Overview of the site plan and development process for Industrial, Commercial, Institutional and Multi-residential developments in the Township of Woolwich.
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SITE PLAN APPROVAL INFORMATION

INTRODUCTION

Commercial, Industrial, Institutional, Recreational and Multi-Residential Development (greater than 3 units) within the Township of Woolwich is subject to Site Plan Control. This includes new buildings and structures, but also includes any additions, site alterations or increase of the size or usability of the site (as per Section 41 of The Planning Act).

Through Site Plan Control the municipality requires site plan agreements to include conditions such as, but not limited to, road widening, landscaping, parking and loading facilities, curbing, garbage facilities, etc.

“Development” means the construction, erection or placing of buildings or structures or any addition or alteration which has the effect of substantially increasing a building’s size or usability, the laying out of a commercial parking lot, or the location of three or more mobile homes. Low density residential development (less than three residential units) and agricultural development is not subject to Site Plan Control.

The Township has prepared this outline to assist applicants in understanding the site plan approval process, the information required for site plan approval, Township standards, and to identify appropriate contact persons.
SITE PLAN AGREEMENT APPLICATION PROCESS

Pre-consultation (Step 1)
The submission of plans for review or meeting with Planning Staff provides staff the opportunity to review a proposal and determine what information will be necessary, along with the scope of that information to be provided for the formal submission.

Submission (Step 2)
The applicant must submit the signed application, necessary site plan drawings and reports (see submission requirements), appropriate number of drawings, and the required fee. For the number of copies required see the submission requirements.

Preliminary Evaluation of Application (Step 3)
Township staff will review the application for completeness; confirm the zoning of the property. This usually requires about 2 days.

Circulation to Agencies (Step 4)
Once it is determined the application is complete, Township staff will circulate the proposal to appropriate agencies for review and comment. These agencies may include the Region of Waterloo (when on a Regional road or of a Regional interest), Grand River Conservation Authority (lands regulated by the GRCA), Waterloo North Hydro, Ministry of Transportation (within the corridor of a Provincial Highway), other utilities as may be appropriate, as well as internal departments including, Building, Fire, and Engineering staff. A list of contact staff for each of these agencies is provided in Appendix A. This process usually takes about 3 weeks as the applications are mailed, time is given for review and writing of the comments.

Comments (Step 5)
All of the agency comments are submitted back to the applicant for review and to make the necessary changes to the plans and reports.

Resubmission / Re-circulation (Step 6)
The applicant re-submits the plans and reports, as per Step 1. Staff may re-circulate the plans and reports to the applicable agencies and departments for their review and comments (Step 4).
This process (Steps 4 and 5) are repeated until the site plan issues are addressed to the satisfaction of the agencies and departments.

**Final Draft of Site Plan**
Once the final set of plans is being complete, Township Planning Staff prepare the draft site plan agreement or amending agreement (where an agreement exists) often called an *addendum*. Staff complete a title search to verify the legal description, owner, and if there are any mortgages on the property. The draft agreement is then forwarded to the applicant for review.

**Registration of Site Plan Agreement**
Once the plans are complete and the agreement is satisfactory, the Owners (and mortgagee if necessary) sign the agreement, and the Director of Engineering and Planning Authorizes the Mayor and Clerk to sign the agreement. If only an addendum to the existing agreement is necessary, the Owners (and mortgagee if necessary) sign the addendum, as well as the Director of Engineering and Planning. The Agreement is then registered on the title of the property.

Of note, site plans typically do not go to Council for approval.

The final signed agreement is registered by Township staff on the property title. The *minimum* time necessary for this process is 5 weeks.

**Fulfilling of “pre-building permit conditions”**
As per the Site Plan Agreement that is entered into by owner/applicant, there may be conditions that need to be fulfilled prior to a building permit being issued. It is the obligation of the owner/applicant to ensure that the conditions be satisfactorily addressed.

Note: the applicant may apply for Building Permit and submit the structural drawings concurrently with the site plan application. However, they do so with the understanding that the Site Plan Agreement must be entered into and any required conditions fulfilled prior to the issuance of the Building Permit. As such the 10 businesses days to issue a Building Permit does not start until the site plan process has been satisfied.

