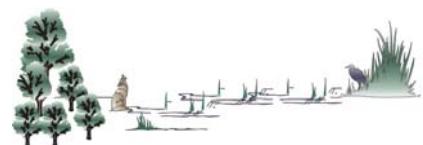


Scoped Environmental Impact Study

405 Essa Road, City of Barrie

**c/o Sean Mason Homes
401 Essa Road
City of Barrie
L4N 9C8**

October 2017



Cunningham Environmental Associates

CUNNINGHAM ENVIRONMENTAL ASSOCIATES

Natural Resources Consultants

October 13, 2017

File No. 1743

405 Essa Road
c/o Sean Mason Homes
401 Essa Road
City of Barrie
L4N 9C8

Re: *SCOPED ENVIRONMENTAL IMPACT STUDY - 405 Essa Road, City of Barrie; Our File 1743*

Dear Mr. Mason:

Enclosed is our report entitled **SCOPED ENVIRONMENTAL IMPACT STUDY - 405 Essa Road, City of Barrie** (October 2017).

Should you have any questions or comments, please contact the undersigned.

Sincerely,

CUNNINGHAM ENVIRONMENTAL ASSOCIATES

 (digital signature)

David G. Cunningham, Hon. B.Sc.
Principal

c.c. Sean Mason Homes (digital copy)
 CEA (2 file copies)

1.0 INTRODUCTION

Cunningham Environmental Associates (CEA) was retained in May, 2017 to provide prepare a Scoped Environmental Impact Study (Scoped EIS) in regards to the re-development of an as-built residential lot, located at 405 Essa Road, in the City of Barrie. **Appendix A** contains the *Curriculum Vitae* which outlines the relevant academic, work history and professional qualifications of CEA.

The parcel or “subject property or lot” is located at the municipal address of 405 Essa Road, in the City of Barrie, County of Simcoe. The as-built residential lot is part of a larger approved residential development known on abutting lands to the north, with 405 Essa Road also known as 369 Essa Road – Phase 3. The subject property location in relation of surrounding land uses is illustrated on **Figure 1**.

For the most part the subject property consists of an as-built single-family dwelling, gravel driveway, shed, front and back yard manicured grassed lawn, along with typical cultural amenities including a vegetable/flower garden, individual and small copses of planted trees and shrubs, and horticultural flowerbeds throughout. The current access to the lot is off of the west side of Essa Road, just north of Ferndale Road South.

The purpose of the Scoped EIS is to document (through site visits and inventories) the cultural and natural features within the entire subject property that is proposed to be re-development (higher density residential), to complement the existing and on-going construction of the abutting 369 Essa Road Phase 1 and 2 lands to the north. Based on the results of the background documents review and site inventories, potential site constraints would be identified that may be germane to the proposed re-development.

The results of the study methods, background documents review, general findings, evaluation and potential impact assessment, and conclusions are documented in the following sections.

2.0 STUDY METHODS

The general methods used to identify, map, characterize and evaluate the on-site features (e.g., trees, shrubs, groundflora) included: a review for example of: Google Earth Pro and County of Simcoe coloured orthophotographs; Natural Heritage Information Centre – NHIC dataquery web-site) natural features mapping; and NHIC flora and fauna lists. Site reconnaissance and inventories were conducted on July 26 and September 14, 2017. The primary purpose of the inventories was to document the botanical resources on-site, namely the tree cover. Other vegetation cover, such as shrubs and groundflora were also documented, along with incidental wildlife observations.

2.1 **Background Documents Review**

The following documents and data sources were reviewed to-date to provide an understanding of the types, character, structure, composition and quality of the on-site and abutting natural features.

- Google Earth Pro coloured orthophotography (June 13, 2012; June 14, 2013; April 20, 2014; May 23, 2014; June 19, 2015; June 21, 2016; August 8, 2016);




<https://maps.simcoe.ca/public/>

Figure 1. Study Site Location

Scale 1:NTS*

405 Essa Road
 Part of 369 Essa Road - Phase 3
 Sean Mason Homes
 City of Barrie
 County of Simcoe

 subject property

-
- Simcoe County coloured orthophotography (2002, 2008, 2012, 2013, 2016);
 - County of Simcoe GIS Website (County of Simcoe 2017);
 - Development of a Natural Heritage System for the County of Simcoe (Gartner Lee Limited 1996);
 - Natural Heritage System for the Lake Simcoe Watershed Phase 1: Components and Policy Templates (LSRCA and Beacon Environmental 2007);
 - Ontario Regulation 179/06: Lake Simcoe Region Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses (Province of Ontario 2006);
 - Natural Heritage Information Centre Species Records 17PK0311 (NHIC 2017);
 - Sean Mason Homes – Phase 3 405 Essa Road, City of Barrie Site Grading Plan (Pearson Engineering Ltd. 2017);
 - 369 Essa Road – Phase 3 Tree Preservation Plan Drawing No. L1.0 (thincdesign 2017a);
 - 369 Essa Road – Phase 3 Landscape Plan Drawing No. L2.0 (thincdesign 2017b);
 - 369 Essa Road – Phase 3 Landscape Details Drawing No. L3.0 (thincdesign 2017c); and,
 - 369 Essa Road – Phase 3 Landscape Details Drawing No. L4.0 (thincdesign 2017d)

2.2 Site Reconnaissance and Inventory

Vegetation Resources

Site reconnaissance and inventories were conducted on July 26 and September 14, 2017. Weather on both visits was sunny with a few clouds, with temperatures of 22°C and 24°C, respectively. Trees with diameters at breast height (DBH) over 10cm were marked with aluminum tree tags and their location noted on a Garmin Montana 610 GPS unit. Data collected included the DBH (measured at 1.37m above ground level), estimated height (m) from ground level to tip of crown, and general condition and growth form. The tagged tree locations were mapped (georeferenced) onto a June 16, 2016 Google Earth Pro coloured orthophotography.

Wildlife Resources

Given the as-built condition of the subject property and surrounding urban land uses, only incidental observations of wildlife were recorded. Dawn and nocturnal breeding bird surveys were not warranted. Incidental observations included direct sightings, calls, scats, nests, browse, push-ups, tracks and browse. In addition to the flora and fauna inventories, a catalogue of representative photographs was compiled.

The nomenclature for the flora observed is consistent with and relied on the following authorities:

- Lycopodiaceae to Aspleniaceae Cody, W. J., and D. F. Britton. 1989. **Fern and Fern Allies of Canada.** Publication 1829/E, Agriculture Canada, Research Branch, Ottawa.
- Taxaceae to Orchidaceae – Voss, E. G. 1972. **Michigan Flora. Part 1: Gymnosperms and Monocots.** Cranbrook Institute of Science and University of Michigan Herbarium. Bulletin 55.
- Saururaceae to Cornaceae – Voss, E. G. 1985. **Michigan Flora. Part 2: Dicots.** Cranbrook

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- Institute of Science and University of Michigan Herbarium. Bulletin 59.
 - Pyrolaceae to Compositae – Voss, E. G. 1996. **Michigan Flora. Part 3: Dicots.** Cranbrook Institute of Science and University of Michigan Herbarium. Bulletin 61.
 - Newmaster, S. G., A. Lehela, P. W. C. Uhlig, S. McMurray, M. J. Oldham, and Ontario Forest Research Institute. 1998. **Ontario Plant List.** FRI Paper No. 123.
 - Bradley, D. J. 2013. **Southern Ontario Vascular Plant Species List.** 3rd Edition. Science & Information Branch Southern Science and Information Section. Ontario Ministry of Natural Resources, Peterborough, Ontario. SIB SSI SR-03, 78 p.

The rarity or significance for vegetation communities and vascular plants (floristics) on the subject property was determined from standard status lists, published literature and the NHIC dataquery web-site (NHIC 2017). Sources for flora included Bakowsky (1997), Argus and Pryer (1990), Environment Canada (2002), COSEWIC (2017), Province of Ontario (2007), MNRF (2017), Oldham and Brinker (2009), and Riley *et al.* (1989). Rare plant species (Species At Risk in Ontario – SARO) included those listed and regulated under the Province of Ontario **Endangered Species Act, 2007**, as amended. The determination for plant species rarity consisted of a straightforward comparison of the plant species recorded on-site with those listed in these source references.

Standard lists and published literature used to determine the status or rarity of fauna included Province of Ontario (2007), MNRF (2017), Austen *et al.* (1994), Dobbyn (1994) and Cadman *et al.* (2007). The determination for wildlife species rarity consisted of a straightforward comparison of property and abutting land wildlife species recorded, with those listed in these source references.

3.0 GENERAL FINDINGS

Adjacent land uses to the north includes on-going construction of residential (Sean Mason Homes Phases 1 and 2), along with woodland. To the west and south are individual residential lots and residential subdivisions. To the east lie Essa Road and a combination of commercial and residential urban development.

3.1 Natural Environment Designations

Based on aerial photography interpretation and the background document review, there are no known natural environment designations (e.g., Life Science or Earth Science Areas of Natural and Scientific Interest- ANSIs, unevaluated or evaluated wetland, watercourses). There are no butternut (*Juglans cinerea*), a tree species listed as Endangered (END) in the provincial **Endangered Species Act, 2007** (Province of Ontario 2007). Nor were there any other flora Species At Risk (SAR) noted on-site.

Based on the County of Simcoe GIS website, there are no natural areas, Greenways or other significant features (e.g., Provincially Significant Wetlands – PSWs) mapped on-site. A review of the NHIC dataquery web-site for NHIC square 17PK0311 (1km x 1km) did not reveal the presence of any flora or fauna SAR.

The subject property or parts thereof are not regulated by the Lake Simcoe Region Conservation Authority (LCRCA) under Ontario Regulation 179/07 (Province of Ontario 2006).

