UNIVERSITY OF TORONTO | Facilities & Services

Landscape design standard

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General requirements

General

1. The Architect shall follow the principles of the "University of Toronto St. George Campus, St. George Secondary Plan, 2022".
2. In undertaking new construction and renovations, the Architect shall preserve existing mature trees[1]. Any project that has an impact on a Client (representatives of University Planning, Design & Construction ("**UPDC**") and Facilities & Services ("**F&S**")) owned or maintained tree(s) shall include a Client commissioned report completed by a certified arborist. This report shall assess the condition of the tree(s) before the project begins. The report shall identify the species, condition, and physical dimensions of the tree(s), and include a plan for the protection of the tree(s) during the project.
3. The Architect shall ensure that any free-standing markers are integrated into the design of new buildings and landscape. These free-standing markers shall conform to the Client's design standards on signage. The markers shall be illuminated and be placed away from traffic.
4. The Architect shall ensure that Client requirements for bicycle parking is provided and integrated into the project's design.
5. The Architect shall consult with the Client to confirm availability of existing site landscape and furnishing stock before proposing new products.
6. This standard shall be read in conjunction with the Client's facility accessibility design standard and deliverable standard.
7. Information on any proposed alternatives shall be documented in the building design standard variance request form and submitted for the Client's review.
8. The design shall adhere to the principles of Crime Prevention Through Environmental Design (CPTED).
9. The plant material shall conform to the horticultural standards of the Canadian Nursery Trades Association with respect to size and quality.

[1] The removal of any tree is subject to review and requires approval from the Vice-President Operations and Real Estate Partnerships (VPOREP), and relevant municipal authority.

10 14 00 – Signage

General

1. All new open space design projects shall adhere to the Client's *Guidelines for Exterior Signage on the St. George Campus.*
2. Signage shall be a component of the landscape design and integrated into walls, structures and planting plans.
3. Signage and their supporting structures shall be resistant to graffiti and compatible with graffiti removal products.
4. Signs and posts shall be designed for easy removal to facilitate repairs.
5. Exterior signage and wayfinding shall be reviewed by the Client.
6. Refer to the Client's Exterior Signage Guidelines and City of Toronto Signage By-law for additional requirements.

32 13 00 – Rigid paving

General

1. In designing the reconstruction of streets on the west campus[2], the Architect shall work with the Client and the City of Toronto to establish a palette of materials.
2. The design for hardscaped areas shall utilize natural stone paving (granite preferred) in the Institutional Major Open Spaces identified in the Urban Design Guidelines. Other areas could utilize a combination of concrete pavers and / or poured in place concrete. Chosen natural material shall be sourced in Canada (where possible) and available in suitable quantities to support future maintenance needs.
3. Asphalt shall only be used for temporary repairs and shall not be used as a permanent material for pedestrian walkway systems.
4. The subbase shall be a minimum of 200 mm (8”) properly compacted screening. The sand shall be clean, sharp and free of deleterious materials. Where vehicles are expected, a concrete base layer shall be used to withstand pressure from emergency service vehicles. An edging material shall be used around the perimeter of paving stones. This edging material shall be durable enough to withstand movement of pavers under vehicular pressure and mechanically fastened.

[2] West campus is defined as the area bounded by St. George Street, College Street, Spadina Avenue, and Harbord Street.

32 31 00 – Fences and gates

General

1. Free standing walls shall not obstruct visibility or create secluded corners that may compromise personal safety.
2. Decorative walls, pillars, and gateways shall be designed to align with the architectural character and material palette of the campus. Materials used shall be resistant to vandalism and easily cleaned.
3. The removal of existing non-historic fences shall be reviewed with the Client. Where fences are required for access, screening, and safety, fences shall be designed to be aesthetically pleasing, not detract from the surroundings.