**MINIMUM processing time**
Approximately 5 weeks (per circulation).
Diagram of Process

1. Pre-consultation
2. Submission
3-4. Review / Circulation
5. Comments
6. Revisions
   - Re-circulated
   - Approved
7. Agreement Finalized
8. Agreement Registered, Permit Available
SUBMISSION REQUIREMENTS FOR DRAWINGS

Generally the following plans are required as part of a site plan submission. In cases where the plans may not be as detailed the plans may be combined. It is recommended that prior to combining plans that the applicant verify this appropriateness of the doing so with Township Staff during the pre-consultation process (i.e., Step 1).

- Existing Conditions Plan
- Overall Site Plan
- Landscape Plan
- Grading, Drainage, Stormwater Plan
- Servicing Plan
- Lighting Plan
- Stormwater Report or Stormwater Brief
- Fire flow / Fire Reservoir calculations
- Details (e.g., servicing, fire reservoirs, planting, outlets etc)

The items and details to be provided on the plans are provided in Appendix A

Prior to submission please ensure that all plans are consistent with the standard details of building locations, parking, surface treatments etc.

Digital Copies

It is recommended that a digital copy of plans and reports be provided as part of the submission process. PDF versions of the plans provide an option to digitally forward to agencies as part of their review.

Final approved drawings must be provided in a digital format, both 1 - PDF and 1 - digital file of a letter-sized (8 ½” x 11”) Site Plan submitted on disk or sent by e-mail to the Planning Section, submitted in .dwg (AutoCAD) or .dgn (Microstation), format using the standard title block and pen settings and following the Digital Submission Requirements. (The Township of Woolwich uses the same requirements as the City of Kitchener).
Number of Map Copies to be submitted:

- development on a Township Road - we require a minimum of **6 hard copies** of the Site Plan and 1 digital copy; and
- development on a Regional Road or Provincial Highway - we require a minimum of **7 hard copies** of the Site Plan and 1 digital copy (see Appendix D) of the Site Plan.
- All sets of drawings are to be folded to a standard page size of 8.5 by 11.
STANDARD REQUIREMENTS

Off-street Parking Spaces

- number required based on use as per Section 6.13.4 of the zoning by-law (if clarification is required contact Township Engineering and Planning Services),
- minimum size is 2.75 by 6 metres with one-way access width of 3 metres and two-way access of 6 metres,
- accessible parking space requirements as required by the Township Zoning By-law Section 6.13.5,
- parking areas to be asphalt (although gravel may be acceptable in some cases),
- aisle widths must also conform to the Township Zoning By-law,
- continuous concrete curbs will be required to define parking areas/entrances (where gravel surfaces are used portable concrete curbs or other means as acceptable to the Township may be permitted).

Loading Spaces

Loadings spaces must be provided as per the zoning by-law, being 3.5 by 10.5 metres in size. All truck turning movements must take place on the property. Truck turning movements may need to be shown on the site plan.

Garbage Facilities

Where street-side garbage pick-up is not provided or used and where indoor garbage storage will not be maintained the development must include a central garbage collection facility.

If a dumpster is proposed this must be on a concrete pad located behind the main building, out of sight from the street and fenced with a solid maintenance-free wood fence on at least three sides. The fence must be higher than the garbage bin. Limited exceptions may be permitted to the fencing.

Alternatively, decorative molok units are permitted.

Truck turning to access the garbage facilities are to take place on the property.
Snow Storage

Snow storage areas must be indicated on the Site Plan and must be located where they will not reduce the number of required parking spaces, will not impact on any sight lines or adjacent properties and will not infringe on any functioning of the development.

Snow storage shall not interfere with a storm water catch basin, drainage swale or retention pond.

All agreements require that if snow storage becomes insufficient it must be removed from the site within 24 hours.

Road Widening

Where development is proposed on lands adjacent to a Township Road which does not meet the required road width the Township will require, as a condition of a Site Plan Agreement and Building Permit, the dedication of a road widening to bring the Township Road up to the required width. All costs incurred from this road dedication (i.e. surveying and preparation of legal documents including deeds for the conveyance) is the owners responsibility.

For development on Regional Roads and Provincial Highways the appropriate agencies may require road widening / daylighting triangles as per their respective requirements.

Road Entrances

Must be designed to the appropriate standard and access permits will be required from the appropriate agency (i.e. Township, Region, Province).

Lighting

Required for areas of public usage (commercial parking, institutional parking) and must not impact adjacent properties or the traffic on the road.
Stormwater Management Plans

Stormwater management plans will be an integral part of the development concept for quality and quantity control. Post development flows cannot exceed pre-development flows for the 5, 25 and 100 year storm events. The analysis and design of stormwater management plans must be based on the use of the hydraulic/hydrologic principles by competent consulting engineers (contact the Township’s Engineering and Planning Services Department).

