

Villages of Central Park

Revised Edge Management Study

Prepared for:

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Date: June 24, 2019 HKLA Job# 2018-072

PREPARED BY:



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April 18, 2019

Fourteen Estates Rick & Shawn Rondeau 513 Westney Road South, Unit 4 Ajax, ON L1S 6W8 Tel: (905) 427-0390 Email: shawn@fourteenestates.com



Re:	Villages of Central Park, Cobourg ON - Edge Management Study
HKLA Ref. No:	2018-072

Dear Rick & Shawn,

I am pleased to submit our Edge Management Study for Phase 1 – 'The Villages of Central Park', your new Plan of Subdivision in Cobourg, ON.

The Environmental Assessment, prepared by Niblett Environmental Associates Inc., requires that an Edge Management Study be prepared for the edges of the subdivision where the development interfaces with the natural environmental areas that are scheduled for preservation. Chris Ellingwood of Niblett Environmental Associates Inc. has reviewed this report.

The Edge Management Study seeks to re-establish a vegetative edge to the remaining woodlot to compensate for the sudden exposure of the interior vegetation of the woodlot to increased wind and sun resulting from the removal of the existing edge vegetation.

Edge planting is also required to establish a planted edge and (buffer area) to the subdivision, thereby removing opportunities for edge colonization of the natural areas retained by foreign invasive species, specifically Buckthorn (Rhamnus cathartica).

This study looks at the opportunities to mitigate the impact of the development on the retained vegetative community by re-establishing the vegatative edge or ecotone community.

HENRY KORTEKAAS & ASSOCIATES INC.

Henry J. Kortekaas, B.L.A., M.E.S., O.A.L.A Principal Landscape Architect

HK/CB Z:2018/2018-072 Elgin St E Brook Rd N, Cobourg (Villages of Central Park) - Rondeau\EDGE MANAGEMENT REPORT\EDGE MANAGEMENT REPORT FOR VILLAGES OF CENTRAL PARK.docx

Table of Contents

1.0 INTRODUCTION	4
2.0 APPROACH	4
3.0 GENERAL LOCATION	6
4.0 'AREA A' - EDGE OF LOCATIONS 1, 2, 3 AND 4	6
5.0 'AREA A' - LOCATION 4 AND PART OF 3	
(STREET 'E' & DENTON DRIVE EXTENSION)	7
6.0 'AREA B' (LOCATIONS 5, 6 AND 7)	8
7.0 RECOMMENDATIONS FOR LOCATIONS 3 AND 4 AREA (A)	8

APPENDIX A - DRAWING L-EM1, L-EM2, L-EM3, L-D1 (AREAS 1-7)	10
APPENDIX B1 - SLAB TRANSPLANTING TECHNIQUE	15
APPENDIX B2 - NATIVE TREE TRANSPLANTING BY SLAB TECHNIQUE	17
APPENDIX C - ADDITIONAL PHOTOS OF EXISTING FOREST EDGE	20
APPENDIX D - BUCKTHORN (RHAMNUS CATHATICA) CONTROL	22
REFERENCES	24

1.0 INTRODUCTION

An ecological edge is the boundary or interface between two biological communities or between different landscape elements. The ecological edge acts as a buffer and is composed of smaller, younger trees that reduce or ameliorate sunlight and wind penetration into the more mature vegetation behind the forested edge. Ecological edges usually have greater plant and animal diversity then the two adjacent biological communities, in this case a White Pine, White Cedar bush and proposed backyards. The sudden removal of the established forest edge and some interior trees that occurs when preparing for residential development, is a significant ecological event. This removal of trees impacts established woodlots, leaving interior trees open to greater exposure to sun and wind. This can result in sun scald, windthrow, and a general decline in vigor and the diversity of the edge ectone.

An Edge Management Study is required for Phase 1 of the development known as 'The Villages of Central Park' in Cobourg, ON, as stipulated in the Environmental Assessment provided by Niblett Environmental Associates Inc and approved by the Town of Cobourg.

2.0 APPROACH

The general approach of the Edge Management Study is to identify general locations to plant small trees and shrubs, of various species which are appropriate to the 'Central Park' site in terms of plant hardiness to create a new forest edge or ecotone.



FIGURE 2.1: Examples of Transplantable White Cedar (Thuja occidentalis), White Pine (Pinus strobus), and Red Twig Dogwood (Cornus sericea) by machine through slabtechnique or by hand. - Notes: No invasive species in this area



FIGURE 2.2: Examples of Transplantable Red Cedar (Juniperus virginiana).



FIGURE 2.3: The transplantable Red Twig Dogwood (Cornus sericea) which are very abundant in Area B, location 5 scheduled for grading.

There are opportunities to transplant many small White Cedar (Thuja occidentalis), Red Cedar (Juniperus virginiana), and Red Twig Dogwood (Cornus sericea) currently growing on the Phase 1 site, in areas scheduled for disturbance and development in the general area of proposed Street "A" and Street "B". (See Appendix A - Drawing L-EM1 for locations where harvesting of small plants by machine or by hand can occure. See Appendix B1 & Appendix B2 - 'Slab Transplanting Technique' photos demonstrating proposed efficient transplanting method). These small trees and shrubs should be transplanted during dormancy, from the proposed disturbed areas to the proposed edge planting areas <u>PRIOR</u> to tree removal and earth moving in Winter 2020.



