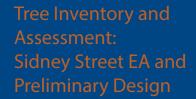
SIDNEY STREET CORRIDOR IMPROVEMENTS (BELL BOULEVARD TO TRACEY STREET) MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

APPENDIX C

Tree Inventory and Assessment Report

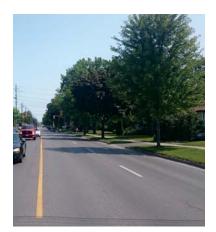














January, 2015
Cima+ project #C14-0026



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Appendix A

Tree Inventory and Assessment Drawing TI-1 to TI-5

1. INTRODUCTION

CIMA+ has been retained by the City of Belleville to complete Municipal Class Environmental Assessment and Preliminary Design services for Sidney Street Corridor Improvements from Bell Boulevard to Tracey Street. The purpose of this Tree Inventory and Assessment Report is to record species, size, and condition of trees within the right-of-way, evaluate the expected impact of proposed construction, and to provide information and specifications to assist with tree preservation.

2. LIMITATIONS

The assessment presented in this report has been made using accepted standard arboriculture techniques as outlined in the Council of Tree and Landscape Appraisers *Guide for Plant Appraisal*, 9th Edition (2000). These techniques include visual examination of above ground parts of each tree. The trees observed were not climbed, cored, or dissected, and excavation for detailed root crown inspection was not performed. Since some symptoms may only be present seasonally, the extent of observations that can be made may be limited by the time of year in which the inspection took place.

Since trees are living organisms, their health and vigour continually change over time due to seasonal variations, changes in site conditions, and other factors. For this reason, the assessment presented in this report is valid at the time of inspection, and no guarantee is made about the continued health of trees that are deemed to be in good condition. It is recommended that the trees be re-assessed periodically to identify changes in condition. While every standing tree has the potential for failure and therefore poses some risk, a tree assessment is a good indication of present health and potential problems that could arise in the future.

CIMA+ has prepared this report for the sole use of the client. Any use of this report by a third party, as any decision based on this report, is the singular responsibility of the third party. CIMA+ will not be held responsible for eventual damages towards a third party resulting from decisions taken, or based, on this report.

3. METHODOLOGY

The site was visited by a CIMA+ ISA Certified Arborist on August 1, 2014. Trees were numbered, identified, measured, and assessed for condition. The tree inventory and assessment table containing this information is included in Section 5.

Drawings No. TI-1 to TI-5 show locations of the numbered trees included in the assessment. The drawing is included as Appendix A.

3.1 Tree Size

Size refers to trunk diameter (caliper or DBH) measured in centimetres at 1.4m above the ground. Where trees had more than one trunk from the base, the size of each trunk was recorded. Where trees forked to codominant trunks, each trunk was measured or the

diameter was measured under the flare and the approximate height of the measurement was noted.

The size of smaller trees and shrubs is recorded in the Notes section as approximate height and/or width.

3.2 Condition Rating

Trees and shrubs were given a subjective condition rating of Excellent, Good, Fair, or Poor. Following is a summary of how the ratings are determined:

- + EXCELLENT (E): no apparent health problems; good structural form
- + GOOD (G): minor problems with health and/or structural form
- + FAIR (F): more serious problems with health and/or structural form
- + POOR (P): major problems with health and structural form

The notes section of the assessment table in this report includes details of observations made concerning the structural form and health of trees.

3.3 Observations

Several structural defects are included in the Notes section of the tree inventory and assessment table. Structural defects are often insignificant when a tree is small, but can pose problems when the tree grows larger and the weight of branches put added stress on defects that can cause weakness. Larger trees also have the potential to cause more damage should they fail. Following is an explanation of some of the problems included in the Notes section of the inventory and assessment table, and how they can affect trees over time.

- + *Girdling roots* are roots that cross over each other or around the trunk of the tree. As these roots grow larger, they can restrict the uptake of nutrients and water, and inhibit structural anchorage.
- + Exposed surface roots can be a result of erosion and soil compaction combined with increasing root diameter. It is important to protect exposed roots from pedestrian and vehicular traffic, and lawn mowers. Damage to roots can cause stress and can result in canopy dieback.
- + *Included bark* is bark that has become embedded in a crotch where limbs join, and causes weakened branch attachments. As the trunk and branch increase in diameter, the bark of each stem in the tight crotch begin to push apart, increasing the likelihood of failure.
- + Narrow branch angles, especially where there is included bark, can be a problem as trees grow larger because the inner wood is poorly attached.
- + Codominant leaders (2 trunks or branches of approximately equal size) often have narrow branch angles, and are associated with weak branch attachment. Strong branch attachments occur between 2 limbs of unequal size with enough space for branch enlargement and formation of a branch bark ridge.

- + When a tree has *multiple branches from the same point of attachment*, the branches usually have characteristics of weakly attached branches.
- + Crossing branches are often associated with narrow branch angles. Branches that cross over each other often rub, causing damage and therefore weakness to one or both branches, and crossing branches can eventually girdle each other.
- + Sunken areas under scaffold branches is often an indication of internal decay.
- + Sapsucker holes refers to holes in the trunk or branches made by birds in search of insects. This damage is a sign of insects in the tree, and can make trees more susceptible to other infection.
- + A tree with a *lean* can be more susceptible to windthrow and soil failure. *Self-correcting lean* refers to a natural correction of the lean by development of new growth that counteracts the lean of the trunk to provide a more balanced form.
- + Dieback refers to the ends of branches dying, which is often associated with root problems.
- + Staghorn effect refers to dead branches protruding through the crown of a tree, and often indicates a state of significant decline.
- + *Grapevines* growing over the canopy of trees suppress vigour and eventually kill trees by blocking sunlight. They also add weight that can make trees more susceptible to breakage during storms.