Landscaping Plans

Landscaping Plans are required to show all existing and proposed landscaping features. The intent is to provide aesthetic development and to provide for buffering between properties/uses (contact the Township’s Engineering and Planning Service Department), with an emphasis on urban design from the street.

The majority of trees and shrubs on site should be native, and all plant materials must be hardy to the area. Any required street trees are to be native trees unless otherwise approved by the Director of Engineering and Planning.

For details on Landscaping refer to the Township of Woolwich Landscape Guidelines 2013 manual.

Accessibility

Site layout and design features should give consideration to features for persons with disabilities. This would include items such as varying hard surface treatments, minimizing vehicle and pedestrian conflict, walkway provisions including appropriate connection to municipal sidewalks, ramps, parking spaces in close proximity to the main entrance, etc.

Fire Reservoirs

Where required by Building Code, an appropriately sized reservoir which is accessible by the Fire Department shall be provided and shown on the site plan. The location and size shall be to the satisfaction of the Township Building Section and Fire Department.
Fire Routes

Fire routes shall be identified on the plan and to the satisfaction of the Township Building Section and Fire Department. The surface treatment of the fire route shall be capable to support a 60,000 lbs truck and shall be signed or identified to the satisfaction of the Fire Chief.

Standard Requirements

Site plan agreements often contain reference to certain items that must be provided in advance of issuing a permit for works to take place. Common items of this nature are noted in Appendix B.

Fulfilling Conditions

The agreement entered into binds the owner to complete the development as per the plans submitted and to maintain the site in accordance with these plans. Some special conditions are noted in Appendix C.

Securities

In certain circumstances the Township will require security deposits from the Owner for 100% of the costs, to ensure work within the road allowance, public property, or items that affect the public realm (buffers, landscaping etc). In some cases a portion of the securities will be held during required maintenance periods to ensure all work was suitably completed and any deficiencies are addressed.
Appendix A - INQUIRIES

Any inquiries with respect to any matters concerning the Site Plan Agreement application should be directed to the following persons, where appropriate:

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<thead>
<tr>
<th>AGENCY</th>
<th>REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Township of Woolwich</strong></td>
<td></td>
</tr>
<tr>
<td>Planning Issues - John Scarfone (ext. 6037) or Jeremy Vink (ext. 6038)</td>
<td>procedures, applications, landscaping</td>
</tr>
<tr>
<td>Servicing / Stormwater Management /Grading /Access Issues - Randy Miller (ext. 6030)</td>
<td>general site plan requirements</td>
</tr>
<tr>
<td>Building Permits/ Septic</td>
<td>Township road widening, grading, storm drainage, entrances, servicing</td>
</tr>
<tr>
<td>Dave Heuchert (ext. 6036)</td>
<td>Building Code information</td>
</tr>
<tr>
<td></td>
<td>Regulations for septic installation</td>
</tr>
<tr>
<td>Fire Department</td>
<td>Fire Code</td>
</tr>
<tr>
<td>Rick Pedersen (Fire Chief) 519-664-2887 x222</td>
<td>Regulations for fire code related items</td>
</tr>
<tr>
<td><strong>Regional Municipality of Waterloo</strong></td>
<td></td>
</tr>
<tr>
<td>Planning &amp; Culture - Transportation Planning Division Transportation Planner (519-575-4757)</td>
<td>Regional road widening, grading and drainage, Regional road entrance permits</td>
</tr>
<tr>
<td><strong>Grand River Conservation Authority</strong></td>
<td></td>
</tr>
<tr>
<td>Resource Planner, (519-621-2763), Ext. 2292</td>
<td>major stormwater works or ‘Fill” permits</td>
</tr>
<tr>
<td><strong>Waterloo North Hydro</strong></td>
<td></td>
</tr>
<tr>
<td>Engineering Technician (519-886-5564)</td>
<td>hydro hook-ups, easements</td>
</tr>
</tbody>
</table>
APPENDIX B - SITE PLAN DRAWING SUBMISSION REQUIREMENTS

*** Drawings submitted in support of this application must comply with the submission requirements. ***

Drawing A – Existing Site Conditions

- Plans are required to be drawn in one of the following metric scales – 1:100, 1:200, 1:250, 1:300, 1:400, 1:500 or 1:1000.
- All plans are required to be folded to legal size (8 ½” x 14”) or smaller, with the title block visible in the lower right hand corner of the drawing sheet.

