

MEMORANDUM

To: Jillian Normand, Mattamy Homes
From: Anne-Claude Schellenberg
Date: May 25, 2018
Subject: **Street Tree Planting Assessment – Summerside West Phase 4** Project no: 17-188

This memo provides an assessment of the potential for street tree planting in the Summerside West Phase 4 community in terms of the geotechnical findings summarized in the Paterson Group Report PG4049-2 (May 14, 2018). Based on the Atterberg test results summarized in this report, a 4.5 m tree-to-foundation setback is recommended in areas with low-to-moderate plasticity clay soils, and a minimum 7.5m tree-to-foundation setback, for small trees only, is recommended in areas with high plasticity soils, in accordance with the City of Ottawa’s *Tree Planting in Sensitive Marine Clay Soils – 2017 Guidelines*. Soil volume and local grading at the tree are also addressed in accordance with the 2017 Guideline document.

Subdivision design criteria and assumptions

The site zoning permits a minimum front yard setback of 3.0m. The front yard setback shown on the ROW cross sections for this community is 3.25m for all conditions except the 18m-with-sidewalk, shown as 4.25m. Increased front yard setbacks of up to 1m are being contemplated to permit tree planting in high plasticity clay soil areas. The proposed minimum lot widths are 9.14m for singles and 6.5m for townhomes. Driveways should be paired where possible to permit canopy tree planting. Under the current zoning bylaw driveways may be installed up to 50% of the total lot width. These assumptions will be used to provide an assessment of tree planting in this community.

Review of required tree-to-foundation distance

The tree-to-foundation setback, based on the Right-of-Way (ROW) cross-sections, is demonstrated below.

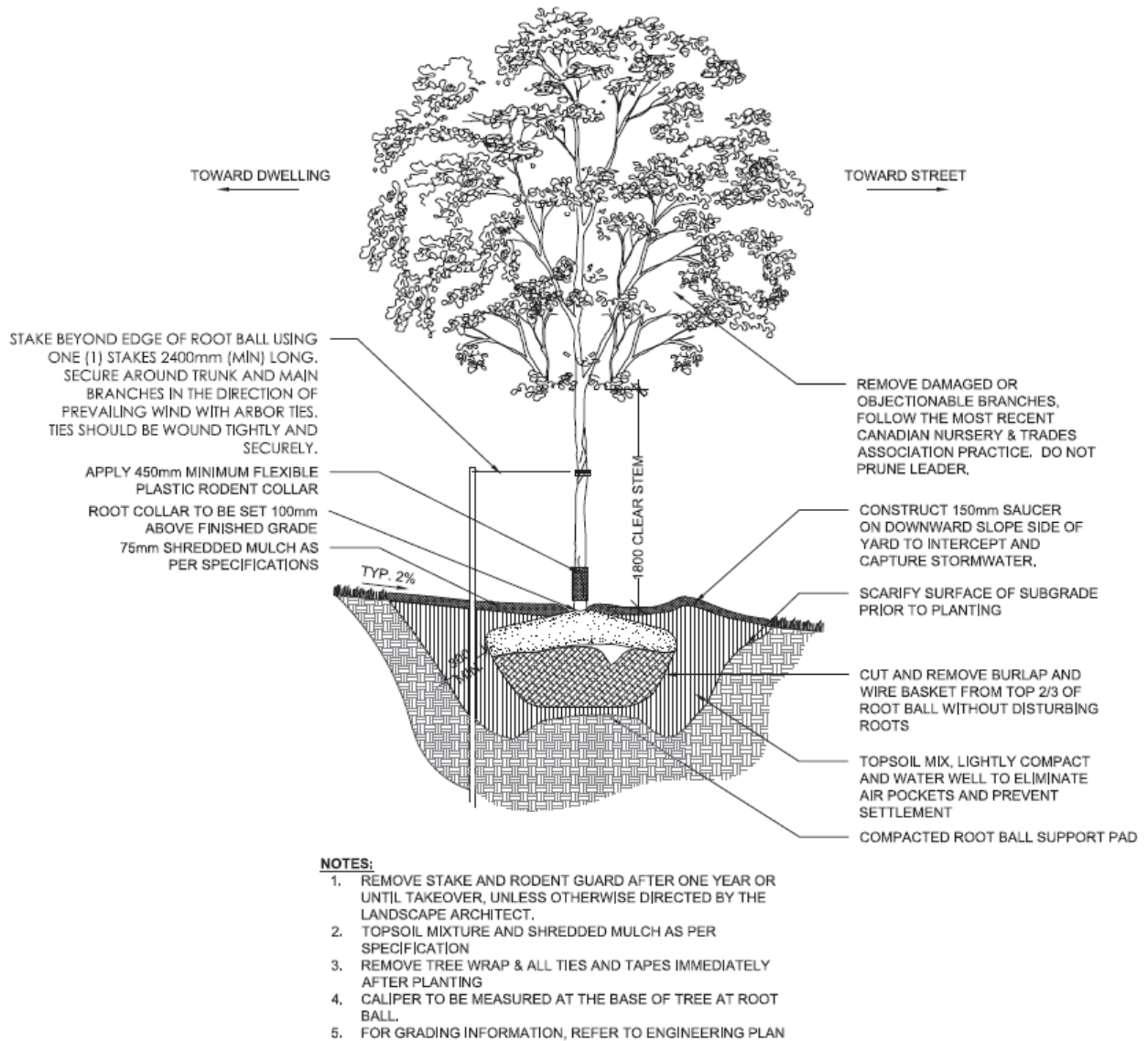
ROW Cross Section	Front Yard Setback per ROW Cross Section (m)	Tree-to-Foundation Distance (m)	Complies with Low-to-Mod. Plasticity, 4.5m distance	Complies with High Plasticity, min. 7.5m distance
14.75 m	3.25	5.75	yes	no
18.0 m – w. sidewalk	4.25	6.50	yes	no
18.0 m – w/o sidewalk	3.25	6.50	yes	no
24.0 m – w. sidewalk	3.25	7.25	yes	no
24.0 m – w/o sidewalk	3.25	7.25	yes	no