FIGURE 2.4: Example of abundant availability of Eastern Red Cedar (Juniperus virginiana), which are perfect size for transplanting. Edge Management Study HKLA | 599 Liverpool Rd. Pickering ON L1W 1R1 | (905) 839-5599 | info@hkla.ca Landscape Architects/Arborists Environmental & Recreational Planners

3.0 GENERAL LOCATION

Phase 1 of the 'Villages of Central Park' is located northwest of the intersection of Elgin Street East and Brock Road North, in the Town of Cobourg.

The first area of the site requiring investigation lies east of the existing Denton Drive residential development currently terminating in a cul-de-sac, also known as 'Area A'. Semi-mature vegetation will need to be removed in the area north of the extension of Denton Drive, thus requiring the installment of a new forest 'edge'. This includes a swath of vegetation along points 1, 2, 3 and 4.



FIGURE 3.1: Location of Phase 1 & suggested future planting patterns for the edge revegetation (See appendix A, Dwg L-EM1)

4.0 'AREA A' - EDGE OF LOCATIONS 1, 2, 3 AND 4

There will not be an opportunity to save any existing trees in any of the proposed backyard areas due to the grading requirements. White Pine (Pinus strobus) and White Cedar (Thuja occidentalis) trees averaging 30-40 ft in height, with a closed canopy will be removed. Hand transplanting of small White Cedar (600-1200 mm height) will be moved down from the existing edge of 'Area A' - areas 1, 2 and 3 and moved to the new edge as per drawing. Any plants not on site but in the plant will be purchased by the landscape contractor and planted in late fall.

The edge of the subdivision will create a 'cut' in the forest, opening the exposed bare understory to sun-scald and possible windthrow. This could pose a liability to the proposed residential development. The biggest negative potential, however, is for foreign invasive tree species such as Sea Buckthorn (Rhamnus cathartica) **(See Appendix D for control methods)** and herbaceous species such as Garlic Mustard (Alliaria petiolate) and other noxious weeds, to invade the exposed bare, understory and the new, "raw" edge of the bush next to the subdivision. This edge will be suddenly exposed to sunlight and wind. For these reasons, planting of small plants will be required in the natural area adjacent to these lots to re-establish a natural buffer to wind and sun through a new vegetative edge. The final Edge Management Plan will be based on the Engineering Grading & Drainage Plan.

Edge Management Study

5.0 'AREA A' - LOCATION 4 AND PART OF 3 (STREET 'E' & DENTON DRIVE EXTENSION)

Street 'E' runs north off of the extension of Denton Drive. Adjacent to Street 'E', there is an existing hedge row of Sugar Maple (Acer saccharum), Ash (Fraxinus spp.), Poplar/Aspen (Populus spp.), scattered Red Cedars (Juniperus virginiana), some individual Oaks (Quercus spp.), and White Cedars (Thuja occidentalis) (See Appendix A - Location 3 & 4, Dwg L-EM2).

Beyond this hedge row, to the west, there is an abandoned farm laneway and a thick stand of White Pine (Pinus strobus) mixed with White Cedar (Thuja occidentalis) along the west side. These trees range from a caliper of 6-20 inches (15-50mm) and a height of 30-40 Feet (9-13m). This laneway will be set as a future pedestrian walkway. This area can also receive



FIGURE 5.1: Example of Transplantable Tree White Cedar (Thuja occidentalis) in Location 3.

additional planting, either tree spaded, hand transplanted, or slab transplanted White Cedar (Thuja occidentalis), Red Cedar (Juniperus virginiana), and Red Twig Dogwood (Cornus sericea) which are growing plentifully in the area of the scheduled storm pond located in Location 5 (see Appendix A, Dwg L-EM3) and additionally in the areas north of the Denton Drive extension. Additional immature varieties of small native shrubs and trees could be planted to increase diversity.



FIGURE 5.2: Example of Transplantable White Cedar (Thuja occidentalis) in Location 1 & 2.



FIGURE 7.1: Abandoned Laneway in Location 3 & 4 and proposed location for machine slab transplanting.

6.0 AREA B (LOCATIONS 5, 6 & 7)

The area north of the wetland and south of the units fronting onto Street 'B', has an existing forest edge of White Birch (Betula papyrifera), Aspen (Populus tremuloides), Poplar (Populus spp.), Red Twig Dogwood (Cornus sericea), Yellow Dogwood (Cornus stolonifera), Basswood (Tilia americana), Ash (Fraxinus spp.), and White Cedar (Thuja occidentalis). There is some open space between the mixed deciduous/coniferous bush and the rear of the proposed lots fronting onto Street 'B'. This piece of open space provides an opportunity to reinforce the existing forest edge while removing opportunities for Sea Buckthorn (Rhamnus cathartica)

(See Appendix D for control methods) and other invasive species. A proposed pedestrian walkway is also to be provided through this route to the rear of the lots. There appears to be ample room between the rear property line of the proposed Street 'B' lots and the north edge of the existing woodlot. A slab transplanting program to introduce White Cedars (Thuja occidentalis), Eastern Red Cedar (Juniperus virginiana), and Red Twig Dogwood (Cornus sericea) into this area **prior** to mass grading of the lots is a possibility, depending on the exact grading requirements. If this area is to be graded and filled, that would preclude this opportunity. It appears there will be no grading beyond the rear lot line of the proposed lots according to February 11th, 2019 Grading Plans. Therefore, some of the edge planting can be carried out in Spring, 2019. This will increase density and create a stable ecological edge. Plants can be collected from Location 5 (see Appendix A, Dwg L-EM3), the proposed Storm Water Management Pond location.