The detailed observations made concerning tree species, size, and condition are included in the tree inventory and assessment table in Section 4.

4. TREE INVENTORY AND ASSESSMENT TABLE

Tree No.	Address	Species	Size (cm)	Rating	Notes	Impact
1		Mixed			Trembling Aspen FG codominant leaders from 1.5m, 40-50cm with included bark. Buckthorn shrubs at base, several dead branches, grapevine, Virginia Creeper. Treeline along adjacent property includes 5-30cm Ash, many with several dead branches, Fair Condition; Buckthorn shrubs; codominant 40-40cm Trembling Aspen FG with many dead branches. Purple loosestrife.	Removal of one large Trembling Aspen and some brush vegetation due to proximity to proposed curb and sidewalk location. Pruning of treeline required for sidewalk clearance.
2		Ash	14	F	Tip dieback, small dead branches. Buckthorn at base, goldenrod, potentilla shrub.	No impact expected

Tree No.	Address	Species	Size (cm)	Rating	Notes	Impact
3		Hybrid Maple	40- 39.5- 7.5	G	Codominant leaders from 0.5m, small stem growing from crotch. Narrow branch angles with included bark, girdling roots, decay in surface roots, likely from mechanical damage. Crossing branches, branches extend past curb over street, small tar spot on leaves.	Removal required
4		Buckthorn group	2-5	FG	Large group of multi-stem shrubs	Removal recommended for sidewalk clearance and removal of invasive species
5	Rona	Spirea shrubs		G	Rona entrance. Clipped Spirea shrubs, 1.2m tall x 1.5m wide, dieback in centre of some	No impact expected
6		Austrian Pine	24	G	No root flare. Inner needle dieback, pitch dried along trunk, foliage browning on a few branches.	No impact expected
7		Austrian Pine	34	FG	Several low side branches with apical dominance. Pitch along trunk, crossing branches, sapsucker holes in several areas on trunk, inner needle dieback	Removal required
8	Rona	Norway Maple	23.5	G	Girdling roots, sunken area on trunk, low branches, narrow branch angles with included bark, tar spot, small dead branches.	Removal required
9	Rona	Norway Maple	21.5	G	Girdling roots, tar spot	Removal required
10	Rona	Norway Maple	21	G	No root flare visible, narrow branch angles with included bark. Low branches, seam with decay along trunk, small dead branches, inner canopy dieback and staghorn effect, tar spot.	Removal required
11	Rona	Potentilla shrubs		FG	Virginia Creeper and grapevine growing over shrubs	Removal required
12		Potentilla shrubs		FG	Grapevine, dieback, weeds and grass in bed	Removal required

Tree No.	Address	Species	Size (cm)	Rating	Notes	Impact
13		Norway Maple	19	G	Girdling roots, decay on surface roots	Removal required
14		Norway Maple	22	FG	Girdling roots, low branches, narrow branch angles with included bark, slightly sparse, inner canopy deiback, staghorn effect, small dead branches, tar spot on leaves	Removal required
15		Austrian Pine	35	G	Limbed up to 1.5m, inner canopy dieback	Removal required
16		Austrian Pine	20.5	G	Slight lean, limbed up to 1.5m, inner canopy dieback	Removal required
17		Honeylocust	23-10- 13	G	Shrubby form, main trunk has low branches, smaller trunks growing from base. Narrow branch angles with included bark, fused crossing branches, small dead branches, broken branches, branches in conflict with overhead wires	No impact expected
18		Norway Maple	20	F	Girdling roots, exposed surface roots, crossing branches, dieback through top of canopy, tip dieback, tar spot on leaves	No impact expected
19		Honeylocust	15	FG	Measured at base of trunk. Shrub form, branches from just above the base. Small dead branches.	No impact expected
20		Norway Maple	24	FG	Minor girdling roots, several dead branches, one 10cm diameter. Tar spot on leaves.	No impact expected
21		Norway Maple	23.5	FG	Decay in surface roots, asymmetrical trunk cross-section, very narrow branch angles with included bark, conflict with overhead wires, small dead branches, one-sided canopy towards road, tar spot on leaves.	No impact expected