General requirements as follows:

- North Arrow;
- Location of driplines, including location of existing landscaped areas and tree cover;
- Location of existing driveways, paved areas and gravelled-surfaced areas;
- Location of buildings to be demolished (ghosted) and buildings to be retained;
- Existing topography of the land, showing contour lines. Severe slopes are to be clearly illustrated showing both top and bottom of banks;
- Existing service connections and on-site sewage system, if applicable;
- Existing surrounding land use;
- Existing streams, creeks, ponds, wetlands and marshes;
- Boundaries of environmental features, and required buffers;
- Flood line boundaries;
- Location of existing driveways on adjacent properties.

Drawing B – Proposed Site Plan for all applications

- Plans are required to be drawn in one of the following metric scales – 1:100, 1:200, 1:250, 1:300, 1:400, 1:500 or 1:1000.
- All plans are required to be folded to legal size (8 ½” x 14”) or smaller, with the title block visible in the lower right hand corner of the drawing sheet.
General requirements as follows:

- Title block including project title or proposed use of building, project address or location, owner’s/developer’s name and address, agent’s name and address, scale, date of issue of drawing, title project (job) number, drawing number and revisions suffix and designer’s;
- North Arrow;
- A key map showing the location of the property;
- True dimensions, bearings and area of the property;
- Location and dimensions of all existing and proposed buildings and structures including basements, mezzanines; electrical transformer pads and/or electrical transformer enclosures,
- Dimensions of all yards (i.e. setbacks of all buildings, structures from property lines);
- Location of off-street parking, handicapped parking, and loading areas including the dimensions of parking spaces and loading areas and setbacks of such areas from property lines. (NOTE: All underground parking designs are to be shown on a separate plan);
- Number of parking and loading spaces required and proposed;
- Number and width of barrier-free parking spaces;
- Number the parking spaces;
- Width of driveways and aisles accessing parking stalls and loading areas;
- Location, width and gradient of barrier-free access to the building entrance;
- Snow storage areas;
- Dimensions detailing entrance throat width and radii, and exit locations to and from the site;
- The location of outdoor containers and/or vaults, central storage and collection areas, or other facilities for the storage of garbage and other waste or recyclable materials;
- Location, height and type of fencing;
- Surface treatments (concrete, asphalt, gravel, grass, etc);
- Location of landscaped areas (including size, type, quantity, planting details);
- Location, length and exposed height of retaining walls including height and type of guards at top (retaining walls higher than 1.0 metre will require a P.Eng. stamp during the building permit application process);
- Percentage (%) lot coverage of: buildings, concrete asphalt surfaces, landscaped areas and gravel surfaced areas;
- Location of lighting standards / wall mounted lights;
- Location of curbing;
- Location of outdoor storage areas;
□ Location of any and all existing and proposed sidewalks and pedestrian facilities, including connections to public sidewalks (identify surface type);
□ Storm water management area, if required (shown conceptually);
□ Location of septic tile field;
□ Location of well;
□ Name, address, telephone number and professional seal;
□ Building entrances and exit doors, indicating the primary entrance of the building;
□ Location of road intersections and driveways across the street and adjacent to the subject property;
□ Location of proposed firewalls (if any, if known);
□ Location of Fire Department connection(s), if any, and the nearest fire hydrants; centre line turning radius and width of Fire Department access routes (12m radii required);
□ Location and extent of easements, rights-of-way, restrictive covenants, etc., on the subject property; a note on the plan must explain the nature of the encumbrance;
□ Location and extent of any easements, rights-of-over adjacent properties (i.e. mutual drives); a note on the plan must explain the nature of the encumbrance;
□ Number of dwelling units and total unit count by bedroom type;
□ Location of any wall openings located less than 1.2 metres from interior lot lines;
□ Directional traffic arrows on pavement, one way arrows, left turn arrows, etc.;
□ Location of existing and proposed multiple unit identification signs, if applicable;
□ Assignment of unique alpha building identifiers (A, B, C,...) where more than one non-residential building intended for occupancy exists on a lot;
□ Assignment of unique building identifiers where more than one residential building intended for occupancy exists on a lot (unique civic numbers may be used for buildings with entrances facing directly onto a street);
□ Street names, street lines and curb locations;
□ New driveway entrances (and existing street furniture to be removed or relocated to construct new driveways);
□ Required right-of-way widenings and property dedications;
□ Required road improvements;
□ Required corner visibility triangles; and,
□ Heritage Impact Assessment Report (HIA) and/or Conservation Plan
Drawing C – Digital Submission & Letter Sized Site Plan