7.0 RECOMMENDATION FOR LOCATION 3 AND 4 AREA (A)

1. The existing hedge row to adjacent Street 'E' will be partially removed due to the Street 'E' residential development. This will leave the forest edge next to the abandoned farm laneway (See Location #3 on Appendix A) more open to light and potential invasive species such as Buckthorn (Rhamnus cathartica). This laneway is readily accessible by a small track machine, such as a modified skid steer or rubber tire loader (See Appendix B). This modified skid steer could transplant the existing White Cedars (Thuja occidentalis) which occur along the extension of Denton Drive and Street 'E'. The intention is to transplant the exiting White Cedars (Thuja occidentalis), Red Cedars (Juniperus virginiana), and Red Twig Dogwood (Cornus sericea) with some other smaller shrubs and trees by machine to create a new ecological edge in the abandoned laneway. A 2 to 3 metre laneway could be retained for a future walkway.

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This work could be done **<u>before</u>** the tree cutting is approved and before mass earth moving takes place. Potentially, if the laneway is to be partially filled, this work could also be done **<u>prior</u>** to mass earth moving in late fall 2019 when the plants are dormant.

2. Once the development takes place and the hedge row is partially or completely removed, the former farm laneway will act as a pedestrian trail with the planting acting as the new ecological edge to the preserved stand of White Pine (Pinus strobus) and White Cedar (Thuja occidentalis) to the west (Area A - Locations 1, 2, and part of 3, see Figure 3.1, pg 6).

3. In the areas that cannot receive planting until after tree removal, we suggest that once the tree removal takes place, silt fence and tree protection fencing be installed along the retained vegetation edge and backyard property line. Once the lots are graded, new edge planting, composed of small trees and shrubs, will be planted in amongst the remaining semi-mature White Cedar (Thuja occidentalis) and White Pine (Pinus strobus) to re-establish an ecological edge (ecotone). This will stall any opportunities for Sea Buckthorn (Rhamnus cathartica) and other invasive species to re-establish themselves, reduce sun scald, and eventually deflect buffer winds.

4. In the area directly north of the Denton Road extension, the edge planting should be composed of native Serviceberry (Amelanchier canadensis), Pagoda Dogwood (Cornus alternifolia), Red Osier Dogwood (Cornus stolonifera). Trembling Aspen (Populus tremuloides) and small hand transplanted White Cedars (Thuja occidentalis) where appropriate, to create the new ecotone/vegetative edge.

In summary, as per the Environmental Impact Report, this Edge Management Report recognizes the importance of a vigourous forest edge. Therefore, we have recommended planting small caliper, similar species to the existing forest edge. The existing vegetation preserved is to be fertilized to promote root growth and seeded with native grasses along the edge.

Where possible, we have also recommended transplanting existing vegetation from other parts of the site for ecological reasons and cost effectiveness.

Prior to finalizing the Edge Management Plan, the location of the walkway north of the existing wetland must be determined so that no planting conflicts with the proposed future walkway.

Edge Management Study

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APPENDIX A DRAWING L-EM1, L-EM2, L-EM3, L-D1 (AREAS 1-7)

AREA OF COLLECTED AND TRANSPLANTED PLANTS

AREA OF TRANSPLANTED RED-CEDAR, WHITE CEDAR AND RED TWIG DOGWOOD (SLAB)

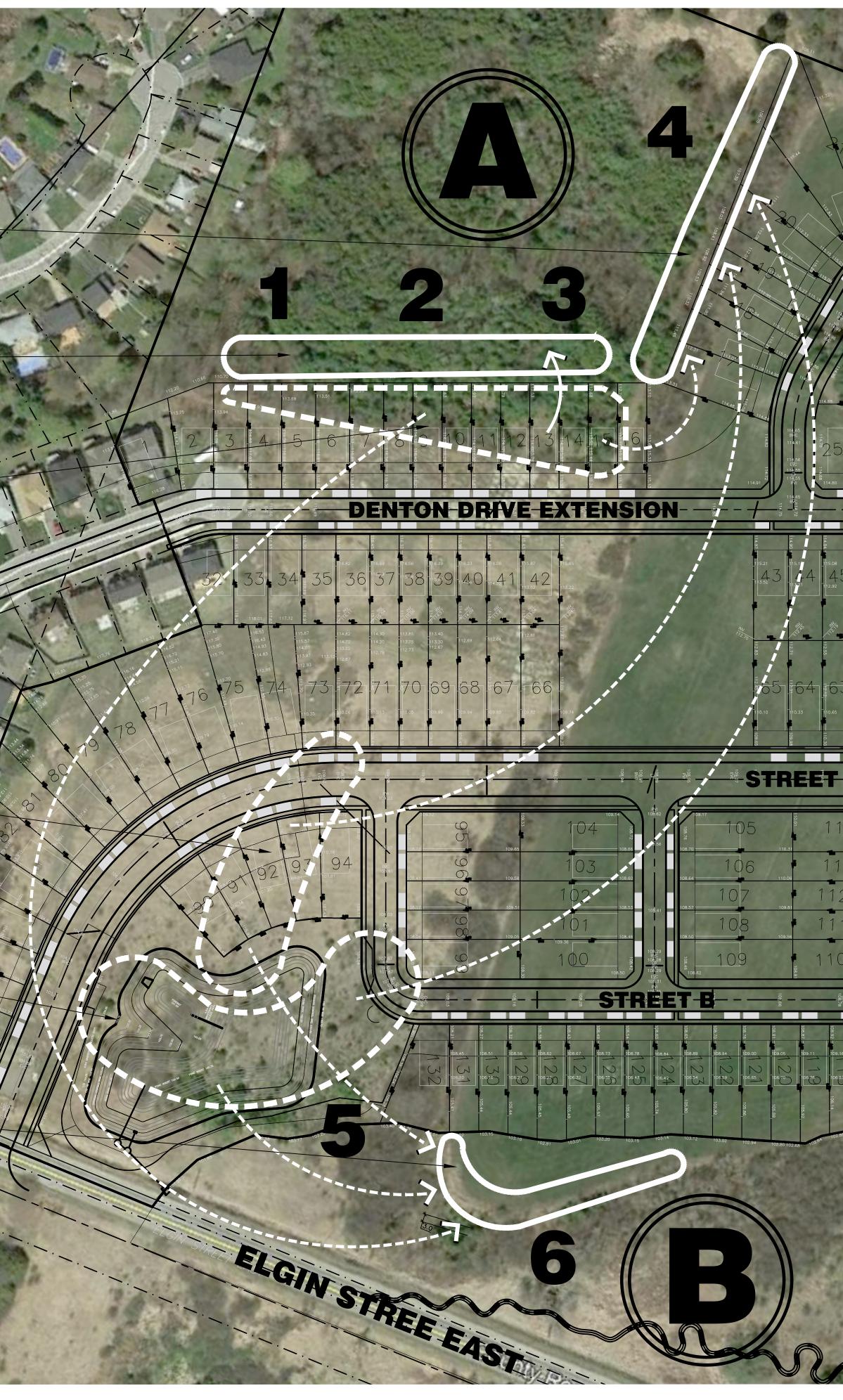
AREA OF HAND TRANSPLANTED-WHITE CEDAR AND ADDITIONAL PURCHASED PLANTS AS PER PLAN

