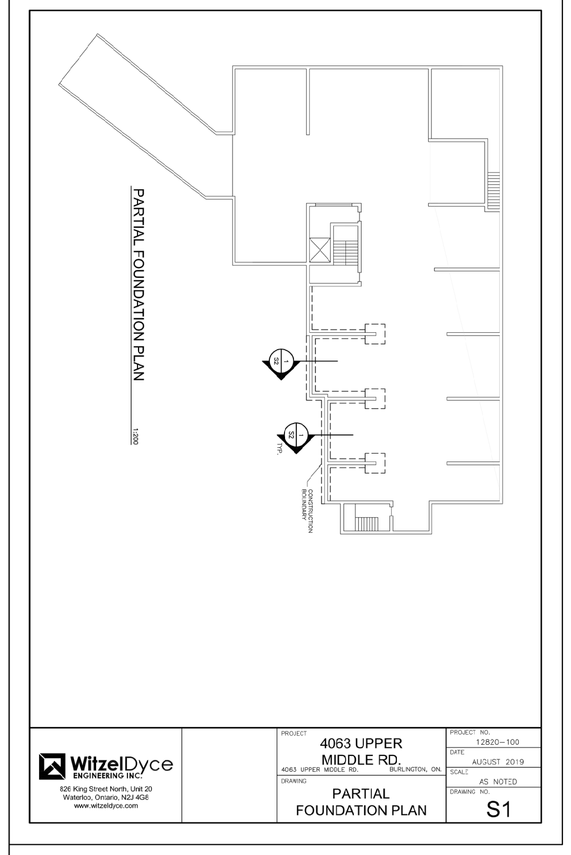
BOREHOLE #3
Queenston Shale @ 132.97

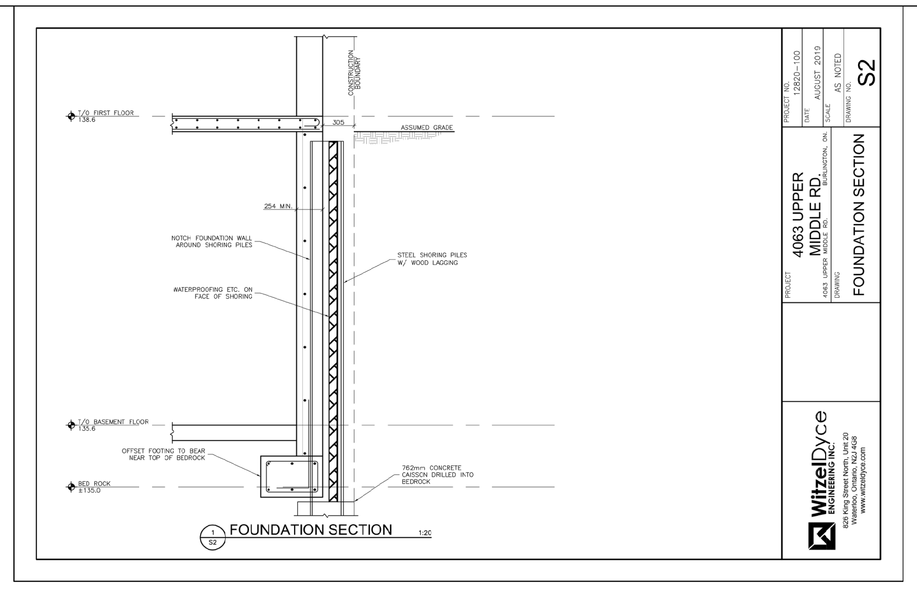
BOREHOLE #2
Queenston Shale @ 134.26

BOREHOLE #1
Queenston Shale @ 134.87

Borehole Plan & Stormwater Tank Section

See Llewellyn & Ass Functional Servicing Report





Foundation Footing Section adjacent to O2 Zone Boundary

Shoring Plan adjacent to O2 Zone Boundary

CONTRACTOR IS TO CHECK AND VERIFY ALL DIMENSIONS ON THE JOB SITE AND NOTIFY DESIGNERS OF ALL DISCREPANCIES BEFORE INITIATING WORK.
ALL DRAWINGS ARE THE PROPERTY OF THINKGIRAFFE.
DRAWINGS ARE NOT TO BE REPRODUCED WITHOUT WRITTEN PERMISSION FROM DESIGNERS.
PRINTS ARE NOT TO BE SCALED.

June 10,2020 ISSUE FOR ZONING AMENDMENT

REMARKS	DATE	NO.
REVISIONS		

thinkGiraffe
ENVIRONMENTAL DESIGN
16 Sulphur Springs Road,
Ancaster, ON, L9G 1L8
905 304 1496
thinkgiraffe@bellnet.ca

PROJECT
Proposed 8 Storey Apartment Building
4063 Upper Middle Rd
Burlington

SHEET TITLE
BUILDING, RAMP & SLOPE SECTIONS

FOLDER	DRAWN BY M F / M S
FILE	SCALE NTS
DATE	NUMBER

A5