Tree No.	Address	Species	Size (cm)	Rating	Notes	Impact
22		Honeylocust	22-26	G	Codominant leaders from 0.5m, shrubby form, crossing branches, inner branch dieback, small dead branches, larvae on trunk, some low branches, some broken branches over parking lot.	Removal required
23	664 Sidney St.	Silver Maple	106	F	Codominant leaders from 3-4m height, narrow branch angles with included bark and vegetation growing in crotch. 30-40cm cavity at old branch failure site on 1 codominant branch, with thin edge of woundwood and extensive column of decay. 10-15cm cavity in side of trunk. Small adventitious shoots, large branches have formed from adventitious shoots. Large dead branch approx 20cm, many small dead branches. Carpenter ants observed. Tree is in decline.	Removal required
24	664 Sidney St.	White Spruce	17	G	Limbed up to 2-3m. Small dead branches.	Removal recommended; root impact will diminish health of tree
25	660 Sidney St.	Flowering Crabapple	29	G	Suckers at base of tree. Apples up to 5cm. broad form, branch tips extend within 1m from curb.	Removal required
26	660 Sidney St.	Silver Maple	83	G	Small areas of decay on trunk with frass, cavity with scraped bark along edges. Narrow branch angles with included bark, vegetation growing in crotch, dead branches hanging in canopy. Buckthorn shrubs at base and Virginia Creeper beginning to grow up trunk. Small dead branches.	Removal required
27		Ash	10.5, 12, 8	F	3 trunks from base, poor growth, small dead branches, flower gall.	No impact expected

Tree No.	Address	Species	Size (cm)	Rating	Notes	Impact
28		Ash	10.5, 12.5, 11, 14	F	3 trunks from base, one is codominant. Decay at pruning wounds, small dead branches, adventitious shoots, slight lean, leaf scorch.	No impact expected
29	648 Sidney St.	Shrubs		G	Shrubs at sign location. 2 Globe Cedar approx. 1m x 1m, Emerald Cedar in middle.	No impact expected
30	646 Sidney St.	Globe Cedar		G	6 shrubs, approx. 0.4m, last one (closest to house) has dieback.	No impact expected
31	646 Sidney St.	Silver Maple	38.5, 60	G	Codominant leaders at 1.2m height. Narrow branch angles with included bark, decay at pruning wounds. Small adventitious shoots and branches formed from adventitious shoots. Small dead branches, canopy extends over road almost to centre line.	Removal required
32	642 Sidney St.	Norway Maple	32.5	G	Girdling roots, decay at pruning wounds, small dead branches, inner canopy dieback. Canopy extends over road about 2m past curb.	Removal required
33	640 Sidney St.	Burning Bush		G	Multi-stem shrub, 1.5m high x 2m width. Upright Juniper behind.	No impact expected
34	636 Sidney St.	Norway Maple	21	G	Narrow branch angles with included bark, crossing branches, tar spot on leaves.	Removal required
35	636 Sidney St.	Willow hedge		G	1.5 – 2m height, dieback along corner of hedge.	Removal of some shrubs (area with dieback) may be required
36	636 Sidney St.	Crimson Norway Maple	40 app	G	Adventitious shoots, decay at pruning wounds, small dead branches.	No impact expected
37	636 Sidney St.	Sugar Maple	25 арр	G	Narrow branch angles with included bark, upright branching form, crossing branches, decay at pruning wounds, branches extend under overhead wires.	No impact expected

Tree No.	Address	Species	Size (cm)	Rating	Notes	Impact
38	636 Sidney St.	Willow hedge		G	1.5 – 2m height, dieback along corner of hedge.	No impact expected
39	8 Tracey St.	Mountain Ash	17.5	FG	Narrow branch angles with included bark, somewhat sparse. Canker/decay at branch union.	No impact expected
40	8 Tracey St.	Norway Maple	43.5	G	Girdling roots, codominant leaders partway through canopy, broad form. Extensive tar spot on leaves. Canopy extends to edge of pavement under overhead wires.	No impact expected
41	8 Tracey St.	Crimson Norway Maple	27.5	G	Measured at 1m above grade. Low branching, girdling roots, narrow branch angles with included bark. Tar spot on leaves.	No impact expected
42	10 Tracey St.	White Birch	17, 15.5, 13	G	Codominant leaders from base, narrow branch angles with included bark. One of main stems has codominant leader with narrow branch angles, crossing branches rubbing. Small dead branches. Service wire through canopy.	No impact expected
43	10 Tracey St.	Honeylocust	34	G	Crossing branches fused, seam along trunk with many small dead branches through inner canopy. Broad canopy extends past sidewalk.	No impact expected
44	9 Tracey St.	White Birch	14, 15.5, 17, 18.5,2 2	G	5 trunks from base, small juniper growing from centre. 2 trunks have significant lean, broad spreading form, small dead branches.	No impact expected
45	9 Tracey St.	Flowering Crabapple	21.5	G	Slight lean, small dead branches, canopy arches over sidewalk.	No impact expected
46	7 Tracey St.	Blue Spruce	42	F	Inner dieback, somewhat sparse. Red mulch circle surrounding tree.	No impact expected