ROW Cross Section	Contemplated Increased Front Yard Setback (m)	Tree-to-Foundation Distance (m)	Complies with Low-to-Mod. Plasticity, 4.5m distance	Complies with High Plasticity, min. 7.5m distance
14.75 m	4.25	6.75	yes	no
18.0 m – w. sidewalk	5.25	7.50	yes	yes
18.0 m – w/o sidewalk	4.25	7.50	yes	yes
24.0 m – w. sidewalk	3.50	7.50	yes	yes
24.0 m – w/o sidewalk	3.50	7.50	yes	yes

In all cases, the front yard setbacks above comply with the City’s required tree-to-foundation setback in low-to-moderate clay soil areas. Small (up to 7.5m) and medium (7.5 – 15m) trees will be able to be planted in these areas.

The contemplated front yard setbacks are required to meet the City’s setback guidelines for high plasticity clay soil areas, however the 14.75m ROW does not permit tree planting under the current scenario. Only small trees will be able to be planted in high plasticity clay soil areas.

Standard detail for surface drainage toward the tree root zone



Review of available soil volume

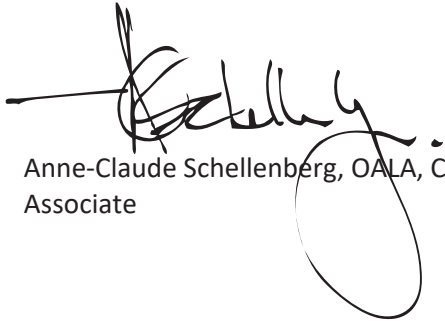
The City requires the provision of 25m³ of available soil volume for small trees (up to 7.5m mature height) and 30m³ for medium-sized trees (7.5-15m mature height) in areas with clay soils. Available soil volume is “based on a depth of 1.5m below finished grade.... It may include lands in the right-of-way and on private property, but it must subtract the volume of the shallow utility trenches.” The following table summarizes soil volume calculations, based on the minimum lot frontages, for both singles and towns with both paired and non-paired driveways.