□ One digital Site Plan file, formatted to print to letter-size (8 ½” x 11”), on disk or sent by e-mail to the planning section, submitted in .dwg (AutoCAD); formatted using the standard title block and pen settings and following the Digital Submission Requirements below.
□ PDF of the letter-sized (8 ½” x 11”) Site Plan on disk or sent by e-mail to jvink@woolwich.ca
□ The standard title block contains a title block border, north arrow, site statistics text, and title-block text. The file contains all required layers and their specific properties including colour, line-type, and line-weight. The title block layer names and content description can be found in the table Standard Title Block Layer Properties and Content (Appendix E).
□ Digital Submission Requirements:
□ All line-work for the site plan drawing should be contained within the standard site plan title block
□ Submit the site plan, on standard site plan title-block in MODEL SPACE
□ Use only the applicable layers of Proposed Site Plan on the site plan title block.
□ The drawing must be specifically formatted to be CLEAR AND LEGIBLE in an 8 ½” x 11” (letter) format printout using the required pen settings.
□ The Site Plan Title-block must be scaled proportionally to fit the site plan drawing.
□ Use only standard, true type, font types
□ Edit the Title-block text to enter the site owner’s name, site address, current date, site plan number (if known), and property legal description.
□ Edit the Title-block text layer ‘Site Statistics’, as applicable,
□ Drawing units are to be in metric.
□ All data is to be contained on title block layers as described in the table entitled Standard Title Block Layer Properties, as applicable.
□ Only the content described under each respective layer’s “Description of Content” shall be allowed.
□ Purge all old or extra drawing layers
□ All line work should be closed. i.e. All lines that meet must be snapped together.
□ Use of hatch pattern in CAD files should be kept to a minimum.

Please Do Not:
□ overwrite the assigned symbology, or layer colours.
□ redraw title-block
□ use your own Site Statistics formatting.
☐ xref any files. (Bind xref files through the xref manager under the Insert menu.)
☐ attach any raster images to the CAD file submitted.
☐ include any layers other than those contained in the standard site plan title-block

Do not include the following on the submitted 8 ½” x 11” (letter) Digital Site Plans:
(PLEASE NOTE: This does not apply to the other site plan drawings A and B)
    ☐ Company Stamps or Logos
    ☐ Legends
    ☐ Key Maps
    ☐ Additional North Arrows
    ☐ References To Other Drawings
    ☐ Features ‘To Be Removed’
    ☐ Commercial Names
    ☐ Point Elevations
    ☐ Slopes
    ☐ Grading Lines
    ☐ Swales
    ☐ Trees
    ☐ Cross Sections
    ☐ Inside Building Details
    ☐ Bound Layers
    ☐ Empty Layers
    ☐ Truck Turning Circles
    ☐ Setback lines

Special Consideration:
    ☐ Label all Grassed or Sodded or Seeded areas as LANDSCAPED
    ☐ Include car stacking illustration for drive-through establishments
    ☐ Label all flush curbs and roll-over curbs
    ☐ Any other structure or features as part of the proposed development
APPENDIX C

The following is a list of conditions requiring completion to the Township’s Satisfaction prior to Site Plan Approval being granted

Prior to the commencement of any grading on the site, the Owner agrees to fulfill each of the conditions which follow:

EROSION AND SILTATION CONTROL
To show all erosion and siltation control features in detail on a Grading and Drainage Control Plan to the satisfaction of the Township and GRCA, and to implement all such erosion and siltation control measures. The Owner further agrees to maintain all such until the site has been fully developed.

TREE MANAGEMENT
To prepare a Tree Preservation/Enhancement Plan as required and to show on the Landscape Plan the location of drip lines, edges and existing plantings, the location of all existing trees and the method to be employed in retaining trees required to be protected.

FILL PERMITS
To obtain Fill, Construction and Alteration to Waterways Permits from the Grand River Conservation Authority and provide the Township’s Chief Building Official with copies thereof.

UTILITY EASEMENTS
To grant to the (Township, Waterloo North Hydro, or Regional Municipality of Waterloo), without cost and free of encumbrance, the easement(s) as indicated on the Site Plan.
As part of Site Plan Approval for the proposed development, the Owner agrees to fulfill each of the conditions which follow:

SATISFY PRE-GRADING
Satisfy all pre-grading conditions.