The following sub-sections provide summaries of the various cultural and natural features (e.g., trees) that lie within the subject property. Natural features are lacking on-site, with only a small copse of trees along the property frontage, and individual trees scattered throughout. The majority of the subject property consists of cultural features such as horticultural flower beds, a vegetable/flower bed, planted ornamental trees and shrubs, and manicured grassed lawn, in addition to the as-built single-family dwelling, shed and gravel driveway.

3.2 Vegetation Cover

Botanical Survey

The majority of the vegetation cover on-site is comprised of manicured grassed lawn, along with ornamental flower beds, a vegetable/flower bed garden and planted shrubbery. There are also individually planted ornamental trees, along with a small copse of trees along the property frontage.

Figure 2 in conjunction with **Table 1** and the photographic record provides a visual perspective of the on-site cultural features and trees (>10cm DBH) that were tagged and their locations within the lot surveyed using a Garmin Montana 610 GPS handheld unit. Typical trees included:

<i>Acer rubrum</i>	red maple
<i>Acer saccharum</i>	sugar maple
<i>Betula pendula</i> 'Youngii'	weeping birch
<i>Fraxinus pennsylvanica</i>	green ash
<i>Picea abies</i>	Norway spruce
<i>Picea glauca</i>	white spruce
<i>Picea pungens</i>	Colorado blue spruce
<i>Pinus nigra</i>	Austrian pine
<i>Prunus serotina</i>	black cherry
<i>Quercus macrocarpa</i>	bur oak
<i>Robinia pseudo-acacia</i>	black locust (thornless variety)
<i>Sorbus hybrid</i>	oak-leaved mountain-ash
<i>Sorbus aucuparia</i>	European mountain-ash
<i>Tilia cordata</i>	littleleaf linden

A photographic records of the various tagged trees (>10cm DBH) are shown on the photographic plates that follow (**Photographs 1 – 16**).

Additional trees (<10cm DBH), along with various native and ornamental shrubs included the following:

<i>Acer saccharum</i>	sugar maple
<i>Acer plantanoides</i> 'Drummondii'	variegated Norway maple
<i>Aesculus hippocastanum</i>	horse chestnut
<i>Berberis vulgaris</i>	common barberry
<i>Cercis canadensis</i>	eastern redbud
<i>Dasiphora fruticosa</i>	shrubby cinquefoil
<i>Euonymus alatus</i>	burning bush



Table 1. List of Tagged Trees on 405 Essa Road, City of Barrie (369 Essa Road Phase 3 – Sean Mason Homes) Property

Tag. No.	UTM NAD 83	Scientific Name	Common Name	DBH* (cm)	Height** (m)	Comments***
947	17T 603327 4911384	<i>Acer rubrum</i>	red maple	7.0	3.5	- leaner, fair condition, to be removed
948	17T 603322 4911380	<i>Acer saccharum</i>	sugar maple	95.0	13.0	- mature, good condition, to be removed due to Essa Road widening and required retaining wall
949	17T 603324 4911374	<i>Acer saccharum</i>	sugar maple	90.0	13.0	- mature, good condition, to be removed due to Essa Road widening and required retaining wall
950	17T 603319 4911371	<i>Acer saccharum</i>	sugar maple	81.0	13.0	- mature, good condition, to be removed due to Essa Road widening and required retaining wall
951	17T 603303 4911359	<i>Pinus nigra</i>	Austrian pine	32.0	7.0	- good condition, to be removed and replaced
952	17T 603304 4911363	<i>Pinus nigra</i>	Austrian pine	34.0	7.0	- good condition, to be removed and replaced
953	17T 603305 4911363	<i>Sorbus hybrid</i>	oak-leaved mountain-ash	31.0	3.5	- good condition, to be transplanted
954	17T 603310 4911364	<i>Picea abies</i>	Norway spruce	32.0	9.0	- good condition, to be removed and replaced
955	17T 603313 4911364	<i>Picea abies</i>	Norway spruce	26.0	9.0	- good condition, to be removed and replaced
956	17T 603311 4911370	<i>Picea abies</i>	Norway spruce	18.0	9.0	- good condition, to be removed and replaced
957	17T 603311 4911366	<i>Picea abies</i>	Norway spruce	22.0	9.0	- good condition, to be removed and replaced
958	17T 603313 4911669	<i>Picea abies</i>	Norway spruce	24.0	9.0	- good condition, to be removed and replaced
959	17T 603311 4911373	<i>Fraxinus pennsylvanica</i>	green ash	50.0	10.0	- good condition, to be removed and replaced
960	17T 603319 4911393	<i>Acer saccharum</i>	sugar maple	-	-	- removed for equipment access to Phase 2
961	17T 603316 4911390	<i>Picea glauca</i>	white spruce	14.0	2.5	- fair condition, to be removed and replaced
962	17T 603304 4911387	<i>Quercus macrocarpa</i>	bur oak	30.0	9.0	- good condition, to be removed and replaced
963	17T 603307 4911391	<i>Acer saccharum</i>	sugar maple	50.0	8.0	- good condition, to be removed and replaced
964	17T 603299 5911369	<i>Tilia cordata</i>	littleleaf linden	51.0	8.0	- good condition, to be removed and replaced
965	17T 603294 4911399	<i>Pinus nigra</i>	Austrian pine	38.0	7.0	- good condition, to be removed and replaced
966	17T 603285 4911373	<i>Picea pungens</i>	Colorado blue spruce	40.0	10.0	- good condition, to be removed and replaced
967	17T 603281 4911392	<i>Acer saccharum</i>	sugar maple	16.0	4.5	- good condition, to be removed and replaced
968	17T 603271 4911396	<i>Prunus serotina</i>	black cherry	26.0	8.0	- fair condition, to be removed and replaced
969	17T 603270 4911396	<i>Prunus serotina</i>	black cherry	15.0	3.0	- fair condition, poor growth form, to be removed and replaced
970	17T 603264 4911394	<i>Pinus nigra</i>	Austrian pine	34.0	9.0	- good condition, to be retained
971	17T 603263 4911391	<i>Pinus nigra</i>	Austrian pine	29.0	9.0	- good condition, to be retained
972	17T 603263 4911387	<i>Pinus nigra</i>	Austrian pine	38.0	9.0	- good condition, to be retained
973	17T 603262 4911379	<i>Pinus nigra</i>	Austrian pine	45.0	9.0	- good condition, to be retained
974	17T 603276 4911372	<i>Robinia pseudo-acacia</i>	black locust	30.0	8.0	- good condition, to be removed and replaced

975	17T 603272 4911363	<i>Betula pendula 'Youngii'</i>	weeping birch	32.0	4.0	- good condition, to be removed and replaced
979	17T 603270 4911396	<i>Sorbus aucuparia</i>	European mountain-ash	14.0	4.0	- good condition, to be removed and replaced
980	17T 603305 4911355	<i>Sorbus aucuparia</i>	European mountain-ash	17.0	3.0	- good condition, to be removed and replaced

*DBH – diameter at breast height (1.37m)

**Height (approx.) in metres from ground level to top of crown

*** refer to Tree Preservation Plan L1.0 and Landscape Plan L2.0 for details in **Appendix A** (thincdesign 2017a, 2017b)



Photograph 1. View of driveway access along south edge of subject property, off of Essa Road



Photograph 2. View of existing single-family dwelling, along with manicured grassed lawn



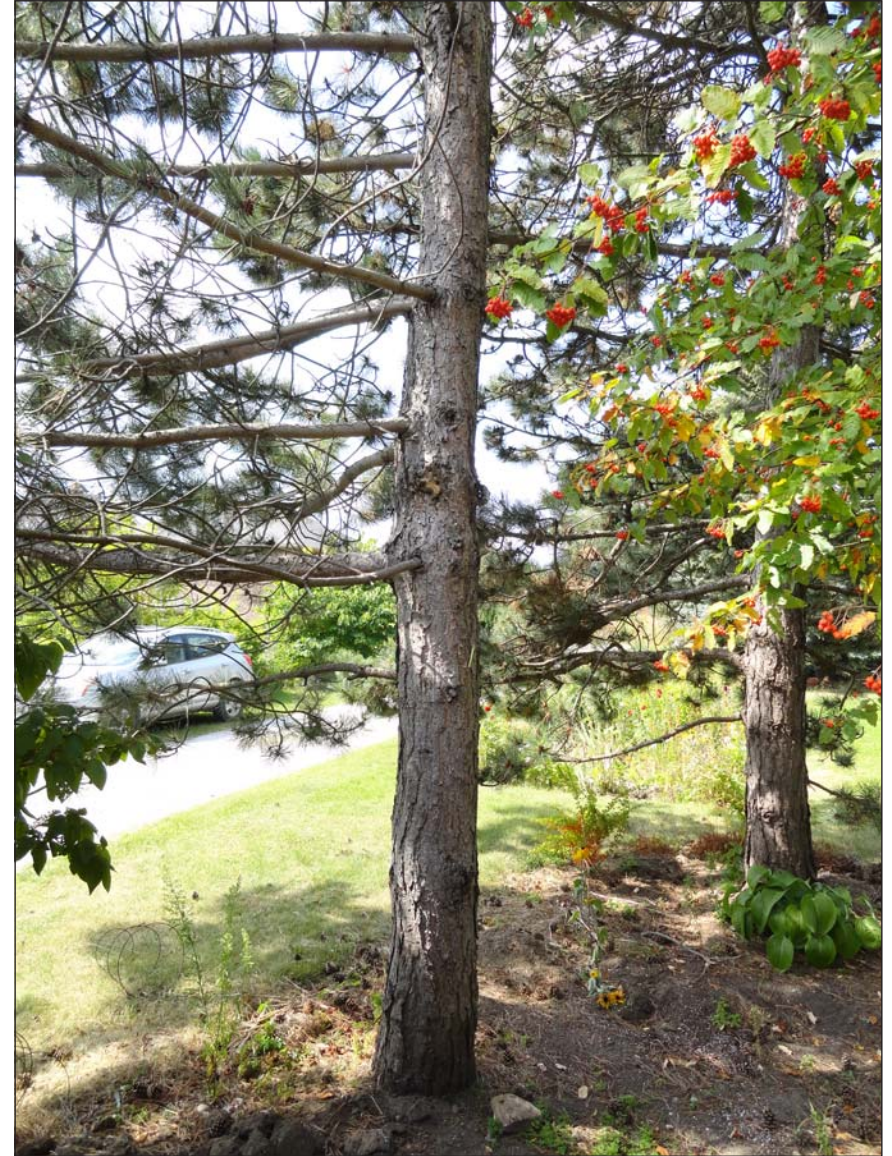
Photograph 3. View fo vegetable/flower garden and shed along north edge of single-family dwelling