SOIL VOLUME CALCULATION		LOT INFO		GROSS SOIL VOLUME										SUBTRACT: UTILITY TRENCH VOLUMES						NET VOLUME (m3)	Soil Volume Supports
				Lawn Width (m)		Lawn Length (m)		Area		Soil Volume (m3)		Main Line Service Trench*		Lateral Service Trench*		Trench Volume (m3)	Trench Depth (m)	Trench Width (m)	Lot Length (m)		
				Min. Frontage	Max. Driveway Width	Building to curb	Sidewalk + median	Lawn Width	Lawn Length	Area	Soil Depth	Soil Volume	Trench Width	Trench Depth	Trench Volume						
ROW	Dwelling	Driveway	Min. Frontage	Max. Driveway Width	Lawn Width	Lawn Length	Area	Soil Depth	Soil Volume	Trench Width	Trench Depth	Trench Volume	Trench Depth	Trench Width	Lot Length	Trench Volume	Trench Depth	Trench Width	Lot Length		
14.75m	Single	Paired	9.14	4.57	4.57	8.25	37.70	1.50	56.55	4.57	1.20	8.23	1.50	0.60	8.25	4.95	1.00	0.60	8.25		
	Single	Unpaired	9.14	4.57	4.57	8.25	37.70	1.50	56.55	4.57	1.20	8.23	1.50	0.60	8.25	4.95	1.00	0.60	8.25		
	Town	Paired	6.50	3.25	3.25	8.25	26.81	1.50	40.22	3.25	1.20	5.85	1.50	0.60	8.25	4.95	1.00	0.60	8.25		
	Town	Unpaired	6.50	3.25	3.25	8.25	26.81	1.50	40.22	3.25	1.20	5.85	1.50	0.60	8.25	4.95	1.00	0.60	8.25		
18.0m with sidewalk	Single	Paired	9.14	4.57	4.57	10.00	37.47	1.50	56.21	4.57	1.20	8.23	1.50	0.60	8.20	4.92	1.00	0.60	8.20		
	Single	Unpaired	9.14	4.57	4.57	10.00	37.47	1.50	56.21	4.57	1.20	8.23	1.50	0.60	8.20	4.92	1.00	0.60	8.20		
	Town	Paired	6.50	3.25	3.25	8.20	26.65	1.50	39.98	3.25	1.20	5.85	1.50	0.60	8.20	4.92	1.00	0.60	8.20		
	Town	Unpaired	6.50	3.25	3.25	8.20	26.65	1.50	39.98	3.25	1.20	5.85	1.50	0.60	8.20	4.92	1.00	0.60	8.20		
18.0m without sidewalk	Single	Paired	9.14	4.57	4.57	10.00	45.70	1.50	68.55	4.57	1.20	8.23	1.50	0.60	10.00	6.00	1.00	0.60	10.00		
	Single	Unpaired	9.14	4.57	4.57	10.00	45.70	1.50	68.55	4.57	1.20	8.23	1.50	0.60	10.00	6.00	1.00	0.60	10.00		
	Town	Paired	6.50	3.25	3.25	10.00	32.50	1.50	48.75	3.25	1.20	5.85	1.50	0.60	10.00	6.00	1.00	0.60	10.00		
	Town	Unpaired	6.50	3.25	3.25	10.00	32.50	1.50	48.75	3.25	1.20	5.85	1.50	0.60	10.00	6.00	1.00	0.60	10.00		
24.0m with sidewalk	Single	Paired	9.14	4.57	4.57	10.75	40.90	1.50	61.35	4.57	1.20	8.23	1.50	0.60	8.95	5.37	1.00	0.60	8.95		
	Single	Unpaired	9.14	4.57	4.57	10.75	40.90	1.50	61.35	4.57	1.20	8.23	1.50	0.60	8.95	5.37	1.00	0.60	8.95		
	Town	Paired	6.50	3.25	3.25	10.75	29.09	1.50	43.63	3.25	1.20	5.85	1.50	0.60	10.75	6.45	1.00	0.60	10.75		
	Town	Unpaired	6.50	3.25	3.25	10.75	29.09	1.50	43.63	3.25	1.20	5.85	1.50	0.60	10.75	6.45	1.00	0.60	10.75		
24.0m without sidewalk	Single	Paired	9.14	4.57	4.57	10.75	49.13	1.50	73.69	4.57	1.20	8.23	1.50	0.60	10.75	6.45	1.00	0.60	10.75		
	Single	Unpaired	9.14	4.57	4.57	10.75	49.13	1.50	73.69	4.57	1.20	8.23	1.50	0.60	10.75	6.45	1.00	0.60	10.75		
	Town	Paired	6.50	3.25	3.25	10.75	34.94	1.50	52.41	3.25	1.20	5.85	1.50	0.60	10.75	6.45	1.00	0.60	10.75		
	Town	Unpaired	6.50	3.25	3.25	10.75	34.94	1.50	52.41	3.25	1.20	5.85	1.50	0.60	10.75	6.45	1.00	0.60	10.75		
Notes																					
1. Trench width and depth estimated by Civil Eng.																					
2. Building to curb distance is based on the closest portion of the building foundation to the curb.																					
3. A medium tree (approx 7.5-15m mature height) requires 30m3 of continuous soil volume (City of Ottawa).																					
4. A small tree (approx 7.5m mature height) requires 25m3 of continuous soil volume (City of Ottawa).																					
5. Refer to City of Ottawa "Tree Planting in Sensitive Marine Clay Soils – 2017 Guidelines" for other tree planting conditions.																					

