March 4, 2020 Project No. 20140347

Christa Jones
Lioness Developments Inc.
2193 Arch Street
Ottawa, Ontario
K1G2H5

ADDENDUM NO. 1 – GEOTECHNICAL INVESTIGATION
PROPOSED RESIDENTAIL DEVELOPMENT
KANATA WEST LANDS
130 HUNTMAR DRIVE OTTAWA, ONTARIO

Dear Ms. Jones

This letter serves as an addendum to, and provides additional information and clarifications to, the following Golder Associates Ltd.'s (Golder's) geotechnical report:

- Report to Lioness Developments Inc. titled "*Geotechnical Investigation, Proposed Residential Development, Kanata West Lands, 130 Huntmar Drive, Ottawa, Ontario*", dated January 2016 (report number 1406416).

In this regard, this letter should be read in conjunction with the contents of the original geotechnical report including the "Important Information and Limitations" document included as part of that report.

Background

Based on the most recent conceptual plan prepared by Fotenn Consultants Inc. (Fotenn), which is attached to this letter, the proposed development will consist largely of low-rise residential buildings (singles and townhouses), and some mid-density units (apartments). Commercial and institutional development blocks are currently proposed at the southwest end of the site.

Although the development layout has changed slightly since the issuance of the January 2016 Golder geotechnical report, the geotechnical recommendations and guidance provided in the report (except those noted below) are considered still valid for the proposed development. The report also meets Part 9 of the current Ontario Building Code (OBC) as well as City of Ottawa's (City) geotechnical investigation guidelines.

However, there have been changes to some of the City's specifications and/or guidelines since the report was issued. The following additional recommendations are therefore provided to supplement/update those previously provided in the original report.

Pavement Design

Based on the current City's specifications, the updated recommendations for pavement design are provided below and supersede those previously provided in the original report.

The surface of the pavement subgrade should be crowned to promote drainage of the roadway granular structure. Perforated pipe sub-drains should be provided at subgrade level extending from the catch basins for a distance of at least 3 metres longitudinally, parallel to the curb in two directions.

The pavement structure for local roads without bus or truck traffic should consist of:

Pavement Component	Thickness (millimetres)
Asphaltic Concrete	90
OPSS Granular A Base	150
OPSS Granular B Type II Subbase	400

The pavement structure for collector roadways which will be subjected to bus and/or truck traffic should consist of:

Pavement Component	Thickness (millimetres)
Asphaltic Concrete	120[(1)]
OPSS Granular A Base	150
OPSS Granular B Type II Subbase	450

Note: [(1)] The minimum thickness for asphaltic concrete is 120 mm due to the increased loading imposed by bus and/or truck traffic.

The granular base and subbase materials should be uniformly compacted as per OPSS.MUNI 501, Method A. The asphaltic concrete should be compacted in accordance with the procedures outlined in OPSS.MUNI 310

The composition of the asphaltic concrete pavement for local roads should be as follows:

- Superpave 12.5 mm Surface Course 40 mm
- Superpave 19 mm Base Course 50 mm

The asphaltic cement should consist of PG 58-34 and the design of the mixes should be based on a Traffic Category B for local roads.

The composition of the asphaltic concrete pavement for collector roads subjected to bus and/or truck traffic should be as follows:

- Superpave 12.5 mm Surface Course 50 mm
- Superpave 19 mm Base Course 70 mm

The asphaltic cement should consist of PG64-34 and the design of the mixes should be based on a Traffic Category D for collector roads.

With regards to the above pavement structure for local roads, it should be noted that the 50 millimetres of asphaltic concrete base course would provide sufficient structural support and would therefore be adequate for the initial periods of roadway service. However, the 90 millimetres of asphaltic concrete is specified for the local roadways based on the typical construction sequence, which would require a surface course placement following substantial completion of the house construction.