> AREA OF COLLECTED WHITE-CEDAR (HAND DUG OR SLAB)

AREA OF COLLECTED RED-TWIG DOGWOOD (SLAB)

> AREA OF COLLECTED-RED CEDAR (SLAB)

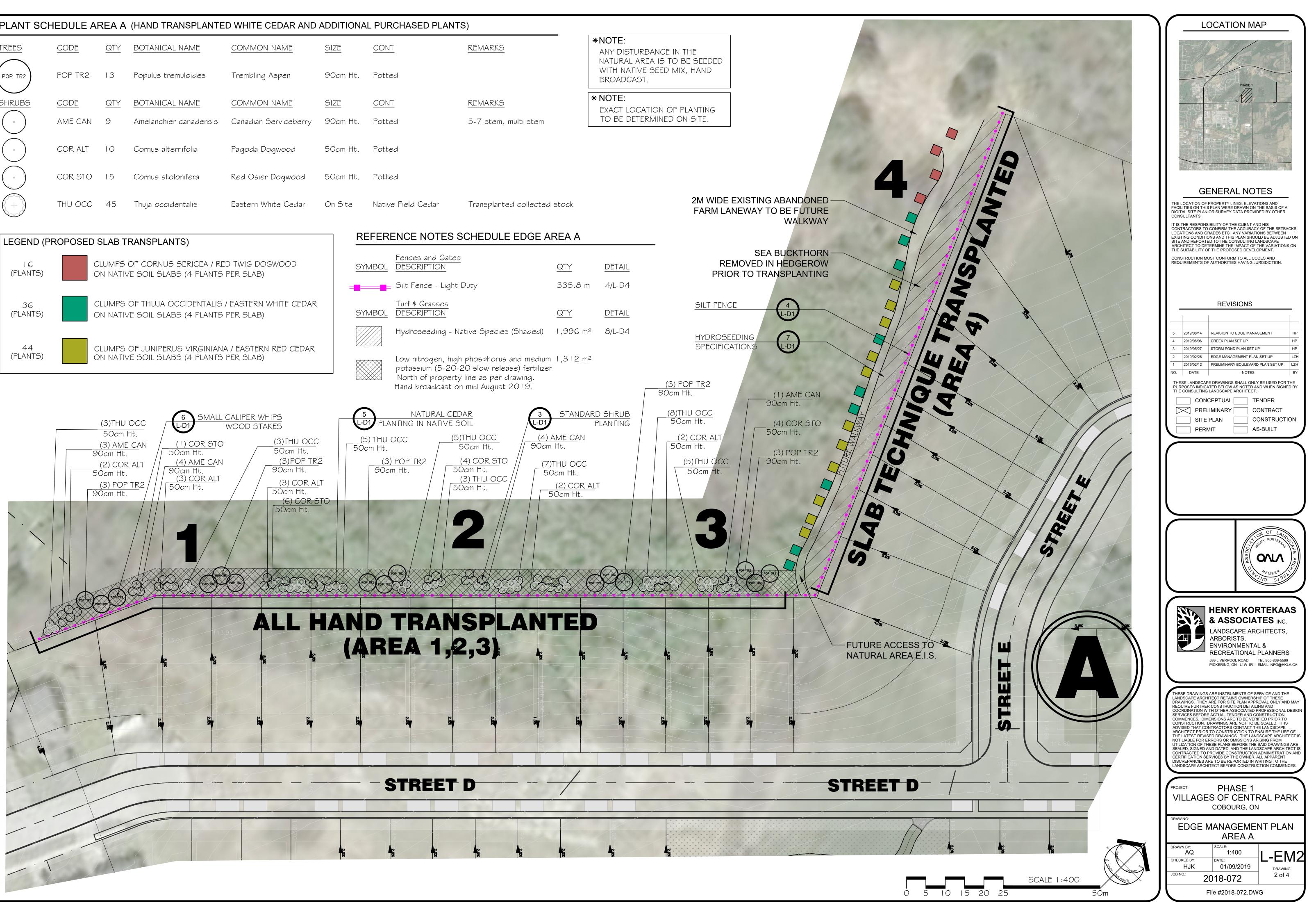
AREA OF TRANSPLANTED RED CEDAR AND RED TWIG DOGWOOD (SLAB)