Conclusions

The contemplated design permits tree planting in both low-to-medium and high plasticity clay soil areas except for the 14.75m ROW in high plasticity clay soil areas. It is anticipated that the municipal requirements for street tree planting will be met in this community. The available soil volumes do not present any constraints to tree planting. It is recommended that driveways be paired where possible, to permit canopy tree planting.

I trust this is satisfactory, please don't hesitate to contact the undersigned should you require additional information.

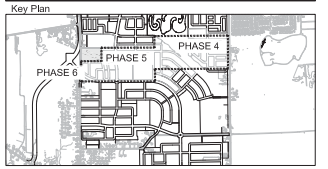


Anne-Claude Schellenberg, OALA, CSLA
Associate

List of attachments:

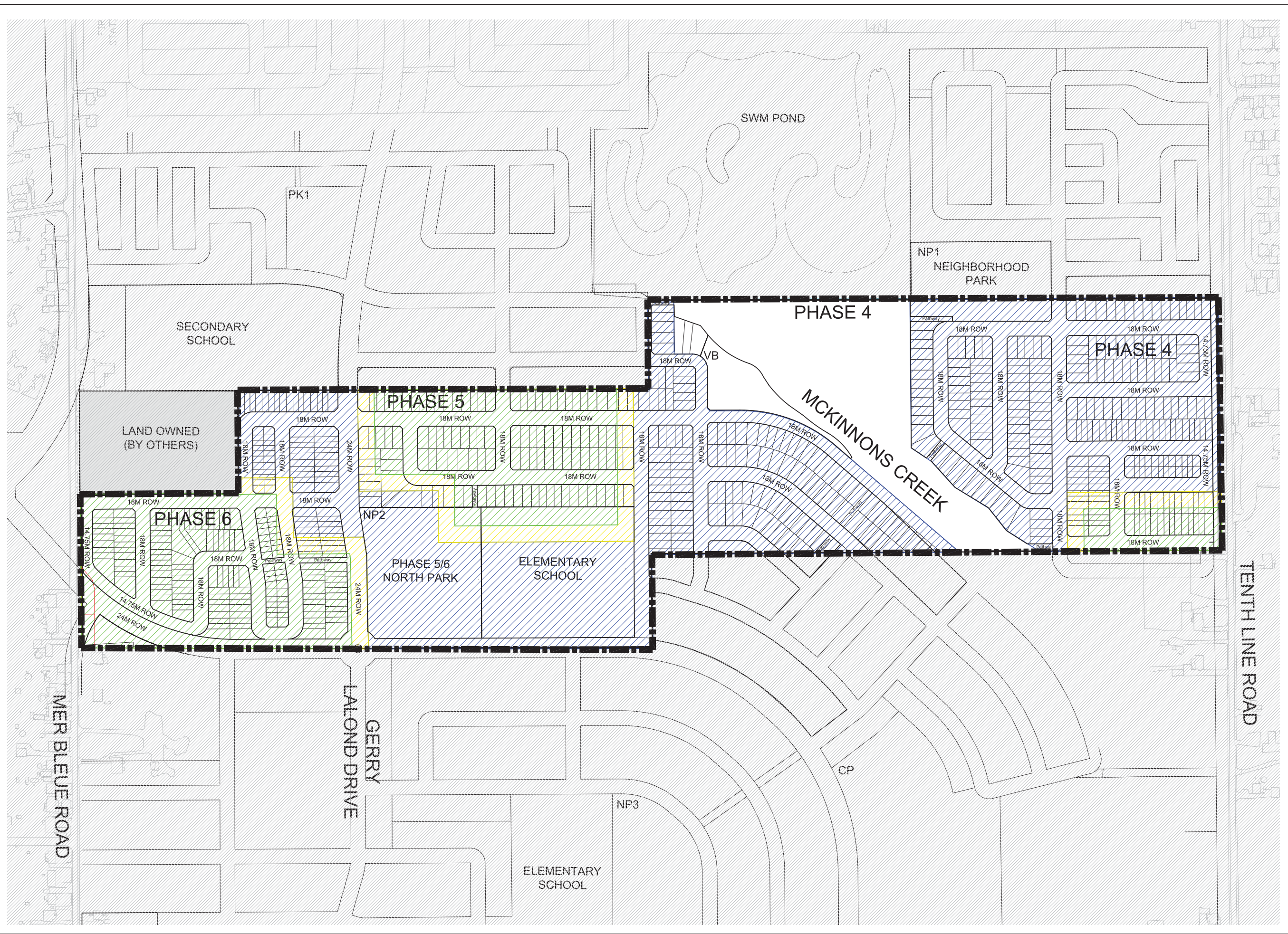
1. Summerside West Phases 4, 5 and 6: Geotechnical Overlay – Tree Planting Setback Recommendations

Contractor shall check all dimensions on the work and report any discrepancy to the Landscape Architect before proceeding. All drawings and specifications are the