32 32 00 – Retaining Walls

1. Retaining walls used to mitigate grade changes or frame landscape area (ex. planters) shall be designed to serve as seating areas in high traffic areas.
2. The location and surface of retaining walls and adjacent landscape design shall consider deterrence of skateboarding.
3. The retaining walls supporting the sloped planter construction along St. George Street is an acceptable design for future projects.

32 33 00 – Site furnishings

General

1. Outdoor seating and street furniture shall be chosen based on both the long-term availability of the product and the longest life cycle available within the budget parameters. It shall be integrated into the general landscape and pedestrian movement system.
2. The seating and street furniture shall make use of reused, recycles or other materials to minimize life cycle impacts.
3. The street furniture and seating shall be designed for the comfort of the users and avoid tripping and sharp edges.
4. Furnished shall be designed for easy repair, and feature readily available parts. Surfaces shall be able to be refinished in case of vandalism.
5. Seatings shall be located no more than 30 metres apart.
6. Skateboard deterrence plan shall be provided.

Site bicycle racks

1. The design of bicycle racks shall follow City of Toronto's Guidelines for the Design and Management of Bicycle Parking Facilities with the "University of Toronto" marking. When installed in the City of Toronto Right-of-way, the "City of Toronto" marking shall be used.
2. Bicycle racks shall consist of a secure post and ring model cast into a concrete bed, see Appendix A for details. The design shall be reviewed with the Client.

Waste and recycling receptacles (recycling depots)

1. Multi-compartmental recycling and waste bins shall be used and follow the Client's four (4) stream program: garbage, mixed papers, mixed containers, and coffee cups. Waste bins shall hold clear plastic liners and be easily maintained and emptied by caretaking staff.
2. Standard of acceptance (refer to Appendix B):
    - Model: Waste Warrior MS-4-OD-22, Outdoor 4-slot in battleship grey or approved equivalent.
    - External dimensions:
        - Width: base 1493 mm (58.75''), lid 1511 mm (59.5")
        - Height: base 863 mm (34"), full unit 1130 mm (44.5")

    - Depth: base 559 mm (22”), lid 584 mm (23”)
- Four-hole system (as per internal unit):
    - Garbage rectangle: 203 mm x 127 mm (8” x 5”)
    - Bottles and Containers circle: 152 mm (6”)
    - Mixed paper slot: 254 mm x 51 mm (10” x 2”)
    - Other octagonal: 254 mm x 127 mm (10” x 5”) with clipped corners (38 mm long, 1.5”)
- Required features:
    - HD rings for bags
    - Galvanized wall between compartments
    - Commercial grade piano hinge
    - Sound dampeners on lid
    - HD chains
    - Drainage holes: 8 per unit, shared between middle compartments; chicken wire to prevent rodent entry
    - Flanged ends: to secure to grounds with lag bolts

3. Bins shall have designated areas for affixing instructive signs or stickers at recycling depots. Signs shall be highly visible and instructive, incorporating pictograms.
4. Bins shall be integrated into landscape design to minimize their visual impact and obstruction while maintaining a pleasant public realm experience.

Site manufactured planters

1. Site manufactured planters must establish an irrigation plan or include built-in irrigation per section 32 84 00.

Site seating and tables

1. Bench seating shall be proposed by the Architect for review by the Client. Proposed products should consider the need to ensure durability, ease of maintenance, and domestically sourced products.
2. Bench seating shall accommodate plaques for donor recognition.
3. Standard of acceptance for loose seating and tables:

4. Fermob Luxembourg Collection – lounge chair, lounge armchair, pedestal table, or approved equivalent.
5. The colours of site seating and tables shall be reviewed with the Client.

Lighting

1. Provide both street-level and pedestrian-level lighting.
2. This section shall be read in conjunction with the Client's lighting and lighting control design standard.

Campus emergency phones

1. The location of the emergency phone shall be reviewed and approved by the Client's Planning and Campus Safety department.
2. Refer to the Client's security and access control system design standard for more requirements.