Photograph 4. View of typical horticultural flower bed, along edge of small copse of trees at property frontage



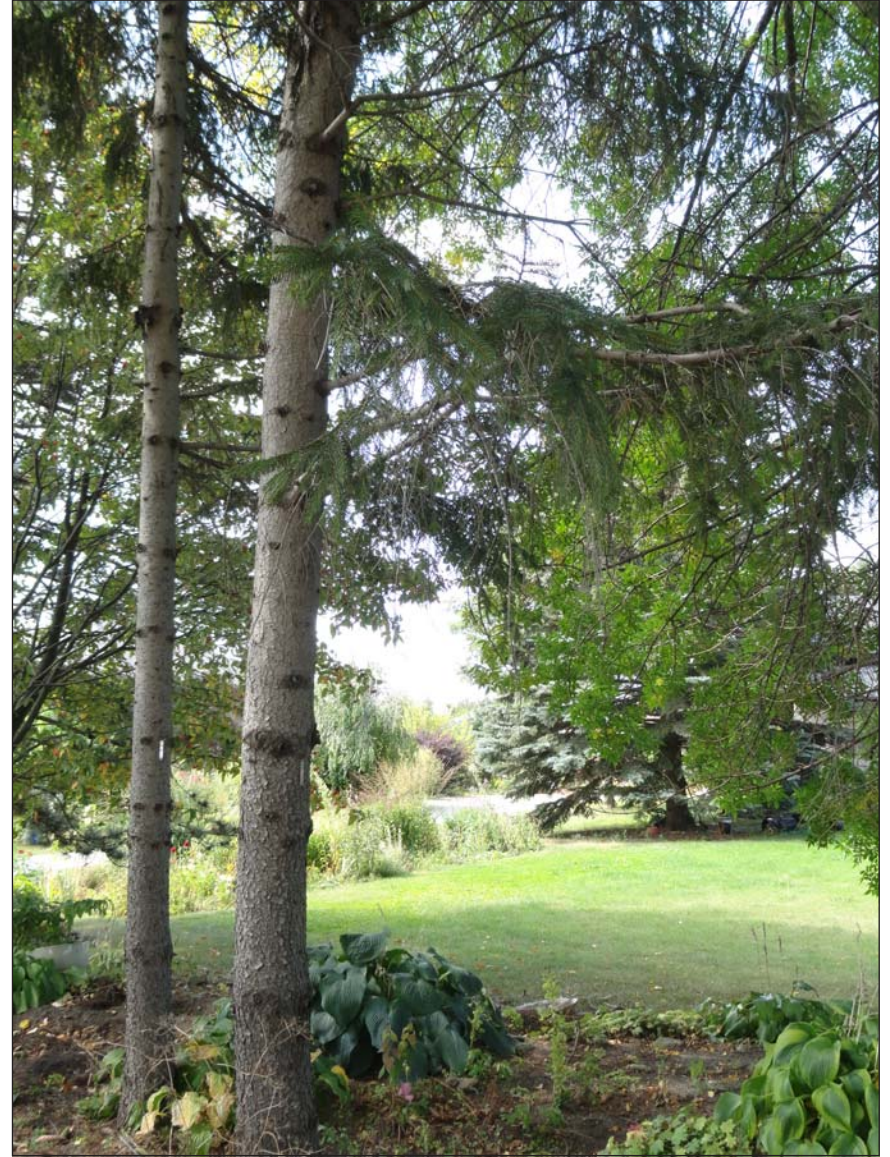
Photograph 5. View of mature sugar maple (#948) along property frontage, to be removed due to Essa Road widening and retaining wall



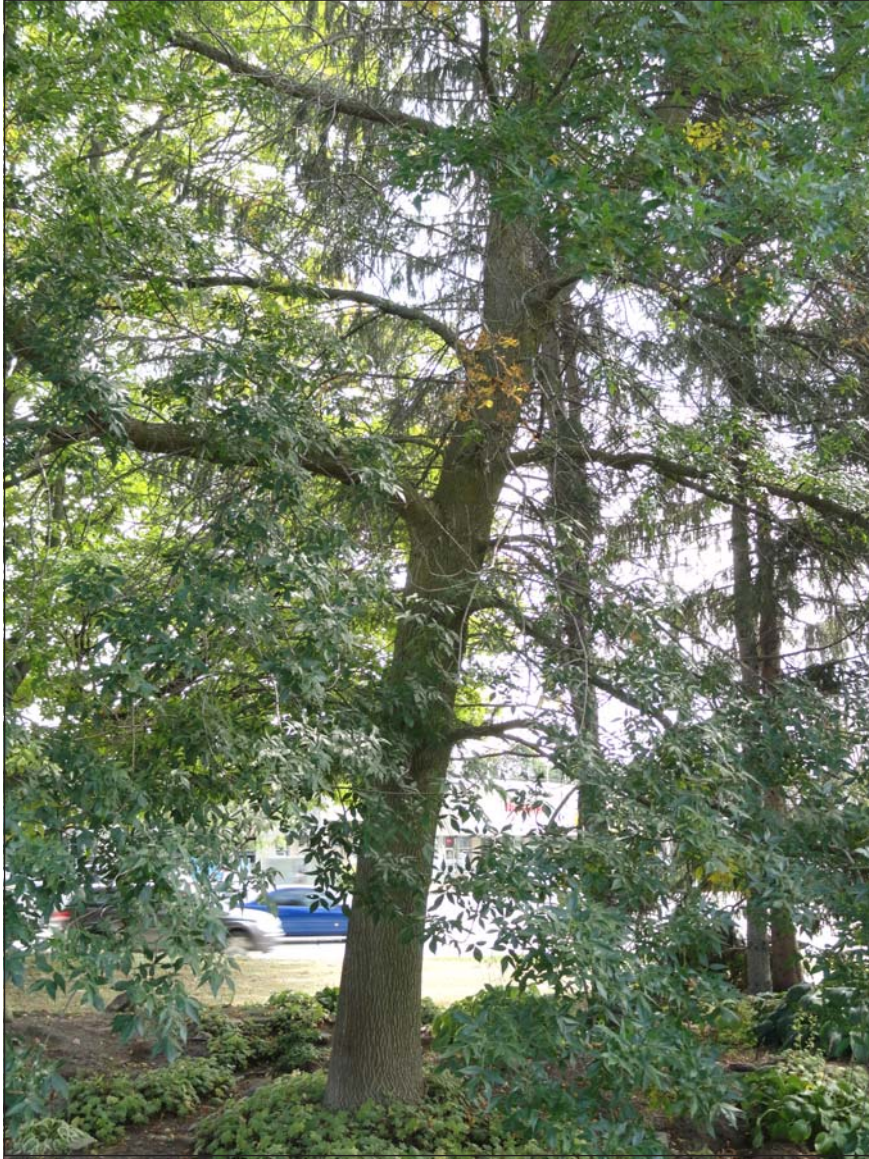
Photograph 20. View of Austrian pine (#951) along edge of driveway and property frontage, to be removed and replaced



Photograph 7. View of oak-leaved mountain-ash (#953) within small copse of trees along north edge of driveway at property frontage, to be transplanted



Photograph 8. View of Norway spruce (#958) in small copse of trees along property frontage, to be removed and replaced



Photograph 9. View of green ash (#959) in small copse of trees along property frontage, to be removed and replaced



Photograph 10. View of bur oak (#962) in small copse of trees along property frontage, to be removed and replaced