Tree No.	Address	Species	Size (cm)	Rating	Notes	Impact
47	7 Tracey St.	Norway Maple	47.5	G	Girdling roots, narrow branch angles with included bark. Adventitious shoots at pruning wounds, small dead branches. Tar spot on leaves. Several dead branches in centre of canopy, small dead branch hanging.	No impact expected
48	7 Tracey St.	Crimson Norway Maple	26, 27.5	F	Codominant leaders, narrow branch angles with included bark. Canker with decay at main union, sunken area. Small dead branches.	No impact expected
49	5 Tracey St.	Flowering Crabapple	31	FG	Measured at 1m height. Codominant leaders, horizontal branching structure, broad canopy, many small dead branches.	No impact expected
50		Apple spp.	26	G	Measured at base of trunk. Low branching, narrow branch angles with included bark, adventitious shoots, small dead branches. Apples are approx. 3" diameter.	Removal required
51		Silver Maple	49.5	FG	Measured at 1m above grade. Codominant leaders, branches lean apart, broad canopy extends past sidewalk. Decay at pruning wounds.	Removal required
52		Flowering Crabapple	20	G	Low branching, trunk surrounded by green suckers (leaves of tree are red). Broad canopy extends to sidewalk.	No impact expected
53	626 Sidney St.	Silver Maple	42	G	Codominant leaders, adventitious shoots. Branches droop to ground adjacent to sidewalk. Tar spot on leaves.	No impact expected
54	626 Sidney St.	Crimson Norway Maple	28	G	Small dead branches, service wire extends through canopy.	Removal required
55	624 Sidney St.	White Spruce	Арр 40	G	Limbed up to 2m, service wire through canopy. Brick garden adjacent with hostas and coral bells.	No impact expected

Tree No.	Address	Species	Size (cm)	Rating	Notes	Impact
66	5 Tracey St.	Mountain Ash	33	Р	Measured at 0.5m, codominant leaders with narrow branch angles and included bark. Half of trunk circumference has decay from crotch to roots, half an canopy is dead, sparse.	Removal required
67	5 Tracey St.	Blue Spruce	45	G	Small girdling roots, limbed up to 2.5m small adventitious shoots along trunk.	No impact expected
68	5 Tracey St.	Flowering Crabapple	25	G	Multiple branches from the same point of attachment, decay at pruning wounds, small dead branches.	No impact expected
69	5 Tracey St.	Blue Spruce	43	G	Extensive pitch dried along trunk, limbed up to 3m, adventitious shoots along trunk.	No impact expected
70	9 Tracey St.	Shrubs		G	0.75m height, 4 Potentilla shrubs around concrete bird bath	No impact expected
71	9 Tracey St.	Norway Maple	30	G	Narrow branch angles with included bark, small dead branches, tar spot on leaves.	No impact expected
72	9 Tracey St.	Shrub		G	Spirea shrub 1m x 1m, pink flowers	No impact expected
73	11 Tracey St.	Garden		G	Peony, hosta, cosmos and other annuals	No impact expected
74	17 Tracey St.	Norway Maple	18	G	Measured at 1m height, low branching, narrow branch angles, tar spot on leaves.	No impact expected
75	16 Tracey St.	Gardens		G	Gardens along driveway and front yard; Dahlias, coreopsis, Rudbeckia.	No impact expected
76	16/12 Tracey St.	Sugar Maple	80	G	Codominant leaders at 1m height, narrow branch angles with included bark. Located in corner of hedge. Small dead branches.	No impact expected
77	12 Tracey St.	Hedge		FG	Privet hedge with Norway Maple and Manitoba maple saplings	No impact expected
78	8 Tracey St.	Norway Maple	41.5	G	Narrow branch angles with included bark, tar spot on leaves.	Removal required

Tree No.	Address	Species	Size (cm)	Rating	Notes	Impact
79	8 Tracey St.	Shrub		G	Spreading Juniper with some dieback.	Removal required
80	8 Tracey St.	Shrub		G	Viburnum	No impact expected
81	633 Sidney St.	Flowering Crabapple	20-10- 11.5	G	3 codominant leaders from base, extensive decay at former branch union, broad spreading form, small dead branches.	Removal required
82	637 Sidney St.	Blue Spruce	15 app	GE		Removal required
83	Field	Trembling Aspen	10-15	FG	2 trunks growing from large stump	Removal required
84	Field	Trembling Aspen	25-50	FG	Codominant leaders from base, large dead branch and dieback.	Removal required
85	222 Bell Blvd.	Garden		G	Hostas and rocks in garden with black mulch	No impact expected
86	plaza	Linden	39.5	G	Suckers pruned from base of trunk	Removal required
87	plaza	Linden	42.5	G	Crook in trunk, adventitious shoots removed from trunk and base	Removal required
88	plaza	Austrian Pine	29	G	Slight lean, limbed up to 2.5m	Removal required
89	plaza	Austrian Pine	31.5	G	Slight lean, limbed up to 3m	Removal required
90	plaza	Austrian Pine	29.5	G	Codominant leaders at top, limbed up to 3m	Removal required
91	plaza	Shrubs		G	Spreading Junipers 1.2m tall, multi-stem ornamental shrub, 3m x 3m, black mulch and armourstone	Removal required
92	plaza	Shrub		G	Spreading Junipers	Removal required
93	Home Depot	Ash	37, 21	F	2 trunks, rocks at base. Smaller trunk has slight lean and crook. Many dead branches, somewhat sparse, heavy seed set. Virginia Creeper growing up larger trunk.	Removal recommended due to root impact, species and condition

5. CONSTRUCTION MANAGEMENT

The most typical construction damage to trees is root damage from compaction and severance. While the dripline of a tree's canopy is typically thought to be associated with the root area, the root

zones can actually extend significantly beyond the dripline of the tree, sometimes up to 2 or 3 times the height of the tree.

To protect trees, grade changes and construction activities that could cause soil compaction should be kept away from trees as much as possible. If roots will be damaged by excavation equipment, it is better to cut roots cleanly with sharp pruning tools rather than allow them to be torn by large equipment. Clean cuts will help to minimize decay and entry points for disease.