32 84 00 – Planting irrigation

General

1. All flora and plant material shall be properly irrigated according to industry standards. The proposed irrigation design shall be reviewed and approved by the Client's Grounds Services.
2. All new landscape installations and retrofits should include an irrigation component that incorporates the most recent technology in water conservation and efficient delivery methods.
3. Grey water and storm water run-off should be used for irrigation purposes.
4. All irrigation components shall be Rainbird.

32 90 00 – Planting

Planting time

1. Planting locations shall be approved by the Client prior to excavation of planting pits.
2. Planting Lists shall be reviewed by the Client prior to planting.
3. Deciduous plants shall be planted during a dormant period before buds have broken. Plant material imported from a region with warmer climatic conditions may only be planted in early spring.

Planting requirements

1. Planting beds and tree pits are to be backfilled with a planting mixture. The backfilling and mixing planting mix shall be done under favourable weather conditions.
2. Tree pits shall be designed to ensure proper drainage and comply with City of Toronto's requirements.
3. Trees and shrubs shall be planted vertically, in the centre of pits.
4. All plant material shall be planted to allow for settlement, so that the final depth will be equal to the depth originally grown in the nursery.
5. Trees with non-uniform canopies that are accepted by the Client shall be oriented to ensure the best visual appearance, subject to the Client's review.
6. Ensure that root balls rest on a minimum of 0.2 m (8") planting mix.
7. Topsoil shall be tamped around root system in layers of 0.15 m (6") depth to eliminate air pockets. Frozen or saturated topsoil is unacceptable. When 2/3 of topsoil mixture has been placed, hole is to be filled with water. After water has completely penetrated the soil, complete backfill. Form a saucer around the root ball.

32 91 00 – Planting preparation

Soil and additives

1. The soil used for landscaping shall be screened, triple mix, weed-free, friable natural loam, free of stones roots, lumps and other solid material.
2. Tree planting within continuous soil trenches with soil cells shall comply with the City of Toronto's specifications and drawings, including Continuous Soil Trench with Soil Cells Drawings & Green Infrastructure Drawings.
3. Peat moss used for landscaping shall be decomposed plant material, fairly elastic and homogenous, free of decomposed colloidal residue, wood, sulphur and iron and of brown colour containing minimum 6% organic matter by weight and moisture content not exceeding 15%. Minimum pH value of peat 4.5, maximum 6.0.
4. Bonemeal shall be raw commercial, finely ground and with a content of minimum 4% nitrogen and 20% phosphoric acid.
5. Manure shall be well rotted, unleached cattle manure, free from harmful chemicals and other injurious substances, at least eight months old, but not more than two years old and with no more than 25% straw, leaves or other unacceptable materials for planting use.
6. Limestone is to be used in all cases where the pH of the soil is less than 6.0. The lime that is to be used shall contain not less than 8% of calcium and magnesium carbonates combined, finely ground to pass a 10-mesh sieve with at least one half passing a 100-mesh sieve. Rate of application shall be determined after determining the pH of the topsoil.
7. Biochar shall be added to the soil to aid with nutrient and moisture retention.
8. The use of anti-desiccant: shall follow the manufacturer's instructions.

Excavation and stakeouts

1. The locations of all below-grade utilities shall be verified prior to excavating.
2. The locations of utilities shall be staked out in areas where excavation will occur.
3. Trees shall not be in areas where water may collect or temporarily pool.
4. For large trees and conifers, the depth of the excavation shall be at least 200 mm (8") deeper than height of root ball, with width of 750 mm (30") greater than diameter of root ball. The size of the planting holes shall be increased in heavy soils by 150 mm (6") for every 300 mm (12") of diameter root ball.