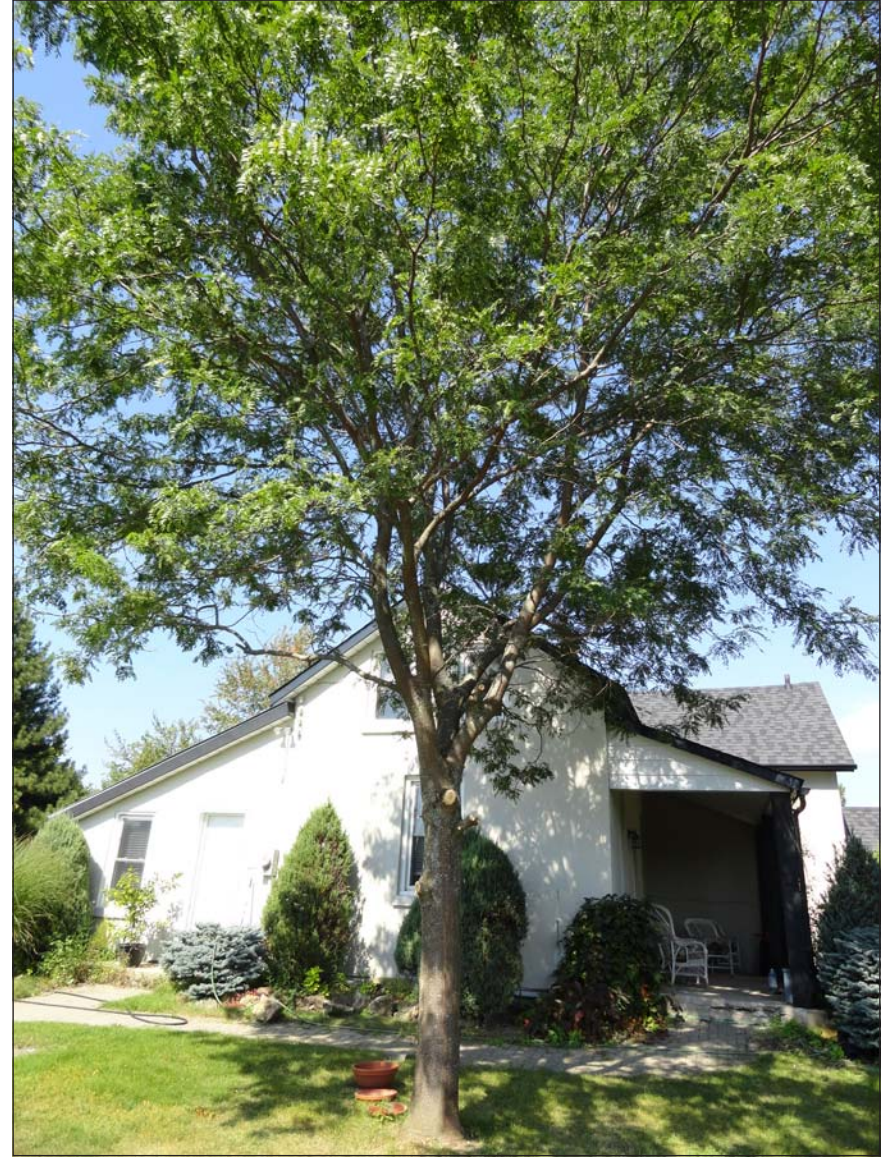
Photograph 11. View of littleleaf linden (#964), along edge of manicured grassed front lawn, to be removed and replaced



Photograph 12. View of black cherry (#968) at back of property along fence line, to be removed and replaced



Photograph 13. View of mature Austrian pine (#973) along west property fenceline, to be retained



Photograph 14. View of black locust (thornless variety) (#974) along south edge of single-family dwelling, to be removed and replaced



Photograph 15. View of mature Colorado blue spruce (#966) at front of single-family dwelling on grassed lawn, to be removed and replaced



Photograph 16. View of European mountain-ash (#980) along south edge of driveway at property frontage, to be removed and replaced

<i>Ilex spp.</i>	holly
<i>Picea glauca</i>	white spruce
<i>Picea glauca</i> 'Conica'	dwarf Alberta spruce
<i>Pinus strobus</i>	white pine
<i>Rosa multiflora</i>	multiflora rose
<i>Sorbus aucuparia</i>	European mountain-ash
<i>Syringa vulgaris</i>	common lilac
<i>Taxus spp.</i>	yew
<i>Thuja occidentalis</i>	eastern white cedar
<i>Tsuga canadensis</i>	eastern hemlock
<i>Viburnum lantana</i>	wayfaring bush
<i>Viburnum trilobum</i>	highbush cranberry

3.3 Wildlife and Wildlife Habitat

Given the lack of natural features, preponderance of cultural features, and the surrounding urban land uses (residential lots, commercial plazas and roads (including traffic noise), quality of wildlife habitat is lacking on the subject property. The only bird species noted included the following: American robin (*Turdus migratorius*), black-capped chickadee (*Parus atricapillus*), blue jay (*Cyanocitta cristata*), mourning dove (*Zenaidura macroura*), European starling (*Sturnella vulgaris*), house sparrow (*Passer domesticus*) and common crow (*Corvus brachyrhynchos*). The only mammal species noted was eastern gray squirrel (*Sciurus carolinensis*).

4.0 RESOURCE SIGNIFICANCE

4.1 Significant Species/Species At Risk (SAR)

A review of the Natural Heritage Information Centre (NHIC) dataquery web-site for significant species indicated no element occurrence records (EO_ID) within a 1km x 1km square area (17PK0311), within which lies the subject property.

A comparison of the plant species found on the subject property with those status lists in Section 2.2, indicated that none of the species are considered rare on either a federal, provincial, regional or local level. As previously stated, no butternut, a species listed as Endangered (END) in the provincial **Endangered Species Act, 2007** were noted on-site (Province of Ontario 2007).

4.2 Other Significant Features

Based on the background document review, none of the cultural or natural feature on-site are designated or lie within Significant Woodland, Significant Valleyland, Significant Wildlife Habitat, Environmentally Significant Area, County Greenlands, or part of a Natural Heritage System.

5.0 IMPACT ASSESSMENT

Based on the background documents review, the site reconnaissance and flora and fauna inventories conducted on July 26 and September 14, 2017, it is our opinion that the as-built residential lot does not contain any cultural features, natural features, significant flora or significant fauna, or SAR, that qualify as a site constraint. The proposed re-development of this single-family residential lot to a higher density will not result in any negative impacts or adverse effects to the on-site and or adjacent features.

The loss of cultural features, namely in the form of manicured grassed lawn, ornamental flower beds, and ornamental trees and shrubs is not considered a negative impact, and will be mitigated by the proposed landscape plantings (**see Appendix B**). As listed on Landscape Plan Drawing No. L2.0, various grasses/sedges and groundcovers (including quantities and spacing) will be planted within the proposed re-development. Planting details are shown on Landscape Drawings No. L3.0 and L4.0 (thincdesign 2017b, 2017c, 2017d).

As shown on Landscape Plan Drawing No. L1.0 (Tree Preservation Plan), the majority of the individual trees and small copse of trees along the property frontage will be removed to facilitate the proposed re-development of the subject property, to a higher residential density. It is proposed that the four Austrian pine (*Pinus nigra*) trees at the back of the lot (western property boundary along the fenceline) will be retained in-situ. Tree protection notes are also included on the Tree Preservation Plan (Landscape Drawing No. L1.0).

The tree survey indicated that there are twenty-seven trees (>10cm DBH) that will be removed to implement the proposed re-development (**see Table 1**). Four (4) trees, the Austrian pines (**trees #970 - #973 on Figure 2**) along the west property perimeter will remain intact and adequately protected through tree protection hoarding as per the City of Barrie Tree Protection By-law.

Some of the trees to be removed along the subject property frontage onto Essa Road (**trees #947 - #950 on Figure 2**) will be needed to facilitate the proposed widening of Essa Road by the City and a required retaining wall.

Regardless, the removal of the trees (>10cm DBH) identified on Table 1, will be more than adequately mitigated through the proposed replacement plantings as contained in the Plant List on Landscape Plan L2.0 (thincdesign 2017b). A total of forty-three (43) coniferous and deciduous trees (wire basket) will be planted on-site. Proposed replacement tree heights are 70cm to 200cm. A total of twelve (12) smaller deciduous trees (150cm to 200cm in height) will also be planted. Three (3) species of shrubs totalling 52 specimens (3 gal. to 100cm) will also be planted. All locations and densities of the tree and shrub replacement plantings are shown on Landscape Plan Drawing No. L2.0.

6.0 CONCLUDING REMARKS and PROFESSIONAL OPINION

The following professional opinion and concluding remarks regarding the proposed re-development of the subject property located at 405 Essa Road, in the City of Barrie are based on the background documents review, resource significance evaluation, and the flora and fauna inventories conducted on July 26 and September 14 2017. They are as follows:

-
- The proposed for re-development of the subject property located at 405 Essa Road, part of the overall 369 Essa Road – Phase 3 residential development will result mainly in the removal and loss of cultural features in the form of manicured grassed lawn, ornamental flower beds, a vegetable/flower bed garden and a variety of ornamental shrubs;
 - This loss or removal is not considered a negative impact as the existing groundcover will be adequately replaced post-development based on the proposed Landscape Plan (**see Appendix B**);
 - Four Austrian pine along the west property perimeter will be retained in-situ and protected using appropriate tree protection hoarding as required and as outline on the Tree Preservation Plan (**see Appendix B**); and,
 - A total of 27 trees (>10cm DBH) will be removed to facilitate the re-development, with some removed (maples along the property frontage #947-#950) to accommodate the proposed widening of Essa Road by the City. This loss or removal will be adequately mitigated based on the proposed Landscape Plan (**see Appendix B**).

In conclusion, it is our professional opinion that the proposed re-development (369 Essa Road – Phase 3 lands) located at 405 Essa Road to a higher residential density can be accommodated without any negative impacts to adjacent properties. Implementation of the proposed Tree Preservation Plan and Landscape Plan (**Appendix B**) will more than adequately off-set the removal of the existing cultural and minimal natural vegetation cover that currently exists on-site, as described in this report.

7.0 REFERENCES

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-

Province of Ontario.

- 2006. **Conservation Authorities Act. Ontario Regulation 179/06 Lake Simcoe Region Conservation Authority: Regulation of Development, Interference with Wetland and Alterations to Shorelines and Watercourses.** Last Amendment O. Reg. 64/13.
- 2007. **Endangered Species Act, 2007.** S.O. 2007, Chapter 6 and Ontario Regulation 242/08 General.

thincdesign.

- 2017a. **Tree Preservation Plan.** Drawing No. L1.0. 10/05/2017. Tocher Heyblom Design Inc.
- 2017b. **Landscape Plan.** Drawing No. L2.0. 10/05/2017. Tocher Heyblom Design Inc.
- 2017c. **Landscape Details.** Drawing No. L3.0. 10/05/2017. Tocher Heyblom Design Inc.
- 2017d. **Landscape Details.** Drawing No. L4.0. 10/05/2017. Tocher Heyblom Design Inc.