Equipment and materials should not be stored near trees, and equipment should not be left idling where exhaust could burn foliage.

In developing the site, new potential targets will be introduced (people and property), and this must be considered when developing a tree preservation plan. For example a tree with broken branches and decay is not hazardous if there are no potential targets present, but if development brings a potential target within the vicinity of the tree, pruning to reduce the likelihood of failure should be carried out. The effect of construction must also be considered in how it will affect the likelihood of failure of a tree, such as whether roots will be affected or whether removing adjacent trees will make a retained tree more susceptible to windthrow.

6. ASSESSMENT OF CONSTRUCTION IMPACT

The Impact column in the Tree Inventory and Assessment table notes the expected impact of the preferred road reconstruction design alternative.

A total of 33 trees and 8 shrubs/partial hedges will need to be removed to accommodate the road reconstruction.

It is recommended that new tree planting take place along the road corridor where space allows, possibly including on adjacent private property. Species should be non-invasive, and tolerant of urban conditions.

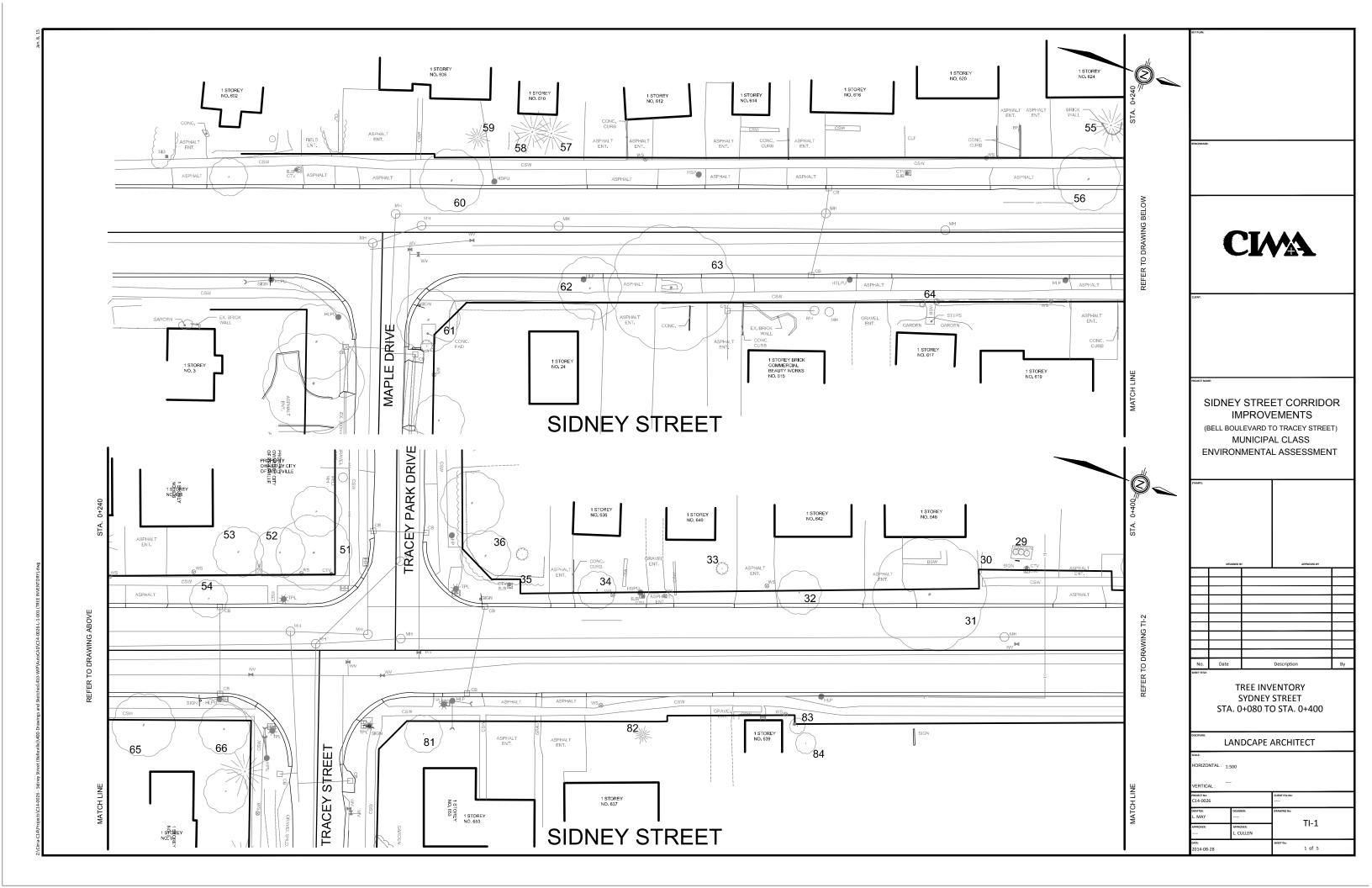
7. Certification

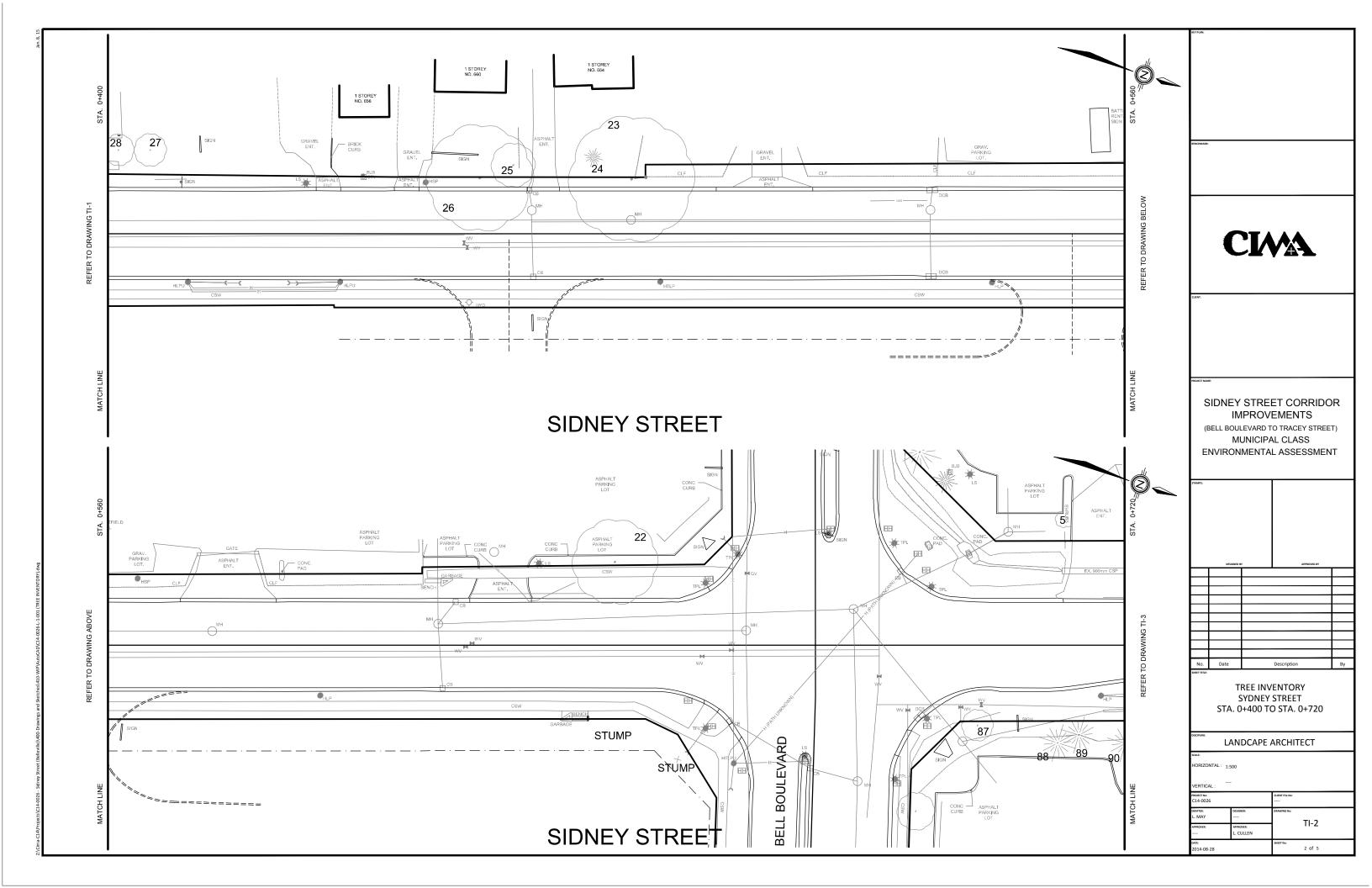
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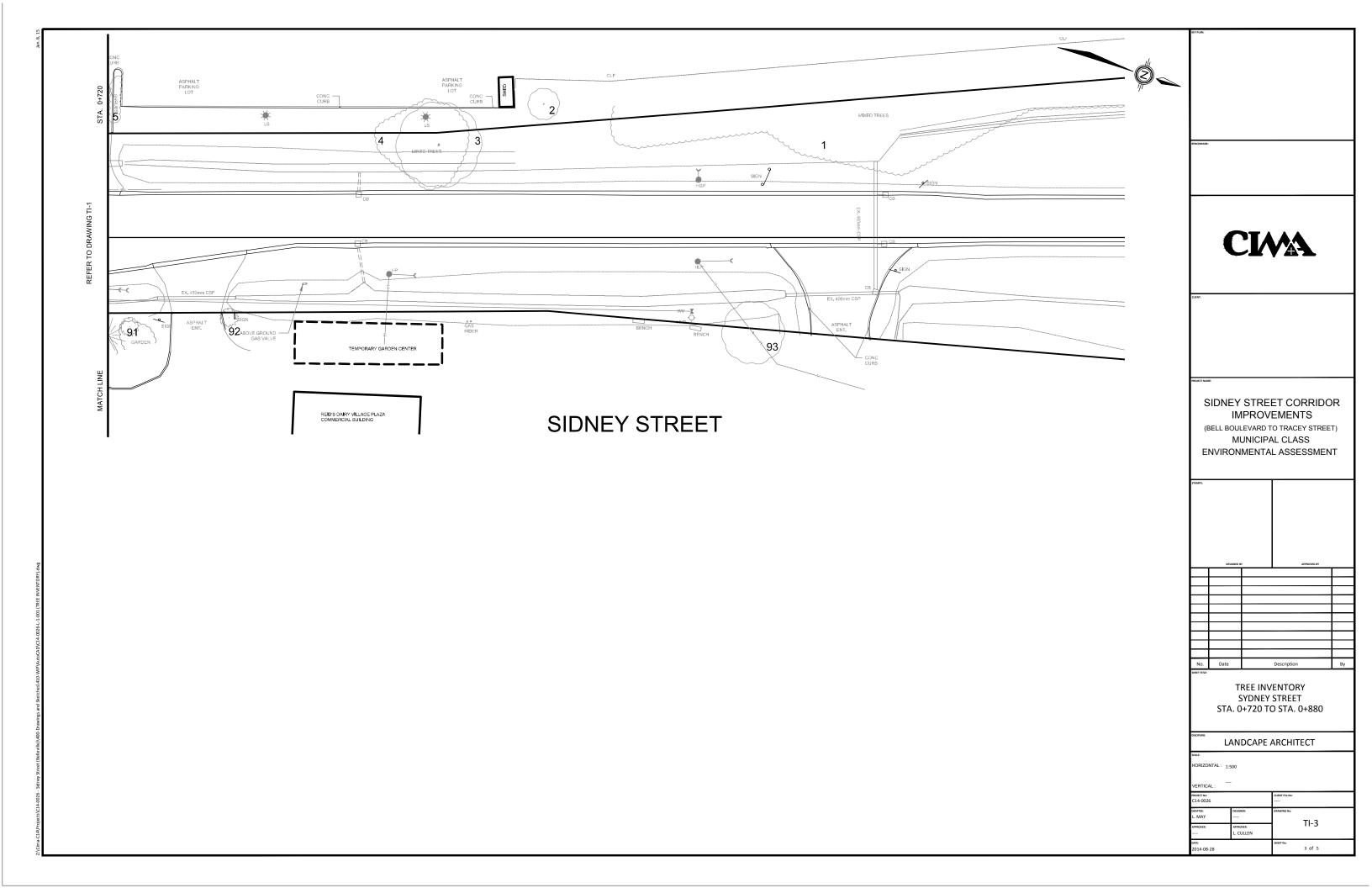
I certify that all the statements of fact in this assessment are true, complete, and correct to the best of my knowledge and belief, and that they are made in good faith.