5. Any excavation within the Tree Protection Zone (TPZ) of by-law protected trees should be completed by pneumatic air excavation and vacuum to ensure minimal damage to the root structure of the subject tree.
6. The bottom of the excavations shall be protected against freezing. All water which enters into the excavation shall be removed prior to planting. All excavated material, excavated from the planting pots and beds, shall be removed from site. The subgrades of the planting beds and tree pits shall be scarified to 200 mm (8”).

32 92 23 – Sodding

General

1. The grass shall be nursery sod: specially sown weed-free and cultivated in nursery field all in compliance with the specifications latest issue of the Nursery Sod Growers Association of Ontario (B) number one Kentucky Bluegrass-Fescue Sod.
2. The sod is to be laid during the growing season. Sodding at freezing temperatures or on frozen ground is unacceptable. Sodding during dry weather should be avoided however, if there is no alternative it will be acceptable only if sufficient and continuous watering is assured.
3. The sod is to be laid with joints butted even with adjoining areas and the rows shall have staggered joints. The sections are to be butted closely without over-lapping or leaving gaps between sections. Irregular or thin sections are to be cut out with a sharp tool.
4. The sod is to be rolled with a light roller to ensure close contact between sod and soil. The sod is to be thoroughly watered.

32 93 00 – Plants

Plant material and ground cover

1. Primary plantings shall be established within all the major open spaces to define the space, provide an appropriate sense of scale and bring a high scenic character to the campus. Major open spaces are landscapes of landmark stature, distinct from plantings associated with specific buildings.
2. The landscape design shall emphasize and consist of large-scale tree cover of deciduous hardwood species that provide variety in form, foliage and fall colour. In addition, evergreens and plants with attractive winter appearance shall be strategically located to enhance landscape quality throughout the year.
3. Plant species shall be selected with consideration for expanding biological diversity, hardiness and longevity.
4. The location, layout, and massing of the plants shall prioritize public and personal safety. Hedges, including Cedar hedges, Catoni Astor and Halls Honey Suckle shall be avoided.
5. Sight distance triangles are maintained free of tree trunks and branches. Branches may droop over time and interfere with sightlines. To maintain minimum sight line distances the following offsets shall be followed:
    - Trees shall not be planted within 9 metres of an intersection.
    - Trees shall not be planted within 3 metres of a roadway entrance or driveway.
    - Trees shall not be planted within 2 metres of a utility pole or light standard.
6. Plant species shall be selected and maintained to preserve clear visibility and sightliness, in accordance with Crime Prevention Through Environmental Design (CPTED) guidelines.
7. Introduce coniferous plant materials where visual screening is appropriate, such as parking lots.
8. Select plant materials that are ecologically compatible and suitable for site conditions (i.e. salt and drought tolerant).
9. Maintain and enhance pedestrian connections to the street by planting trees along these pathways.
10. Select small-form tree species where overhead hydro wires are present; use full form trees where there are no overhead wires.
11. Utilize mass plantings of hardy and prolific blooming perennials for bold, permanent landscape features. Drought resistant or ornamental grasses shall be used as accent plantings and as a low maintenance groundcover.

12. Expand the range of plant materials to include native tree species from the time of the Client's original land grant. In addition, prioritize plants that require minimum maintenance, such as low pesticide and water use, and that provide habitats for native birds and animals.
13. Select planting materials that reflect the seasonal colour change to highlight the changing seasons. Apply guidelines for colour and lighting in new landscape designs to maximize seasonal effects.
14. Any selection of species for plantings of woody or herbaceous material shall be reviewed by the Client.

Trees and shrubs

1. The trees and shrubs shall be No.1 grade. All the selections and locations shall be reviewed by the Client.
2. The trees and shrubs shall have a strong fibrous root system, free of disease, insects, defect or injuries and structurally sounds. The trees shall have straight stems well and characteristically branched for species. Plants shall have been transplanted or root pruned regularly but not later than 9 months prior to arrival on site.
3. The designs shall consider providing adequate soil volume and quality for root development. Innovative techniques may be required to provide this space in constrained environments (i.e. soil cells, structural soils, root paths, etc.).