Voss. E. G.

- 1996. **Michigan Flora: Part 3; Dicots Concluded.** Cranbrook Institute of Science and University of Michigan Herbarium. Bloomfield Hills, Michigan. Bulletin 61.
- 1985. **Michigan Flora: Part 2; Dicots.** Cranbrook Institute of Science and University of Michigan Herbarium, Bloomfield Hills, Michigan. Bulletin 59.
- 1972. **Michigan Flora: Part 1; Gymnosperms and Monocots.** Cranbrook Institute of Science and University of Michigan Herbarium. Bloomfield Hills, Michigan. Bulletin 55.

APPENDIX A – CURRICULUM VITAE

DAVID G. CUNNINGHAM, Spec. Hon. B.Sc.
Senior Ecologist/Principal

- EDUCATION**
- Honours Bachelor of Science (BSc.) Environmental Sciences (1978)
York University, Toronto, Ontario
- MEMBERSHIPS**
- The Field Botanists of Ontario
 - The Canadian Society of Environmental Biologists
 - Ontario Nature
 - Ontario Field Ornithologists
 - Society for Ecological Restoration
- CERTIFICATIONS**
- International Open Water Diver (PADI) Certification - 1980
 - Certification for Ministry of Natural Resources and Forestry Ontario Wetland Evaluation System (Southern and Northern Ontario). 1st Edition to 3rd Edition.
 - Ministry of Natural Resources & Forestry Environmental Impact Study (EIS) Training Session
 - MNRF Ecological Land Classification Certification (2009)
 - Butternut Health Assessor Certification (#177)
 - NHIC Species At Risk Data Sensitivity Training

AREAS OF PROFESSIONAL EXPERIENCE

General

Mr. Cunningham has 38 years experience in the natural environment profession, which includes 32 years as an environmental consultant. He specializes in environmental evaluations and impact assessments related primarily to natural resources, with expertise in terrestrial vegetation, wetlands and wildlife. David has managed and/or participated in a variety of projects dealing with natural heritage features and functions, including their significance and sensitivity. He has managed multi-disciplinary studies pertaining to the identification and evaluation of terrestrial, aquatic and wetland resources, from a watershed and subwatershed perspective. This has included the formulation of natural environment policies, standards and targets for natural heritage systems.

Mr. Cunningham regularly identifies and assesses the impacts of various land use development proposals on existing terrestrial and wetland resources. Development proposals have included infrastructures such as oil, gas, water and sewer pipelines, roads, sewage treatment plants, storm water facilities, and landfills. Other projects have included airports, parkland, golf courses, subdivisions, pits, quarries and mines, transportation corridors, coal-fired electric and small-head hydroelectric facilities including transmission line route selection. Many of these projects have been completed under Federal and Provincial Environmental Assessment statutes, the “*Provincial Policy Statement*”, “*Greenbelt Plan*”, “*Oak Ridges Moraine Conservation Plan*”, “*Lake Simcoe Protection Plan*”, regional/municipal/township/town Official Plans, Secondary Plans and other Federal and Provincial acts.

David has participated in watershed, subwatershed and master drainage studies throughout Ontario. In these studies, he was responsible for the collection and review of natural environment background information, site inventories and evaluations, as well as liaising with resource management agencies and public interest groups.

He has qualified as an expert witness (biologist/ecologist) before the Ontario Municipal Board (OMB). He has prepared evidence and participated in mediation sessions before the Board, Ontario Mining & Lands Division Commissioner, Regional-Municipal and Township Councils, Federal Court (Criminal Division) and Provincial Court.

Terrestrial Vegetation and Wildlife Studies

David has extensive experience in botanical evaluations including species inventories, vegetation community mapping and is certified in Ecological Land Classification (ELC) protocol. Inventories and after-construction monitoring programs have been undertaken using a variety of qualitative, and quantitative sampling techniques. Species habitat identification, utilization and Species At Risk (SAR) are a critical component of all studies. He has managed/participated in the evaluation of Environmentally Significant/Sensitive Areas (ESAs) as a part of Natural Heritage Systems (NHS), Secondary Plans, Master Drainage Plans and Master Environmental Servicing Plans.

David has also worked extensively on wildlife studies including habitat evaluations and management plans, population assessments and impact mitigation from land uses. He has managed projects dealing with the inventory and control of nuisance animals, particularly bird and mammal species in the vicinity of waterfront parks, airports and construction sites. Wildlife habitat evaluation and management projects have included mapping, as well as the identification and assessment of movement corridors and habitat linkages. These projects were conducted using small mammal trapping and tagging techniques, bird banding, and provincial breeding bird survey protocols. David was a volunteer participant in the 1981-1985 and 2001-2005 Ontario Breeding Bird Atlas (OBBA) project. He regularly utilizes the bird and amphibian survey protocols of the Ontario Marsh Monitoring Program (MMP).

Wetland Studies

Mr. Cunningham has participated in over 100 wetland evaluations throughout Ontario using the standard Canadian Federal and the Ontario Provincial Evaluation System for Wetlands - Southern Ontario and Northern Ontario (OWES). He has managed and prepared Environmental Impact Studies (EIS)/Natural Heritage Evaluations (NHE) for various land use development proposals on wetland features, attributes and functions. Developments involving wetland issues have included housing, industrial, commercial, roads, utility corridors, storm water facilities, landfills, golf courses, hydroelectric facilities and aggregate/mineral/ore extraction.

Mr. Cunningham has formulated and provided mitigation measures and recommendations, site selection and compensation criteria, and restoration/rehabilitation management plans as compensation for land use development proposals in and adjacent to wetlands and shoreline features, within the context of both the Federal and Provincial wetland policies. He has been involved in the research and testing of wetland buffers, including enhancement/restoration planting plans within buffers adjacent to various wetland features. He has worked extensively with the MNRF, Parks Canada, Conservation Authorities and the Trent-Severn Waterway (TSW) on wetland and shoreline issues and is a certified wetland evaluator under the MNRF 1st, 2nd and 3rd editions of the OWES for both Southern and Northern Ontario.

Woodland/Woodlot Studies

David has experience in evaluating woodland/woodlot ecosystems in relation to other identified natural resources. These evaluations have included the integration of information on woodland ecology, soils, surface drainage, flora and fauna. Woodland assessment projects have included the use of quantitative sampling techniques (tree tagging, basal sweeps) to determine species dominance, age, height, health and community structure. All of these projects have involved due diligence pertaining to flora and fauna Species At Risk (SAR) and the ranking of wooded areas and individual trees for preservation or integration into proposed developments and natural heritage systems. This also involves appropriate buffer restoration/enhancement naturalization planting plans. He has participated in the preparation of managed forest plans using the Managed Forest Tax Incentive Program (MFTIP) guidelines in conjunction with a certified Forest Plan Approver. He has prepared reports related to tree compensation issues under Forest Conservation and Tree-Cutting By-laws. He is also an MNRF certified Butternut Health Assessor (#177).

Aquatic Studies

Mr. Cunningham has participated in studies that focus on aquatic environs, fish and fish habitat evaluations. He has assessed the potential impacts of dredged sediment disposal, hydroelectric facilities, sewage disposal and water supply facilities on fish, fish habitat and water quality. He has prepared plans and drawings, and supervised the construction of MNRF fisheries enhancement projects - FEP (riparian shoreline restoration, fencing, cattle watering stations, spawning shoals). Most of these projects have included using an array of fish and water quality sampling equipment. Equipment has included a dissolved oxygen/temperature meter, secchi disk, Van Doren bottle, backpack electro-shocker, beach seine net, gill net, trap net, portable HACH kit, ponar, dome sampler, and depth sounder.

Federal, Provincial and Conservation Authority Acts, Statutes, Regulations, Policies & Guidelines

He has extensive knowledge of the regulations pertaining to Species At Risk (SAR) for both the Federal "*Species At Risk Act*" (SARA) Schedule 1-3 listed species, as well as the Province of Ontario "*Endangered Species Act, 2007*" and the Species At Risk in Ontario (SARO) list. He regularly reviews updates for both Acts and their applicability to a proposed development project. He is very familiar with the Ontario "*Oak Ridges Moraine Act*" - Oak Ridges Moraine Conservation Plan (ORMCP) having completed numerous ORM Compliance reports and Natural Heritage Evaluations (NHE). He has also addressed natural environment issues related to the Ontario "*Greenbelt Plan*", "*Lake Simcoe Protection Act*" - Lake Simcoe Protection Plan, and Conservation Authorities Ontario Regulations, planning and development policies and/or guidelines.

PROFESSIONAL HISTORY**Principal**

Cunningham Environmental Associates, Lindsay, Ontario	1985 to Present
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Associate Ecologist

Hensel Design Group, Collingwood, Ontario	2009 to Present
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Associate Ecologist

Michael Michalski Associates, Bracebridge, Ontario	2007 to Present
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Associate Ecologist

Bird and Hale Limited, Toronto, Ontario	2000 to Present
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Associate Ecologist

Michalski Nielsen Associates Limited, Bracebridge, Ontario	1998 to 2007
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Associate Ecologist

Ecologistics Limited, Waterloo, Ontario.	1995 to 1998
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Associate Ecologist/Senior Ecologist

Niblett Environmental Associates Inc., Bethany, Ontario	1987 - 1995
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Biologist

Toronto Region Conservation Authority (TRCA), Downsview, Ontario	1986
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Resource Technician

Ontario Ministry of Natural Resources, Maple District Office, Maple, Ontario	1985
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Terrestrial Ecologist

Proctor & Redfern Limited, Toronto, Ontario	1984 - 1985
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Resource Technician

Ontario Ministry of Natural Resources, Maple District Office, Maple, Ontario	1984
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Biologist

Seatech Investigation Services Limited, Halifax, Nova Scotia	1982
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Authority Biologist

Lake Simcoe Region Conservation Authority, Newmarket, Ontario	1982 - 1983
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Biologist

Metropolitan Toronto and Region Conservation Authority, Downsview, Ontario	1979 - 1982
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* References available upon request

APPENDIX B – TREE PRESERVATION PLAN/LANDSCAPE PLAN



- GENERAL NOTES
1. ALL DRAWINGS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
 2. THE CONTRACTOR SHALL CHECK ALL DIMENSIONS AND REPORT DISCREPANCIES TO THE LANDSCAPE ARCHITECT.
 3. ALL DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF THE LANDSCAPE ARCHITECT AND MUST BE RETURNED ON REQUEST.
 4. DO NOT SCALE DRAWINGS.