property of the Landscape Architect and must be returned at the completion of the work. This drawing is not to be used for construction until signed by the Landscape Architect.

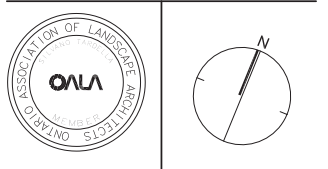


LEGEND

	HIGH PLASTICITY CLAY SOILS TREE TO FOUNDATION DISTANCE = 7.5M - SMALL TREES 12-15M - MEDIUM TREES 20M - LARGE TREES
	BUFFER ZONE ADJACENT TO HIGH PLASTICITY CLAY SOILS TREE TO FOUNDATION DISTANCE = 7.5M BUFFER - SMALL TREES 12-15M - MEDIUM TREES 20M - LARGE TREES
	LOW TO MEDIUM PLASTICITY SOILS TREE TO FOUNDATION DISTANCE SMALL MEDIUM TREES = 4.5M LARGE TREES = MATURE HEIGHT OF TREE



No.	Description	Date
1	GEOTECHNICAL OVERLAY	MAY 25/18



NAK
design strategies
100-250 BESSERER STREET, OTTAWA, ON K1N 6R3 CANADA
T 413.237.2346 F 413.237.4423 NAKDESIGNSTRATEGIES.COM

**SUMMERSIDE WEST
GEOTECHNICAL OVERLAY
PHASE 4-6**

OTTAWA, ON		
Title		
TREE PLANTING SETBACK RECOMMENDATIONS		
Date	September, 2017	Sheet
Scale	1:2000	
Drawn	LW	
Checked	ACS	
Job No.	17-188	