GRADING AND DRAINAGE CONTROL
To prepare a detailed Grading and Drainage Control Plan, including infiltration of rooftop runoff where soil conditions permit, showing drainage details for the subject property, abutting properties and public rights-of-way so as to ensure compatible drainage, and to show thereon all existing and proposed connections to the municipal storm sewer, and all detailed erosion and siltation control features.

ROAD WIDENINGS
To convey to the Township or Region, without cost and free of encumbrance, the road widening and/or daylighting triangles as indicated on the Site Plan.

COST ESTIMATE AND LETTER OF CREDIT
To provide a cost estimate for 100% of the total cost of all "off-site development works" to be done by the Owner, as required by this Agreement. Such a cost estimate shall include materials, installations, removals, closures and restorations, project management/co-ordination, and site supervision, inspection and certification of all site development works, and shall be in a form satisfactory to the Engineering Section.

When required by the Township, to provide a cost estimate for 100% of the total cost of all "landscaping" to be done by the Owner, as required by this Agreement. Such a cost estimate shall include materials, installations, removals, closures and restorations, project management/co-ordination, and site supervision, inspection and certification of all site development works, and shall be in a form satisfactory to the Planning Section.

To provide a Letter of Credit for the items noted above, in a form satisfactory to the Township, to be held by the Township as security for the completion of the site development works required in the Section 41 Development Agreement.
FIRE FLOW DEMAND ANALYSIS
When required, to submit a fire flow demand analysis conducted by a Professional Engineer, to the satisfaction of the Chief Building Official in consultation with the Township’s Fire Chief, to determine if the proposed development exceeds the capabilities of the water distribution system for fire fighting purposes.

ENGINEER CERTIFICATION
Within 1 year from the date a building permit has been issued, to provide a certificate from a professional engineer that the site has been developed in accordance with the approved plans.
APPENDIX D
Guidelines for Growing, Installing and Maintaining Healthy Trees

Prepared by the Illinois Tree Specification Review Committee (as edited by Township Staff)

Nursery Propagation, Growing, Harvesting & Handling:
Installation of the “Package”

It takes only a short time to plant a tree, but how it is done can have a lasting influence. Mistakes made when planting trees are usually impossible to correct later. Shortcutting the planting process can cause the tree to fail after a short time, or to struggle for many years and never reach its full potential as a healthy vigorous addition to the landscape. Attention to detail taken at planting time will pay dividends for years.

- Checking Structural Root Location
- Removing Non-Biodegradable Materials
- Pruning
- Planting Pit Depth and Width
- Placement of Structural Roots in Relation to Grade
- Backfilling the Planting Hole
- Watering
- Trunk Protection
- Staking
- Mulching
- Fertilization

Checking Structural Root Location
As a general rule for young nursery-grown trees, there should be two or more structural roots within 1-3 inches of the soil surface, when measured 3-4 inches away from the trunk. The structural roots should be distributed radially in all directions. The size and number will vary with species. If the roots are deeper than this, consider rejecting the stock, as the root ball may be undersized. (See American Standard for Nursery Stock 2004, [https://www.anla.org/publications/index.cfm](https://www.anla.org/publications/index.cfm))

The best time to determine root depth is while tagging trees, before they are dug. It can also be done after the trees are dug. Checking both in the nursery, and rechecking just before planting, may be the best way to be absolutely sure that the roots are not too deep in the root ball.
Checking for root depth can be done several ways. A gap around the base of the trunk is a sign that the roots are too deep. An inexpensive surveyor’s chaining pin, or a stiff piece of wire, can be used to probe for roots in the field, or in the root ball. The severed ends of the structural roots can sometimes be detected through the burlap on the sides of the root ball. Carefully removing soil from around the base of the trunk with a hand trowel is also acceptable, but difficult to do after the root ball has been wrapped.

Removing Non-Biodegradable Materials
Materials used to cover and support the root ball during transport and storage can injure trees if left in place after planting. If root ball has been reburlapped, burlap on the outside of basket should be removed after the root ball is placed in planting hole.

Remove all basket wires down to 4-6 inches below the root ball shoulder to eliminate the wires most likely to make contact with the structural roots ("High profile package"). After removal of basket top horizontal ring(s) and loops, twine can be tied over top of root ball to stabilize trunk through first year ("high profile package – Removal of top ring(s), loops and retying").

Low-profile baskets are designed so that there is no wire that needs to be removed. It is not necessary to remove the loops, even if they are less than 4-6 inches below the root ball shoulder. Chances of roots growing through them are low. ("Low profile package")

If all burlap and twine are not removed from the top of the root ball, and down the side to 4-6 inches below the shoulder at the time of planting, each root ball should be inspected within a year to confirm that the burlap and twine have rotted away and are not damaging the tree’s root system.