- LEGEND
- PROPOSED EINGINE
 - TREE GROUPING PRESERVATION AREA
 - TREE PRESERVATION FENCING
 - INDIVIDUAL TREE REMOVAL
 - INDIVIDUAL TREE PRESERVATION

01	SUBMISSION FOR SPA	2017 10 06
NO.	REVISIONS	DATE



PROJECT:
369 ESSA ROAD - PHASE 3
SEAN MASON HOMES
Barrie, ON

TITLE:
TREE PRESERVATION PLAN

PROJECT NO: 17023
SCALE: 1:200
DRAWN BY: AF
REVIEWED BY: MT
PRINT DATE: 10/5/2017

DRAWING NO.

L1.0

- GENERAL NOTES
1. BUTTERNUT LOCATION IS APPROXIMATE AS SURVEYED BY AZIMUTH ENVIRONMENTAL CONSULTING INC. FIELD MEASUREMENT MAY BE REQUIRED TO ENSURE APPROPRIATE DEVELOPMENT SETBACKS ARE PROVIDED TO THE SATISFACTION OF CITY OF BARRIE AND LSRA.
 2. ALL TREE LOCATIONS ARE APPROXIMATE.
 3. PRIOR TO THE REMOVAL OF TREES #1.2 AND 3 ON ADJACENT LANDS WRITTEN APPROVAL AND RELEASE BY ADJACENT LAND OWNER MUST BE OBTAINED PRIOR TO COMMENCEMENT OF ANY WORK IN THIS AREA.

- TREE PROTECTION NOTES
1. INSTALL TREE PROTECTION HOARDING PER CITY OF BARRIE TREE PROTECTION BYLAW INDICATED ON PLAN AS TPZ MINIMUM, UNLESS OTHERWISE NOTED.
 2. CITY OF BARRIE'S TREE PROTECTION POLICIES AS OUTLINED BY URBAN FORESTRY IN THE "TREE PROTECTION MANUAL V2" ARE TO BE FOLLOWED. REFER TO APPENDIX #2 IN THE PROVIDED SPECIFICATIONS.
 3. DO NOT ALTER GRADES WITHIN TREE PROTECTION ZONE.
 4. NO ACTIVITY OR STORAGE OF ANY KIND, IS TO TAKE PLACE WITHIN THE TREE PROTECTION ZONE (TPZ) UNLESS OTHERWISE NOTED.
 5. TREE PROTECTION HOARDING SHALL BE INSPECTED BI-MONTHLY BY THE PROJECT LANDSCAPE ARCHITECT FOR THE DURATION OF ACTIVE CONSTRUCTION.
 6. ROOT BUFFERING IS TO BE PROVIDED WHERE ASPHALT ROAD ALLOWANCE ENDOACHES THE EXISTING TREE CANOPY AS INDICATED ON THE PRESERVATION PLAN. THIS WILL CONSIST OF TEMPORARY LAYER OF MULCH DESIGNED TO PROTECT THE SOIL TEXTURE AND ROOTS WITHIN THE TPZ.
 - 6.1. A BASE COURSE OF TREE CHIPS SPREAD AT A 15 CM (6") DEPTH OVER THE ROOT AREA (KEEPING ONE FOOT CLEAR OF THE TRUNK), AND COVERED WITH 3/4" PLYWOOD PLACED OVER THE WOOD CHIPS.
 - 6.2. ONCE THE CONSTRUCTION WORK IN THIS AREA IS COMPLETED, PLYWOOD AND WOOD CHIPS ARE TO BE CAREFULLY REMOVED WITHOUT DISTURBING THE ORIGINAL SOIL SURFACE.
 7. IN THE AREA WHERE THE ASPHALT ROADWAY ENDOACHES THE TREE CANOPY DRIP:
 - 7.1. IF TREE ROOTS THAT ARE 50 MM (2") OR LARGER ARE ENCOUNTERED THEY MUST BE CLEARLY CUT BACK TO A SOUND WOOD LATERAL ROOT UNDER THE SUPERVISION OF THE PROJECT ARBORIST/LANDSCAPE ARCHITECT. THE END OF THE ROOT SHALL BE SEALED AND KEPT MOIST. ALL EXPOSED ROOT AREAS WITHIN THE TPZ SHALL BE BACKFILLED OR COVERED WITHIN ONE HOUR. EXPOSED ROOTS MAY BE KEPT FROM DRYING OUT BY TEMPORARILY COVERING THE ROOTS AND DRAPING LAYERED BURLAP OR CARPETING OVER THE UPPER 1 METRE (3 FEET) OF TRENCH WALLS. THE MATERIALS MUST BE KEPT MOIST UNTIL BACKFILLED TO REDUCE EVAPORATION FROM THE TRENCH WALLS.
 8. PRESCRIPTION FERTILIZATION RECOMMENDATION: TO ENCOURAGE ROOT GROWTH AND HELP COMPENSATE FOR ROOT LOSS AND SOIL COMPACTION IN THE AREA OF ROOT BUFFERING FERTILIZER SHOULD APPLIED NO EARLIER THAN TWO YEARS FOLLOWING CONSTRUCTION. AT A MINIMUM A SOILS ANALYSIS SHOULD BE DONE AND A SLOW-RELEASE ORGANIC FERTILIZER FOCUSING ON REPLACING ONLY DEFICIENT NUTRIENTS SHOULD BE USED.

1 TREE PRESERVATION FOR DEVELOPMENT APPROVALS

2 TREE PRESERVATION AREA SIGNAGE

1 TREE PRESERVATION FOR DEVELOPMENT APPROVALS

L1.0

N.T.S.

Tree Preservation Area sign complete:
How to Order: This sign to be 11 inches high by 17 inches long and posted at 50 meters intervals along tree preservation fencing, as per the Tree Removal Form.

TREE PRESERVATION AREA

NO UNAUTHORIZED TREE CUTTING PERMITTED IN THIS AREA

2 TREE PRESERVATION AREA SIGNAGE

L1.0

N.T.S.

Tree Removal Template
How to Order: This sign to be 24 inches high x 36 inches long and posted in a visible location seven days prior to initiating or commencing any vegetation removal.

NOTICE OF TREE REMOVALS

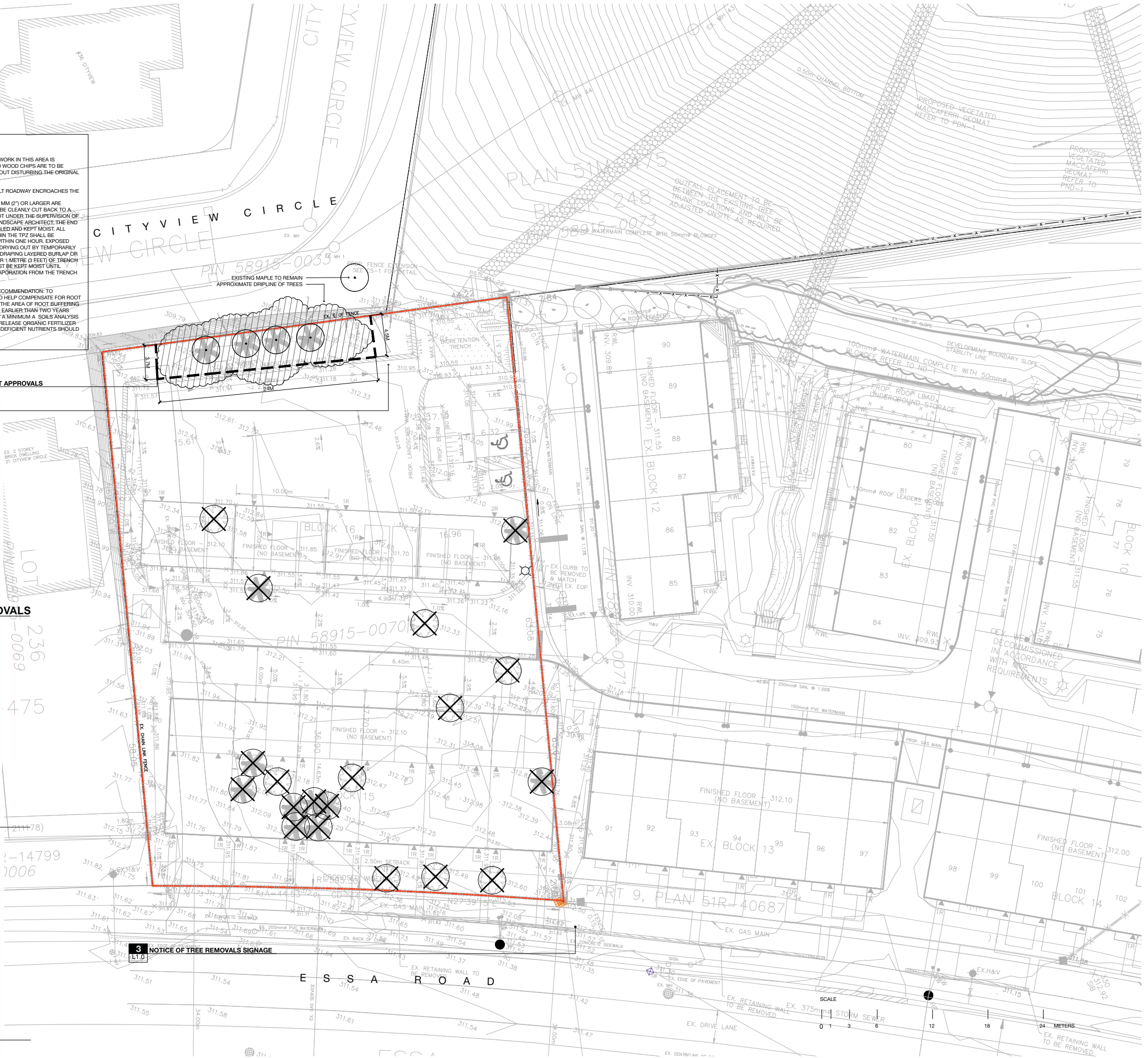
All vegetation removal work shall occur in accordance with By-law 2005-120.