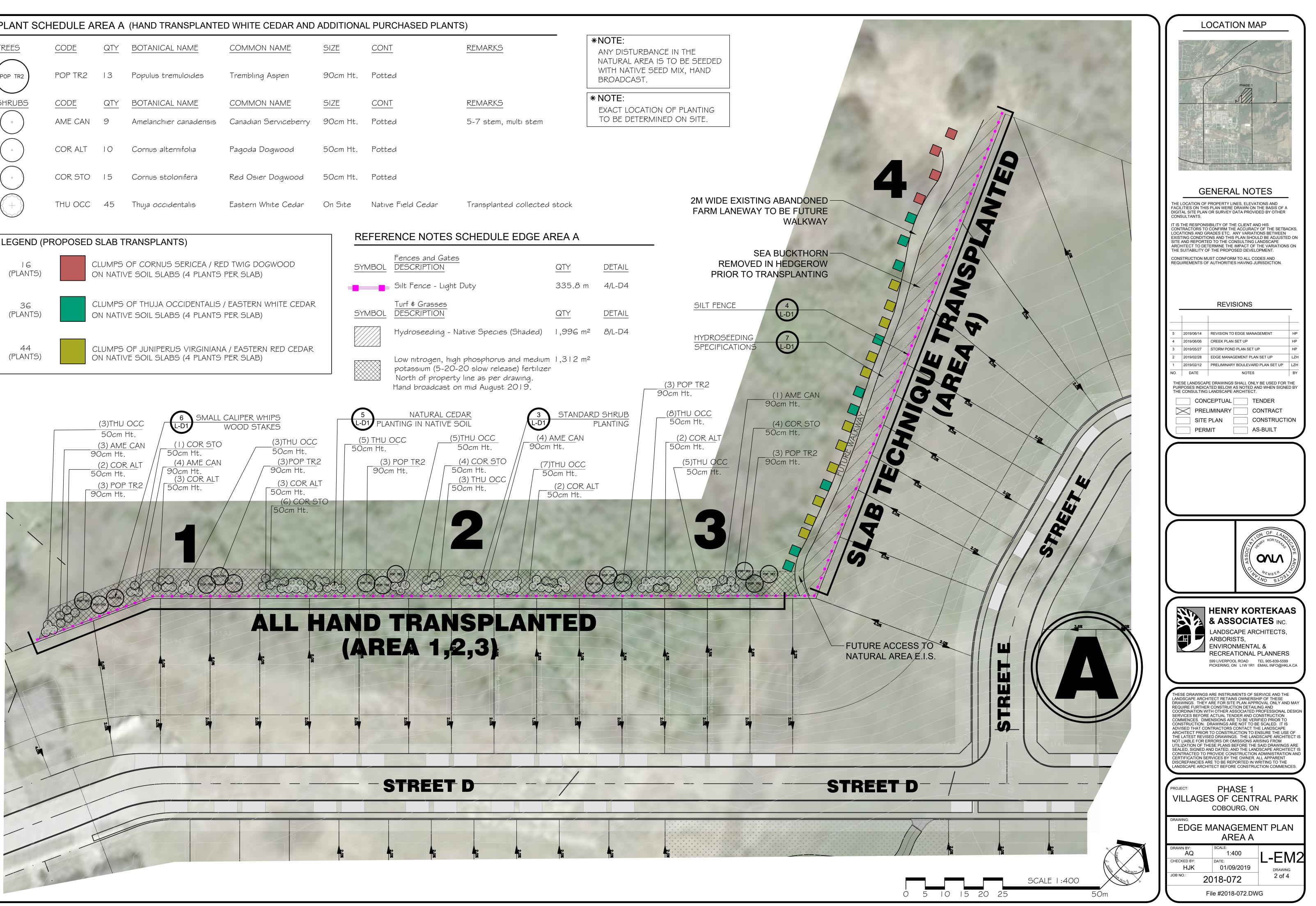


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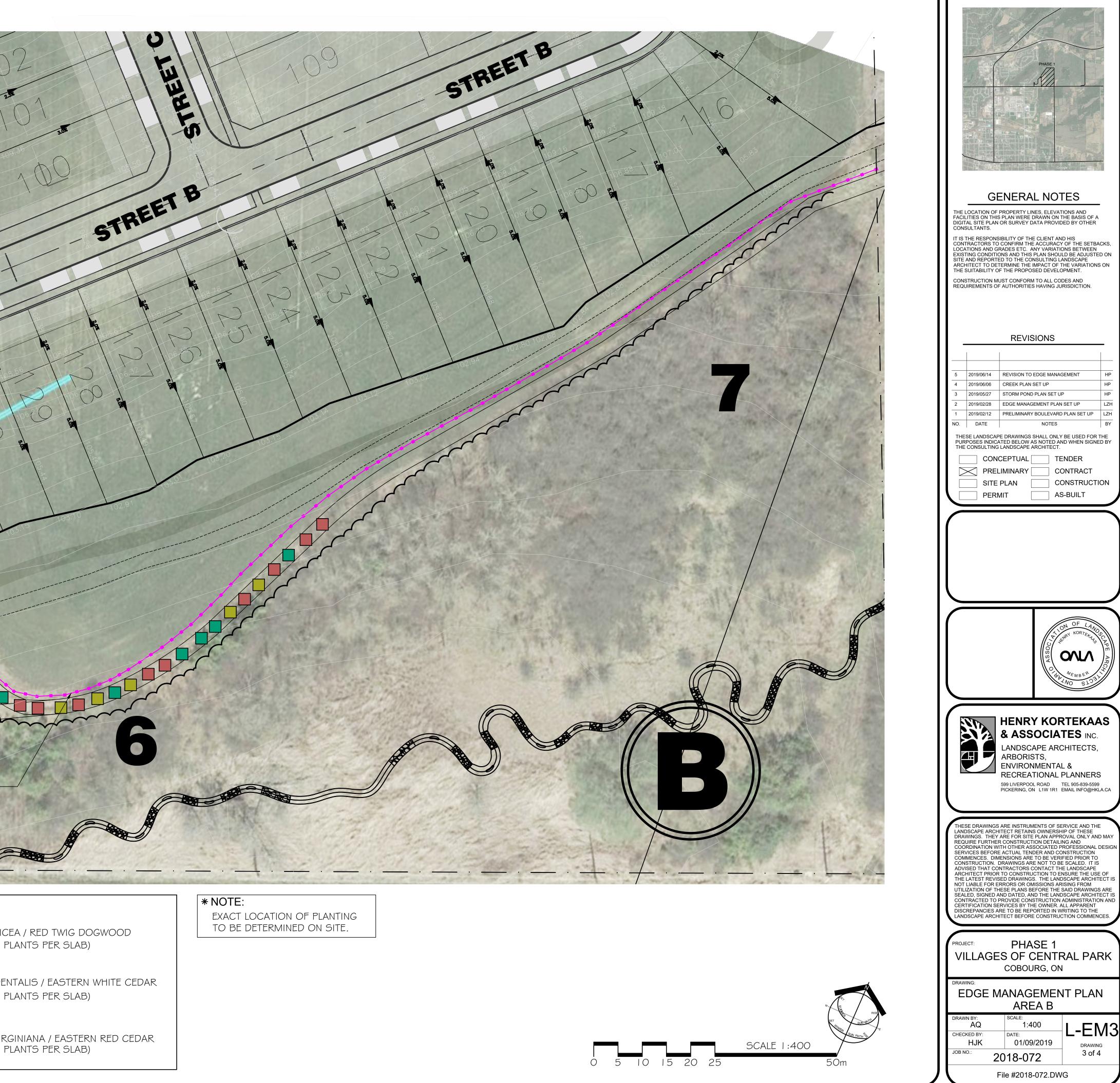
	LOCATION MAP
	PHASE 1
111 11 11 11 11 11 11 11 11 11 11 11 11	Google
	GENERAL NOTES THE LOCATION OF PROPERTY LINES, ELEVATIONS AND
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	THESE DRAWINGS ARE INSTRUMENTS OF SERVICE AND THE LANDSCAPE ARCHITECT RETAINS OWNERSHIP OF THESE DRAWINGS. THEY ARE FOR SITE PLAN APPROVAL ONLY AND MAY REQUIRE FURTHER CONSTRUCTION DETAILING AND COORDINATION WITH OTHER ASSOCIATED PROFESSIONAL DESIGN SERVICES BEFORE ACTUAL TENDER AND CONSTRUCTION COMMENCES. DIMENSIONS ARE TO BE VERIFIED PRIOR TO CONSTRUCTION. DRAWINGS ARE NOT TO BE SCALED. IT IS ADVISED THAT CONTRACTORS CONTACT THE LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION TO ENSURE THE USE OF THE LATEST REVISED DRAWINGS. THE LANDSCAPE ARCHITECT IS NOT LIABLE FOR ERRORS OR OMISSIONS ARISING FROM UTILIZATION OF THESE PLANS BEFORE THE SAID DRAWINGS ARE SEALED, SIGNED AND DATED, AND THE LANDSCAPE ARCHITECT IS CONTRACTED TO PROVIDE CONSTRUCTION ADMINISTRATION AND CERTIFICATION SERVICES BY THE OWNER. ALL APPARENT DISCREPANCIES ARE TO BE REPORTED IN WRITING TO THE LANDSCAPE ARCHITECT BEFORE CONSTRUCTION COMMENCES.
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PLANT SCHEDULE AREA A (HAND TRANSPLANTED V			OWHITE CEDAR AND ADDITIONAL PURCHAS			
TREES	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONT
POP TR2	POP TR2	13	Populus tremuloides	Trembling Aspen	90cm Ht.	Potted
SHRUBS	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONT
	AME CAN	9	Amelanchier canadensis	Canadian Serviceberry	90cm Ht.	Potted
	COR ALT	10	Cornus alternifolia	Pagoda Dogwood	50cm Ht.	Potted
	COR STO	15	Cornus stolonifera	Red Osier Dogwood	50cm Ht.	Potted
(+)	THU OCC	45	Thuja occidentalis	Eastern White Cedar	On Site	Native Field (