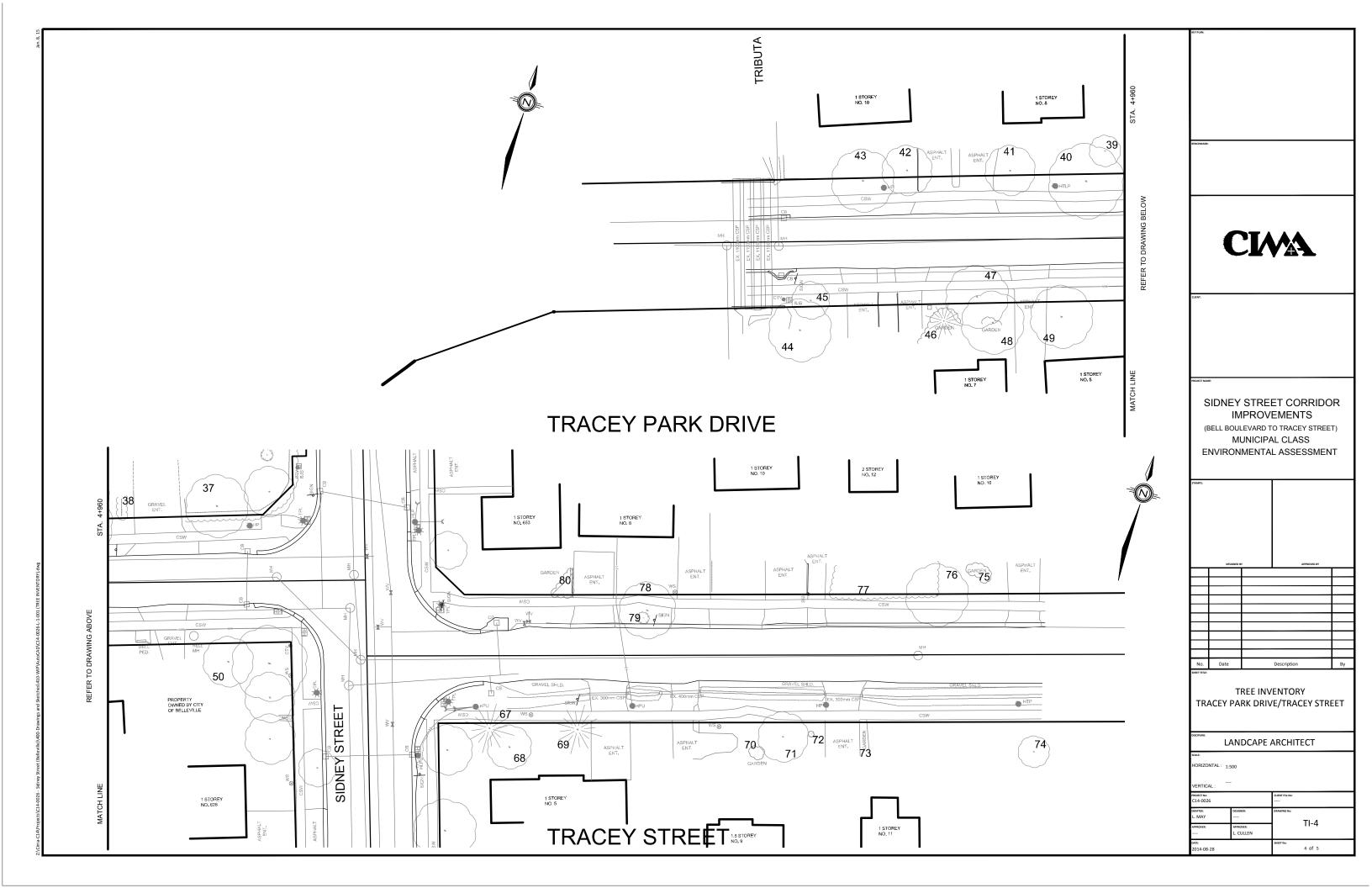
Lisa Cullen, ISA Certified Arborist ON-0741A