Owner: Name of Owner
Removals completed by: Name of person or company retained to work on the vegetation removal on the land.
For Further Information, please contact: Address and telephone number of a person action on behalf of the owner from whom further information on the proposed vegetation removal work may be obtained.

3 NOTICE OF TREE REMOVALS SIGNAGE

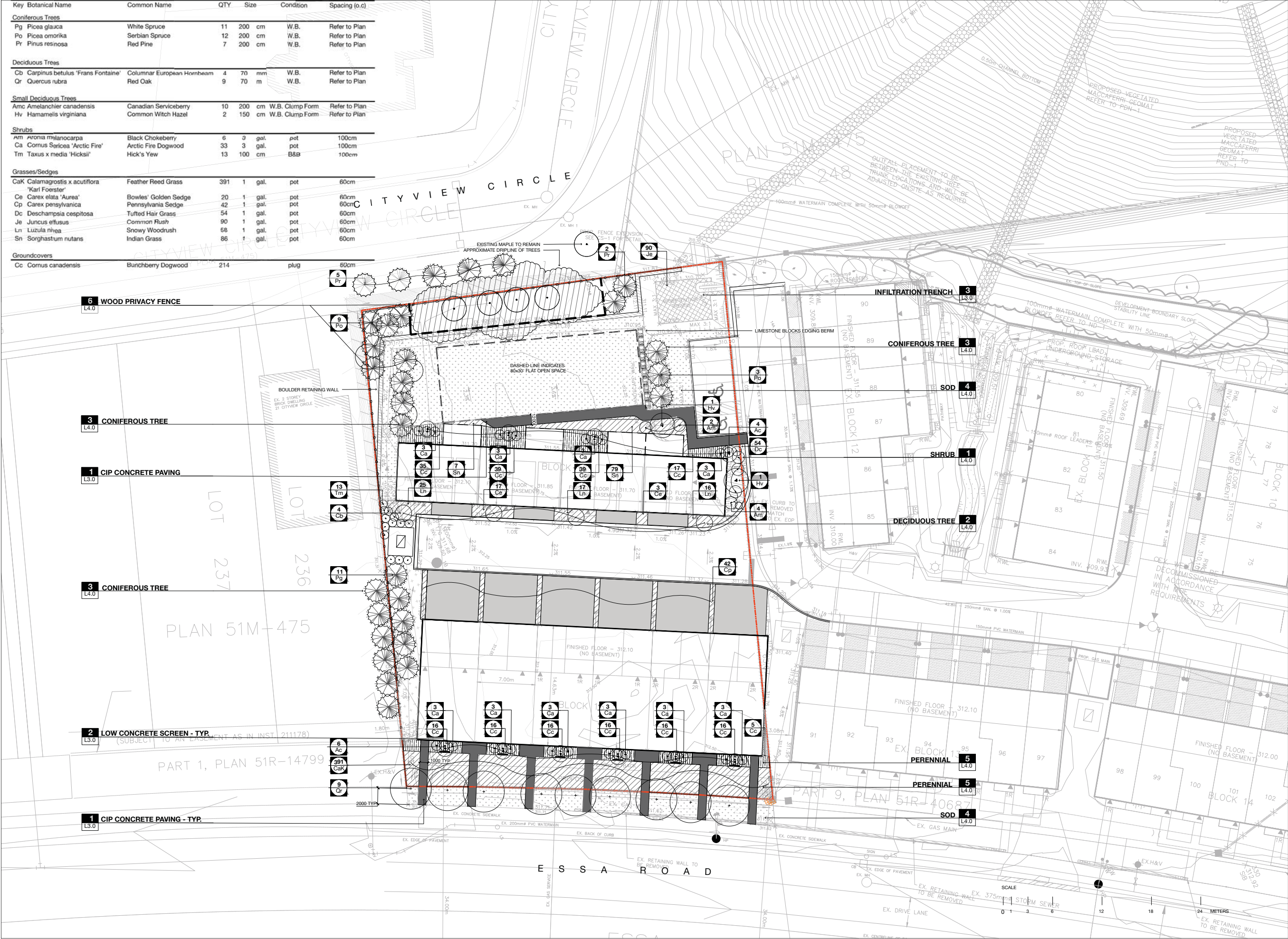
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N.T.S.



PLANT LIST

Key	Botanical Name	Common Name	QTY	Size	Condition	Spacing (o.c)
Coniferous Trees						
Pg	Picea glauca	White Spruce	11	200 cm	W.B.	Refer to Plan
Po	Picea omorika	Serbian Spruce	12	200 cm	W.B.	Refer to Plan
Pr	Pinus resinosa	Red Pine	7	200 cm	W.B.	Refer to Plan
Deciduous Trees						
Cb	Carpinus betulus 'Frans Fontaine'	Columnar European Hornbeam	4	70 mm	W.B.	Refer to Plan
Qr	Quercus rubra	Red Oak	9	70 m	W.B.	Refer to Plan
Small Deciduous Trees						
Amc	Amelanchier canadensis	Canadian Serviceberry	10	200 cm	W.B. Clump Form	Refer to Plan
Hv	Hamamelis virginiana	Common Witch Hazel	2	150 cm	W.B. Clump Form	Refer to Plan
Shrubs						
Am	Aronia melanocarpa	Black Chokeberry	6	3 gal.	pot	100cm
Ca	Cornus sericea 'Arctic Fire'	Arctic Fire Dogwood	33	3 gal.	pot	100cm
Tm	Taxus x media 'Hicksii'	Hick's Yew	13	100 cm	B&B	100cm
Grasses/Sedges						
CaK	Calamagrostis x acutiflora 'Karl Foerster'	Feather Reed Grass	391	1 gal.	pot	60cm
Ce	Carex elata 'Aurea'	Bowles' Golden Sedge	20	1 gal.	pot	60cm
Cp	Carex pennsylvanica	Pennsylvania Sedge	42	1 gal.	pot	60cm
Dc	Deschampsia cespitosa	Tufted Hair Grass	54	1 gal.	pot	60cm
Je	Juncus effusus	Common Rush	90	1 gal.	pot	60cm
Ln	Luzula nivea	Snowy Woodrush	58	1 gal.	pot	60cm
Sn	Sorghastrum nutans	Indian Grass	86	1 gal.	pot	60cm
Groundcovers						
Cc	Cornus canadensis	Bunchberry Dogwood	214		plug	60cm



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LEGEND

- PROPERTY LINE
- EXISTING TREE
- PROPOSED DECIDUOUS CANOPY TREE
- PROPOSED CONIFEROUS TREE
- PROPOSED MULTI-STEM SHRUB/SMALL TREE
- PROPOSED SHRUB
- TALL GRASSES/SEDGES
- WILDFLOWER / MEADOW NATURALIZED SEED AREA
- BIOSWALE/INFILTRATION TRENCH
- SOD
- SEED: RYE GRASS ECO LAWN
- GROUNDCOVER
- CONCRETE
- DRIVEWAY
- PROPOSED BOARDFENCE
- PROPOSED LIGHT STANDARD

01 SUBMISSION FOR SPA 2017 10 16
NO. REVISIONS DATE



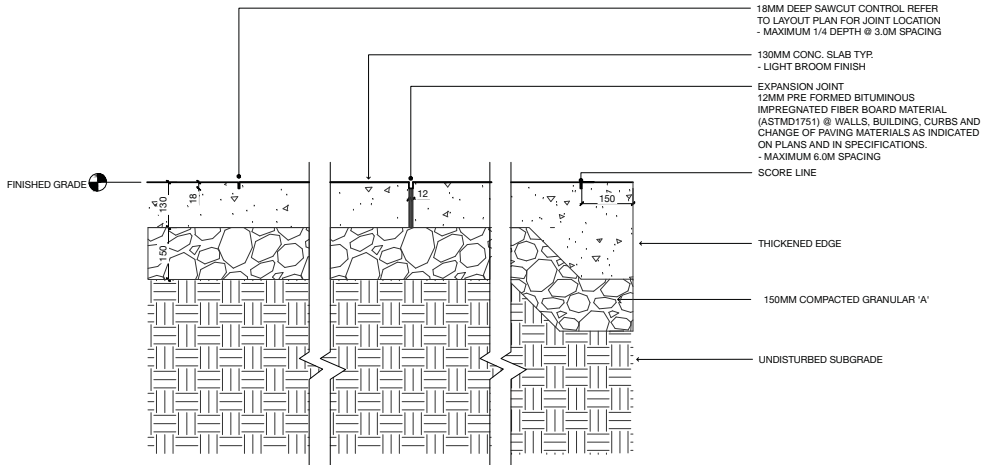
PROJECT:
369 ESSA ROAD - PHASE 3
SEAN MASON HOMES
Barrie, ON