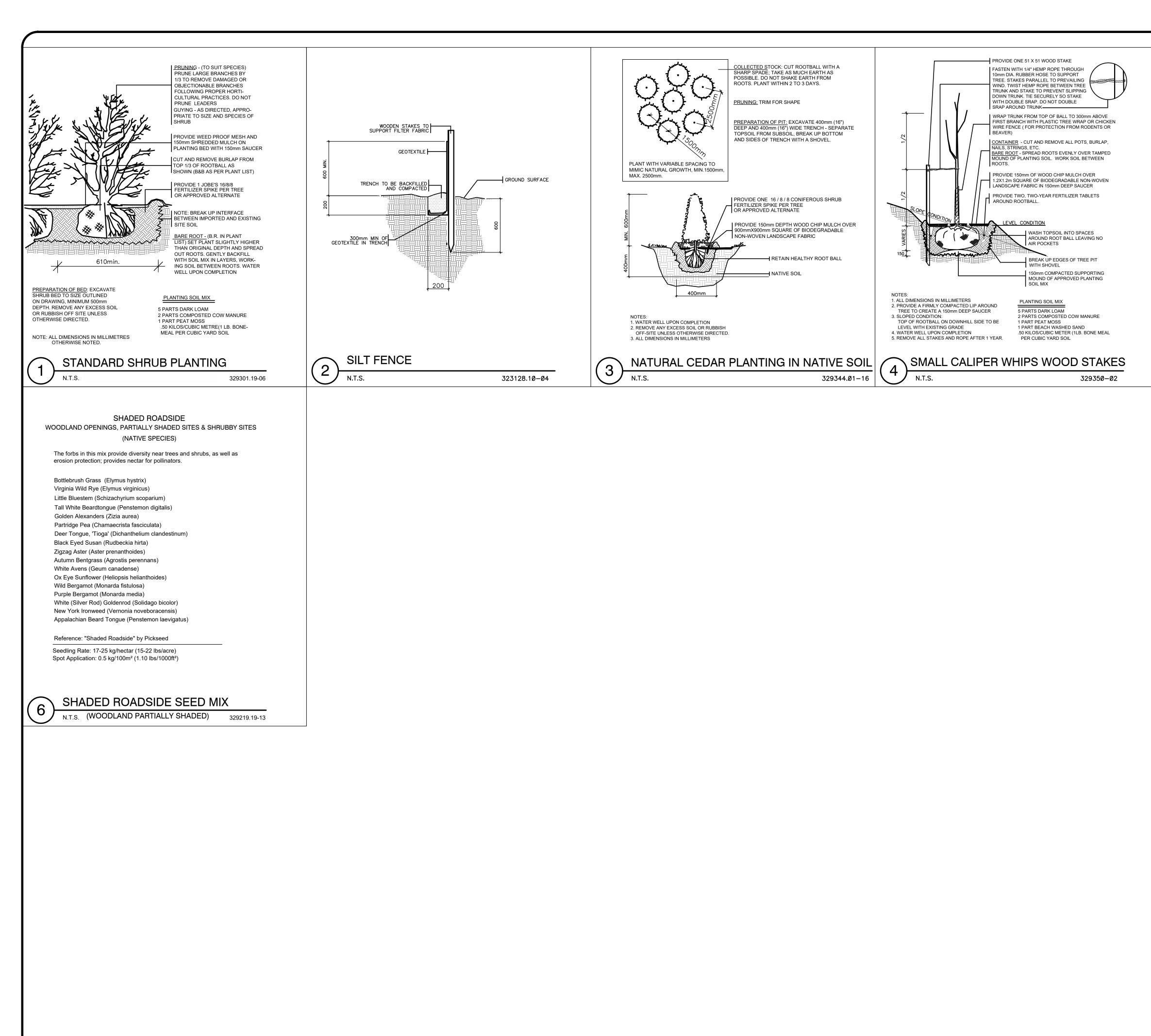




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				(PLANTS)	ON NATIVE SOIL SLABS (4 P
				32 (PLANTS)	CLUMPS OF THUJA OCCIDEN ON NATIVE SOIL SLABS (4 P
				24 (PLANTS)	CLUMPS OF JUNIPERUS VIR
					ON NATIVE SOIL SLABS (4 P



LOCATION MAP



	LOCATION MAP
HYDROSEEDING SPEC.	
ALL GRADED SLOPES TO BE HYDROSEEDED BEYOND THE PERIMETER SOD LINE TO THE EDGE OF WOODLOTS OR SITE BOUNDARY WITH THE SEED MIXTURE AS PER PLAN.	PHASE 1
APPLY 2280kg/ha FIBER MULCH TO FORM A UNIFORM BLOTTER-LIKE GROUNDCOVER ALLOWING ABSORPTION AND PERCOLATION OF WATER. AREAS SEEDED WILL NOT EXCEED AREAS WHICH CAN BE MULCHED ON THE SAME DAY. ALL SEEDED AREAS REQUIRE A ONE YEAR WARRANTY PERIOD AND APPROPRIATE MAINTENANCE TO ESTABLISH ACCEPTABLE TURF COVER.	
*NOTE:	GENERAL NOTES
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	IT IS THE RESPONSIBILITY OF THE CLIENT AND HIS CONTRACTORS TO CONFIRM THE ACCURACY OF THE SETBACKS, LOCATIONS AND GRADES ETC. ANY VARIATIONS BETWEEN EXISTING CONDITIONS AND THIS PLAN SHOULD BE ADJUSTED ON SITE AND REPORTED TO THE CONSULTING LANDSCAPE ARCHITECT TO DETERMINE THE IMPACT OF THE VARIATIONS ON THE SUITABILITY OF THE PROPOSED DEVELOPMENT. CONSTRUCTION MUST CONFORM TO ALL CODES AND REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
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	DETAIL
	DRAWN BY: SCALE: AQ AS SHOWN CHECKED BY: DATE: HJK 01/09/2019 JOB NO.: 2018-072
	File #2018-072.DWG

APPENDIX B1 SLAB TRANSPLANTING TECHNIQUE



APPENDIX B2

NATIVE TREE TRANSPLANTING BY SLAB TECHINIQUE

SLAB TRANSPLANTING DESCRIPTION

The Draft Plan of Subdivision for this site has been approved. The proposed lots have been sensitively located and laid out to preserve sensitive and unique environmental and ecological natural heritage features. Nevertheless, tree removal will be required. To ensure plant communities maintain their function, edge management and corridor planting should take place using native transplanting stock and seedlings.