In addition, if a similar paving sequence is proposed for collector roads, with an additional course being required upon substantial completion of site development, then a thicker overall asphaltic concrete layer (i.e., a total thickness of 130 millimetres) would be required to allow for three lifts, since two initial lifts will likely be required to support the construction traffic.

In such case, the following composition of the asphaltic concrete pavement for collector roads subjected to bus and/or truck traffic could be used:

- Superpave 12.5 mm Surface Course 40 mm
- Superpave 12.5 mm Surface Course 40 mm
- Superpave 19 mm Base Course 50 mm

The asphaltic cement should consist of PG64-34 and the design of the mixes should be based on a Traffic Category D for collector roads.

A tack coat should be provided on all vertical and milled horizontal surfaces. The tack coat should consist of SS-1 emulsified asphalt diluted with an equal amount of water. The undiluted and emulsified asphalt shall be in conformance with OPSS 1103.

At intersections, the new pavement structure should be continued at least to the limits of construction or the end of the curb “return” (i.e., the start of the constant width portion of the side road). At these streets, the pavement should be milled back beyond the curb return an additional 300 millimetres to a depth of the surface course, 40 to 50 millimetres, to accept the new surface course asphaltic concrete.

The above pavement designs are based on the assumption that the pavement subgrade has been acceptably prepared (i.e., where the trench backfill and grade raise fill have been adequately compacted to the required density and the subgrade surface not disturbed by construction operations or precipitation). Depending on the actual conditions of the pavement subgrade at the time of construction, it could be necessary to increase the thickness of the subbase and/or to place a woven geotextile beneath the granular materials. If required, the geotextile should consist of a Class I non-woven geotextile in accordance to OPSS 1860. The geotextile should have a maximum A.O.S. of 212 µm.

Trees

As per the most recent City’s tree planning guidelines (2017), which came into effect after the report was issued, plasticity index testing would need to be carried out on soils below the proposed underside of footings and to depths of about 3.5 metres below the proposed finished grades, and at approximately 150 metres spacing.

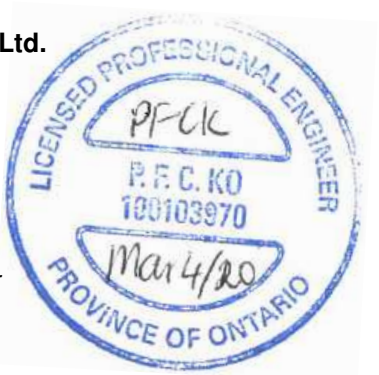
In this regards, additional geotechnical sampling (by means of test pitting) and laboratory testing will be carried out in the spring (as weather permits) to supplement the existing report. Based on the proposed grading, the recommendations related to tree planting and corresponding setback distances for this site will be provided under a separate letter.

Closure

We trust that this letter is sufficient for your present requirements. If you have any questions concerning this report, please feel free to contact the undersigned.

Yours truly,

Golder Associates Ltd.



Christine Ko, P.Eng.
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CK/KM/MSS/hdw
https://golderassociates.sharepoint.com/sites/124098/project files/6 deliverables/geotech/20140347-001-l-rev0_geotech addendum_2020-03-04.docx

Attachment: *Conceptual Plan Option 4* (Drawing No. P4) by Fotenn Consultants Inc., dated December 20, 2018

130 HUNTMAR DR
OTTAWA

CONCEPT PLAN
OPTION 4

LEGEND

- RESIDENTIAL MID-DENSITY (APARTMENTS)
- RESIDENTIAL LOW DENSITY (SINGLES / TOWNHOUSES)
- SCHOOL SITE - 6ac
- COMMERCIAL
- PARKLAND DEDICATION
- PROPERTY BOUNDARY
- SETBACKS

0 25m 50m 100m

No.	REVISION	DATE	BY
3	OPTION 4	2019.03.14	RP
2	FOR CLIENT REVIEW	2019.01.22	EL
1	DRAFT	2018.12.20	RP

CLIENT
URBANDALE

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DESIGNED	RP
REVIEWED	MT
DATE	2018.12.20

P4