TITLE:
LANDSCAPE PLAN

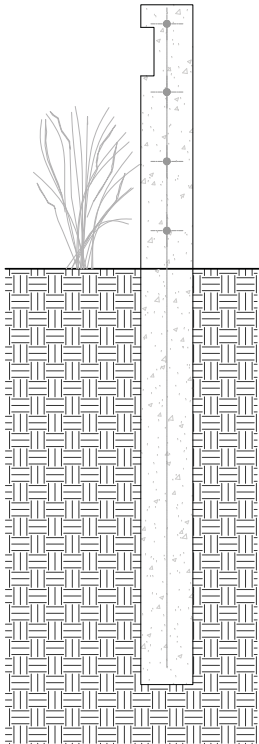
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DRAWN BY: AF
REVIEWED BY: MT
PRINT DATE: 10/5/2017

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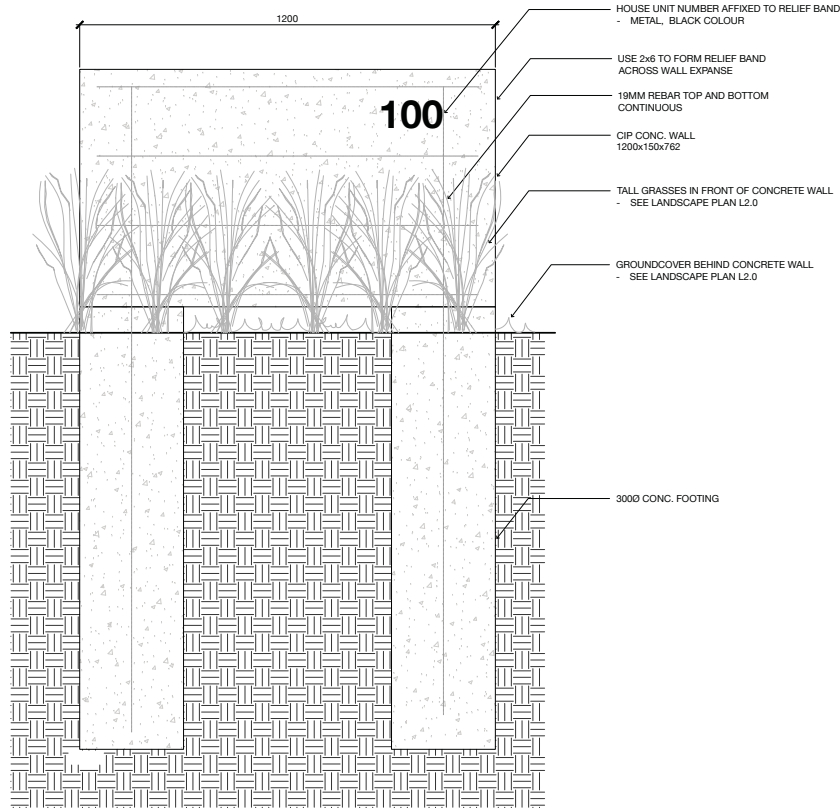
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1
L3.0
1:10
CIP CONCRETE PAVING

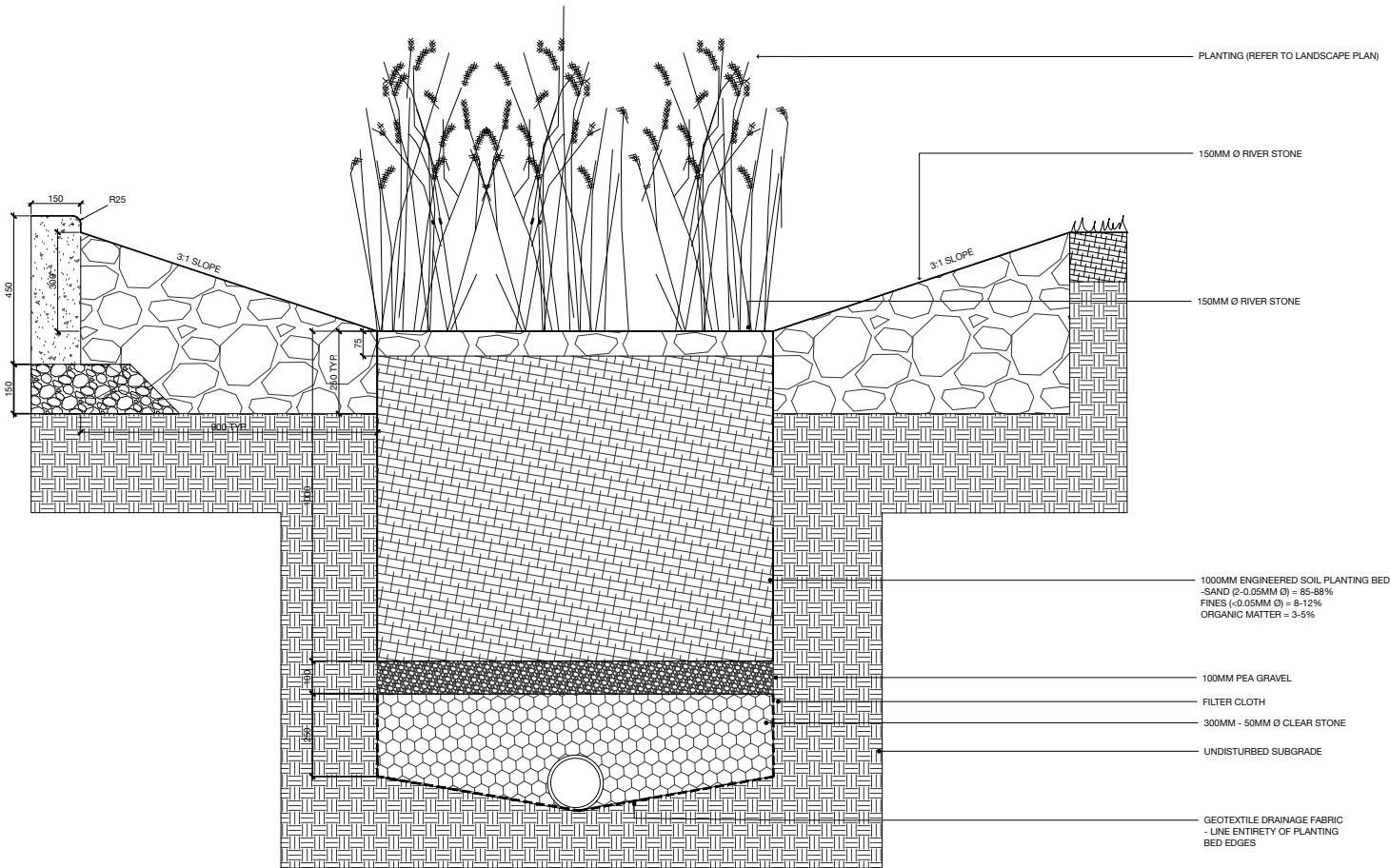


SECTION



ELEVATION

2
L3.0
1:10
LOW CONCRETE SCREEN



3
L3.0
1:10
INFILTRATION TRENCH

- GENERAL NOTES
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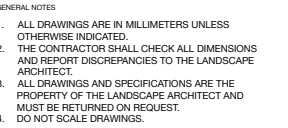
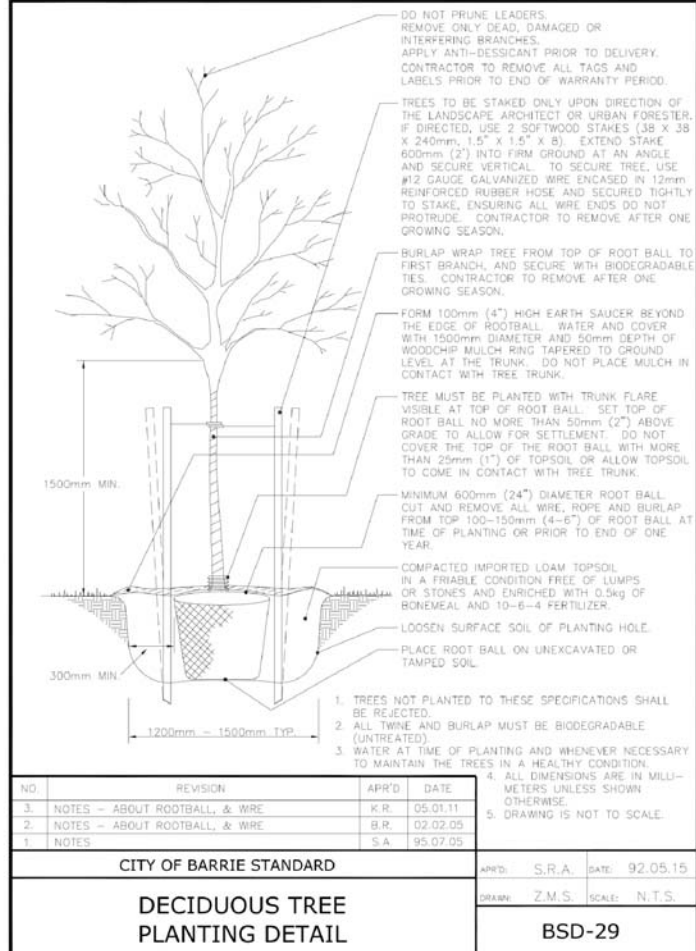
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369 ESSA ROAD - PHASE 3
SEAN MASON HOMES
Barrie, ON

TITLE:
LANDSCAPE DETAILS

PROJECT NO: 17023
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PRINT DATE: 10/5/2017

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L3.0



3 CONIFEROUS TREE PLANTING



LANDSCAPE DETAILS

PROJECT NO: 17023
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REVIEWED BY: MT
PRINT DATE: 10/5/2017

L4.0

6 WOOD PRIVACY SCREEN
L4.0 N.T.S.