Tree size	Crown height	Crown spread	Average rooting depth	Soil volume requirements
Large Tree	20 m	18 m	1 m to 2 m	30 m^3 (0.8 - 1.2 m depth) 15 m^3 (shared root space)
Medium Tree	15 m	8 m	1 m to 1.5 m	23 m^3 (0.8 – 1 m depth)
Small Tree	3 m	3 m	1 m	15 m^3 (0.6 – 1 m depth)

4. Trees and shrubs shall have been grown in containers for minimum one growing season but no longer than two. The root system shall be able to “hold” soil when removed from container. Plants that have become root bound are not acceptable.
5. In balled and burlapped trees, the size of the ball shall be proportional to the caliper of deciduous tree and to the height of the conifer. The caliper shall be measured at 150 mm (6”) above ground level. A tree with 75 mm (3”) caliper required root ball of 1 m (40”) diameter. Increase diameter of root ball by 250 mm (10”) with each increase of 25 mm (1”) in caliper. Root balls of proper size shall include 75% of fibrous and feeder root system. This excludes use of native trees grown in light sandy or rocky soil. Secure root balls with hessian burlap, heavy twine and rope. Frozen root balls will be permitted only if root balls are sufficiently protected to prevent breakage. Protect root balls from sudden changes in temperature and exposure to heavy rainfall.
6. Each newly planted tree shall have 4 (four) root aeration tubes installed and spaced evenly just outside the planting hole. Each tube shall be 450 mm (18”) long by 75 mm (3”) in diameter, with a top cap 100 mm (4”) in diameter (installed flush to the ground) and a porous cylinder for the easy exchange of gases and water.
7. Imported plant material shall be accompanied by the necessary permits and import licences. They shall conform to federal and provincial regulations.
8. All materials shall be inspected by the Contractor for damage in transit. No defective material shall be delivered to the site. Material subsequently damaged shall be removed from the site immediately. No plant shall be accepted when the ball of earth surrounding its root system has been cracked or broken prior to or during planting, or after the burlap, staves, ropes or platform required in transplanting have been removed.
9. Refer to Figure 1 below for tree planting details.