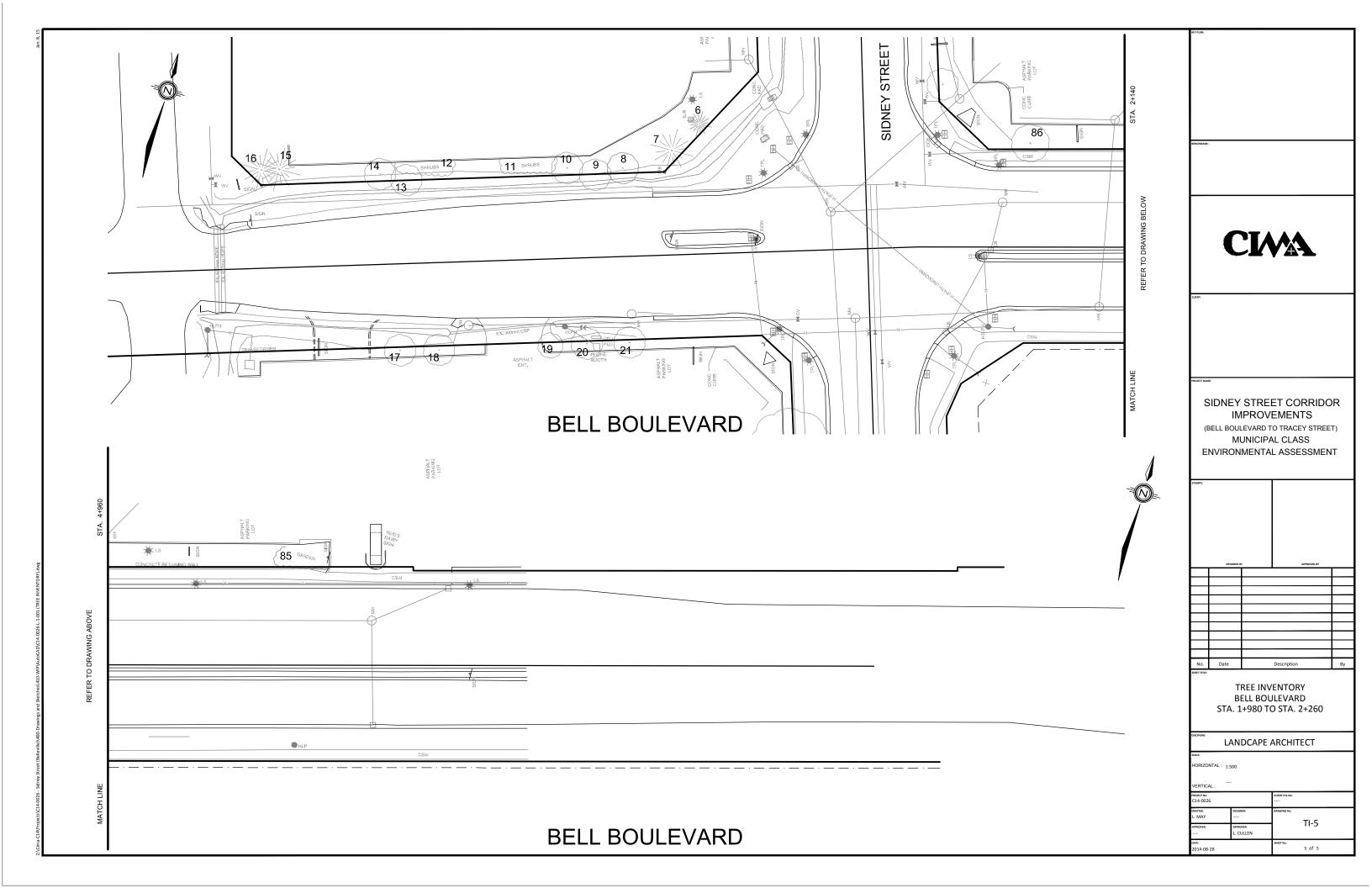
APPENDIX A
TREE INVENTORY DRAWINGS
TI-1 TO TI-5











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