Pruning
If pruning was done correctly during production in the nursery, the tree should require very little pruning when planting, except for removing broken twigs. It is best to not make large pruning wounds on the stem. Proper pruning cuts just outside the branch collar are imperative.

Planting Pit Depth and Width
The planting hole volume should be 1.2 metres large enough for rapid initial root development during the first year and to encourage root spread beyond the planting hole.
The planting hole should be slightly shallower than the root ball to anticipate pancaking of the root ball. Two inches high is adequate for a 2-3 inch caliper tree. Up to 4 inches high may be needed for larger root balls. The root ball should be placed on stable subgrade to minimize settling.

**On sites with poor quality (compacted, clayey or poorly drained) soil, the planting hole should be at least two times the width of the root ball diameter or 1.2 metres square. If the roots are unable to grow into the compacted subsoil, a hole with sloped sides will allow them to gradually grow back up toward the better quality surrounding surface soils and continue to spread beyond the planting hole. Hole should be filled with 100% native topsoil, not subsoils.** On sites with high quality soil, the planting hole needs to be only wide enough to facilitate planting.

If the sides of the hole are glazed or dried, use a hand tool to break up surfaces before planting

It is not possible to dig a wide hole when installing trees with a tree spade. After planting, the soil around the root ball can be deeply cultivated to eliminate air pockets and provide a favorable environment for new root growth, similar to a wide planting hole

**Placement of Structural Roots in Relation to Grade**

If structural roots are found at the correct depth, plant with the top of the root ball slightly above grade (Planting pit depth and width). If the structural roots are slightly deep in the root ball, the planting hole should be shallower to account for it. **It is most important to get the structural roots at the correct depth.** Leave the extra soil intact, at least until it is placed in the planting hole and backfilled.

In some situations it may be preferable to leave the extra soil above grade rather than remove it, and risk cold or sunscald damage. If the extra soil over the structural roots is filled with fibrous roots, removing them suddenly could cause extra stress. The extra soil should gradually erode away. Mulch can be used to cover the protruding root ball and make a more gradual slope.

**Backfilling the Planting Hole**

Compact some of the excavated soil around the base of root ball to stabilize it. The rest of the soil should topsoil and be tamped only lightly, or left to settle on its own. Watering will assist in settling
the soil naturally. Excessive tamping can compact soil and slow water penetration and root growth.

Backfill soil amendments may be desired on sites with poor quality soil to improve soil structure, water-holding capacity, or drainage. On sites with high quality soil, the backfill does not require amending.

Watering

In the first year or two, it is important to keep the root ball moist, but not over-watered. The root ball soil is the major source of water for the tree until the root system redevelops. During this time, monitor the moisture in the root ball. Surrounding soils where there are few roots absorbing moisture often stay moist, as the root ball is quickly drying out.

Use of tree watering bags is gaining popularity. They deliver water to the right place. We know very little about heat buildup on the trunk under the empty bag. An empty bag may also deflect rainwater away from the base of the tree.
Throughout the warm, summer weather, the tree will probably need water about twice each week. Approximately 5-10 gallons of water is sufficient to moisten a 20-inch diameter root ball. A 40-inch diameter root ball has more than twice the volume and would require 35-45 gallons.

For complete planting diagrams see
- [Tree planting with low profile package](#)
- [Tree planting with high profile package](#)

**Trunk Protection**
Plastic guards can help to protect trunks from mowers, weed whips and other mechanical injuries. If used, they must be removed before the trunk grows large enough to be damaged. Where sunscald or frost cracks are common, trunks of thin- and/or smooth-barked trees are sometimes wrapped to prevent injury from winter sun. However, the preferred wraps are light in color, porous to water and biodegradable, and should be removed in the spring, no later than May 15 in the Chicago area.

**Staking**
Staking, guying, or bracing refer to mechanically supporting the trunk of a planted tree to keep it in an upright position. **Staking is not usually necessary for properly handled and planted B&B stock.** If the root ball is in good condition, and has been stabilized by compacting soil around the base, the tree is not likely to lean or shift. Many contractors feel that leaving the burlap and twine over the root ball for the first year helps to hold the root ball together and keep the tree straight. There may be a few exceptions where staking is needed, such as very windy sites, or sandy root balls.