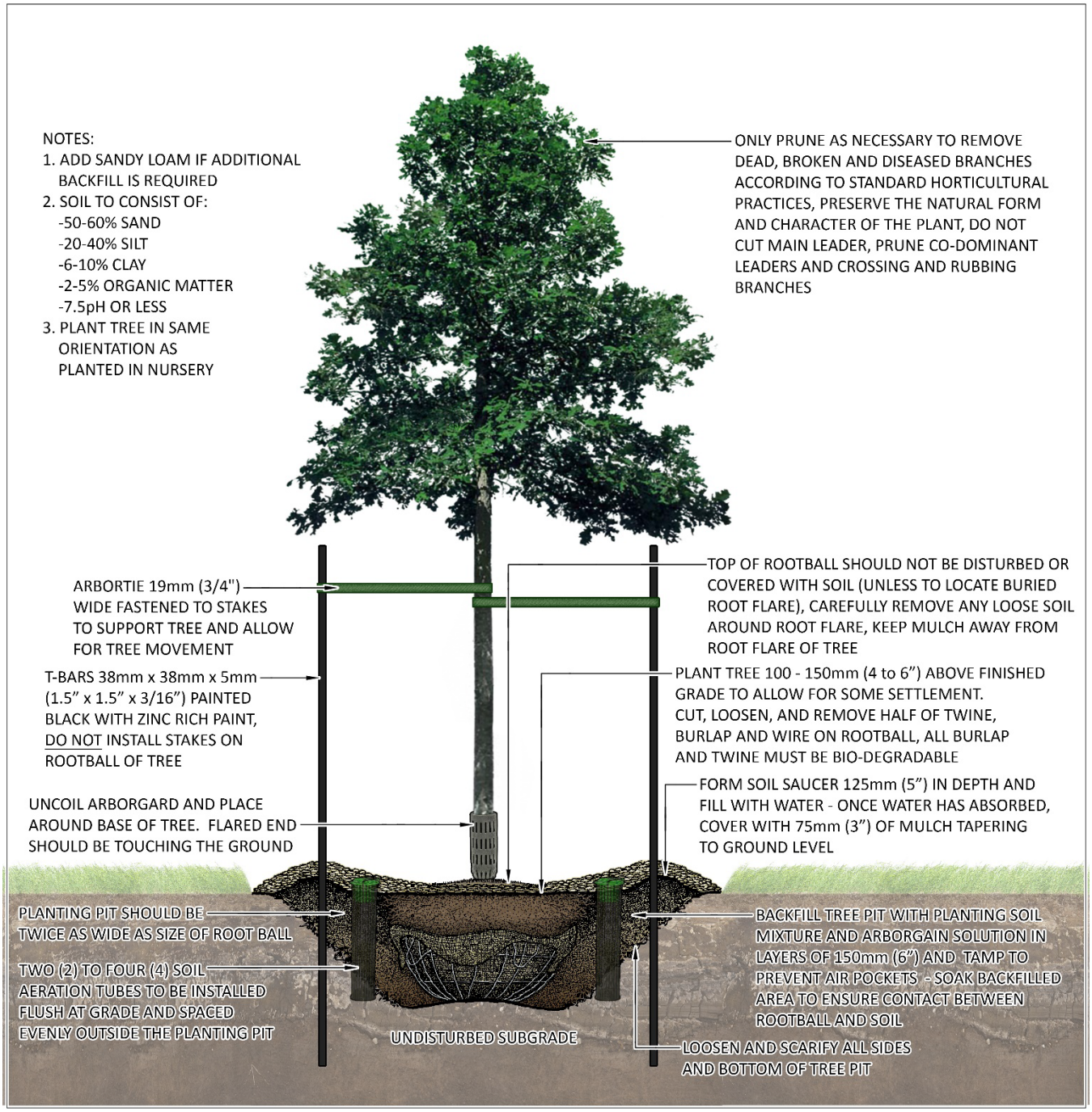


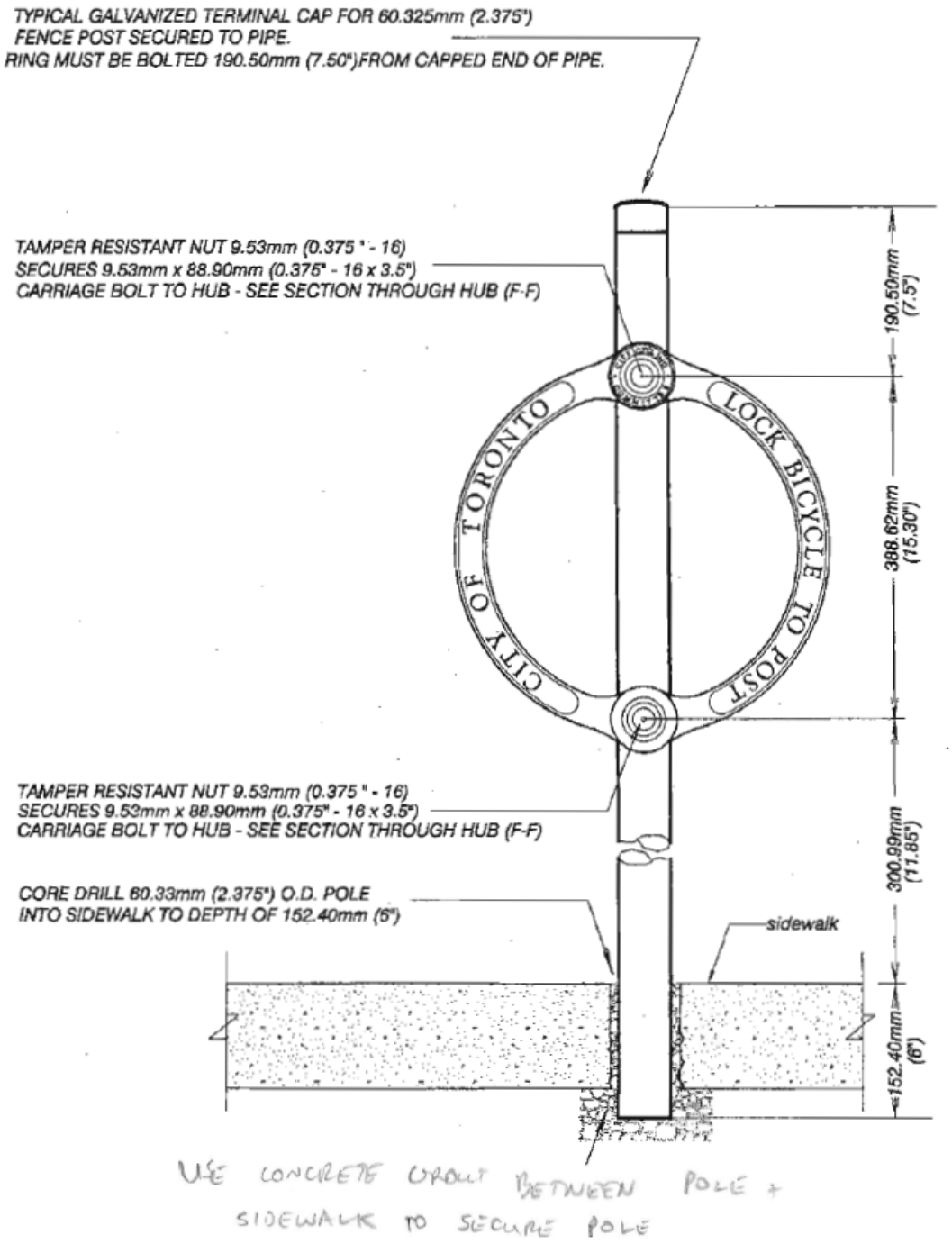
Figure 1: Tree planting details

32 94 00 – Planting accessories

General

1. The tree wrappings for trunks shall be first quality burlap.
2. The anchors for the support of large shrubs and trees up to 65 mm (2.5”) in caliper shall be new metal “T” bars 38 mm x 38 mm x 5 mm (1.5” x 1.5” x 3/16”) painted black.
3. Eye bolts and turnbuckles shall be zinc coated. Turnbuckles shall be 10 mm (0.375”) diameter bolts for trees for 75 mm (3”) caliper, and 6 mm (0.25”) diameter bolts for under 75 mm.
4. Anchoring hoses shall be two-ply reinforced, new black rubber hose 13 mm (0.5”) in diameter.1q`
5. Mulch shall be shredded bark mulch and applied using best management arboricultural practices. Top up mulch as necessary to maintain a 75 mm (3”) minimum layer depth.
6. The tie back wires shall be zinc coated pliable steel wire, #9 gauge.
7. The stakes shall be T-rail iron stakes 38 mm x 38 mm x 1.8 m primed with on brush coat of black zinc rich paint to CGSB 1-GP-181.
8. Ties shall be ArborTie Green, manufactured by Deep Root Canada Corp., with a minimum tensile strength of 408 kg, or an approved equivalent. The ties shall be installed according to the manufactures instructions such that the tree is firmly, but not too tightly, supported, remaining in a vertical position.
9. Wound dressing shall be horticulturally accepted non-toxic, non-hardening emulsion.
10. Rodent protection shall be round, metal or plastic extending 610 mm (24”) above grade.
11. Keep trunk protection in proper repair and adjustment.

Appendix A: Post and ring details



Appendix B: Waste and recycling receptacles