Goals of Sound Ecological Development will ensure the following are achieved in a coordinated fashion:

1) Mitigate disturbance to natural areas, by replanting disturbed areas where possible.

2) Re-establish new ecological edges, or "ecotones," and corridors where they are removed or disturbed.

3) Re-establish natural vegetative corridors and make new ecological linkages in a biological sense.

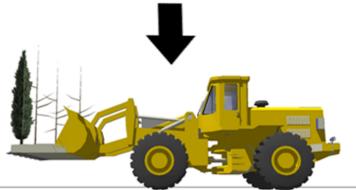
Planting of various sizes, placed next to existing vegetation, should include layers of native transplanted and seedling stock of shrubby and woody plants that vary in mature height and growth speed. Over time, these will form a vertically and horizontally heterogeneous ecotone, or vegetative edge, which is more ecologically valuable than a homogeneous planting. It is suggested that extensive areas of young native vegetation be transplanted by machine to achieve the above. here are approximately 1.2 hectares of young vegetation of a suitable size to transplant utilizing 8' x 8' steel slab mounted on a large loader (See Appendix A - Drawing L-EM1 for slab transplant source locations). Additional planting of infill seedlings will also add diversity and ecological stability to the site vegetation. The slab technique transplants 4 small plants at once in an efficient and cost effective manner. Transplanting by a larger tree spade machine is not warranted, which is costly and not efficient. The goal is to transplant small trees with their biome.

STEP 1

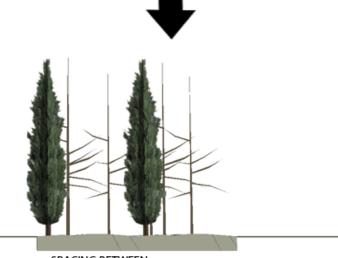
SCOOP OUT 8x8' SLABS USING FRONT END LOADER EQUIPPED WITH SPECIAL EXTENDED METAL SLAB BUCKET







STEP 3 PLACE IN SOIL DO NOT BLOCK DRAINAGE



SPACING BETWEEN SLABS TO BE FILLED WITH TOPSOIL

TRANSPLANTING 8'X8' SLABS USING FRONT END LOADER EQUIPPED WITH EXTENDED METAL SLAB BUCKET

APPENDIX C ADDITIONAL PHOTOS OF EXISTING FOREST EDGE



Image 1: Open area at rear of lots suitable for edge planting. (Area A - Location 1)



Image 2: Typical edge at rear of lots. (Area A - Location 1)

APPENDIX D BUCKTHORN (RHAMNUS CATHARTICA) CONTROL

BUCKTHORN (RHAMNUS CATHARTICA) CONTROL METHODS

1. Removals using a weed wrench tool can be effective for stems up to 5cm in diameter.

2. For larger trees (greater than 5cm in diameter), use tractor to pull plants.

3. Cutting is a feasible control option. However, herbicide must be applied to fresh stumps to prevent re-spouting. Immediate application of herbicide to a fresh cut allows for better absorption and may reduce the need for repeat applications. A precise application of herbicide from a small hand-pump bottle can be done at any time of the year, although the late spring/early summer is the most effective time. The site must be monitored for the next few seasons to ensure control of seedlings or re-spouts.

4. Mowing will reduce stem numbers and vigour, and will eventually kill off most seedlings. It need to be carried out in early and late summer for at least 2-3 consecutive years and is recommended for stems that are less than 2 years old.

5. Disposal: Common Buckthorn branches can be piled and burned on site (check with your municipality for a burn permit). Pile branches before they dry, as dry buckthorn thorns harden and can inflict painful and long-lasting wounds. If you are going to dispose of buckthorn in green waste (compost) or by chipping, ensure that you have removed all fruit or are only doing so with the male trees. Common Buckthorn has been noted to take more time than most other species to break down in to compost. Fruits should be removed and placed in the trash. Disposal at municipal compost waste facilities is an option if they have ability to heat the seeds to a high enough temperature, check with your municipality for disposal options.

6. Natural Resource Exception: A 'natural resources' exception exists for the use of prohibited pesticides to manage, protect, establish or restore a natural resource. This exception allows the use of prohibited herbicides for control of invasive plants on your property provided your project meets specific conditions and you obtain the necessary approvals.

If your project meets the natural resources criteria specified in section 33 of Ontario Regulation 63/09 and includes the use of pesticides in accordance with Integrated Pest Management principles outlined in the BMP guide you will need to contact the Ontario Ministry of Natural Resource (www.ontario.ca) to obtain a written letter of opinion from the MNR Regional or Branch Director. **7.** Herbicides must be applied in accordance with all label directions and only for the control of specified pests. For an up-to-date list of herbicides labelled for Common Buckthorn control, visit the Pest Management Regulatory Agency's website at www.pmra-arla.gc.ca The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)'s Publication 75, Guide to Weed Control is an excellent reference for all aspects of weed control, and includes a section on invasive plant management. It is regularly updated and includes herbicides currently registered for specific weeds, including Common Buckthorn. To determine if a federally registered herbicide is also classified for use in Ontario, visit http://app.ene.gov.on.ca/pepsis/

REFERENCES

Ontario Invasive Plant Council. 2012., Invasive Common (European) Buckthorn (*Rhamnus cathartica*) Best Management Practices in Ontario [PDF]. Available at:

https://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/06/OIPC_BMP_Buckthorn.pdf