If a tree must be staked, be sure stakes and guys do not create a hazard for people. Guying material should be wide, smooth, nonabrasive, flexible, and if possible, photodegradable. To prevent injury to the bark, the guying should be examined at least once during the growing season and adjusted if necessary. Supports should be removed after one year to avoid trunk girdling.

**Mulching**
Apply mulch over the entire planting hole to conserve soil moisture. The mulch layer should be 1-3 inches deep after settling, depending on the size of the tree. Mulch should not be allowed to cover the base of the trunk.
Mulch is often incorrectly piled up to 1 ft deep in a small circle only about 3 ft wide around the tree. This is of little benefit to the roots, sheds water, can be potentially damaging to the trunk. It is aesthetically unpleasing, and sometimes called “volcano mulch”.

Sometimes the ‘volcano mulch’ can be covering up a bad planting job. It can be hiding excess soil from the planting hole that was piled around the base of the tree rather than being hauled away.

Fertilization
Drought stress limits the growth of newly planted trees more than any other factor. Until the root system can grow and absorb more water, adding fertilizer to the soil is likely to be ineffective.
Tree Planting Detail

PRUNE ONLY AS REQUIRED TO PRESERVE THE NATURAL CHARACTER OF THE TREE. DO NOT REMOVE BRANCHES.

KEEP MULCH 150mm AWAY FROM TRUNK. TOP OF ROOT BALL MUST BE VISIBLE. DO NOT PULL UP MULCH AT TRUNK.

STEEL T-BAR DRIVER IGF WITH MEASURING WIRE

TREE TIE & GUIDE: GALVANISED WIRE ENDS IN 1MM RUBBER NOSE OR APPROVED EQUAL.

PLANTING BOLL/TOP SOIL

SHALLOW ANGLE OR HOES SHOOL SIDES AND BOTTOM

300MM DEPTH OF SOIL

NOTES:
- DO NOT USE TREE PLANTS. TREES PLANTED IN ALLOTTED PLANTING BARGAINING WILL NOT BE ACCEPTED.
- CHECK SOIL CONDITIONS PRIOR TO PLANTING. FOR CLAY LOAM CONDITIONS.
- SET TIES 150: 150MM HIGHER THAN MEASURING STICK.
- SHELTER AND LIVEN MESH ON PLANTING PIT. SHELTER MESH COMPRESSED IN BOTTOM OF PIT.
- BASKET PLANTING MUST BE IN ACCORDANCE WITH TOWN OF ALLOTTED SPECIFICATIONS.
- INSTALL BOLL/TOP SOIL IN LAYERS AND CONSIDER ACTIVELY TRAPEZOIDAL TO COFFER AIR FLOW.
- REMOVE DRAIN, DRAINAGE AND CURTAIN BOLT FROM TOP MULCH OF ROOT BALL.
- ALL MULCH SHALL BE SHREDDED PRODUCE HEDGE MULCH.

DECIDUOUS TREE PLANTING
### APPENDIX E - Standard Title Block Layer Properties and Content

<table>
<thead>
<tr>
<th>Layer Name</th>
<th>Colour</th>
<th>Linetype</th>
<th>Layer Description</th>
<th>Entity Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEARINGS_DIST</td>
<td>Green-Index 3 (0,255,0)</td>
<td>Continuous</td>
<td>Bearings and distances of the legal property boundary.</td>
<td>Text</td>
</tr>
<tr>
<td>CONTOURS</td>
<td>Grey-Index 8 (128,128,128)</td>
<td>Continuous</td>
<td>Contour lines and associated text.</td>
<td>Line &amp; Text</td>
</tr>
<tr>
<td>ENTRANCE_ARROWS</td>
<td>Red-Index 1 (255,0,0)</td>
<td>Continuous</td>
<td>Standard arrows showing building entrance locations.</td>
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<td>ESPA</td>
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<td>ESPA boundaries and associated text.</td>
<td>Line &amp; Text</td>
</tr>
<tr>
<td>EX_STRUCTURES</td>
<td>Grey-Index 8 (128,128,128)</td>
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<td>Existing buildings, structures, forms and associated text.</td>
<td>Line &amp; Text</td>
</tr>
<tr>
<td>EX_USE</td>
<td>Grey-Index 8 (128,128,128)</td>
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<tr>
<td>EX_VEGETATION</td>
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<td>Existing trees, shrubs, woodlots and associated text.</td>
<td>Line &amp; Text</td>
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<tr>
<td>FENCE</td>
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<td>Fence-location, height, and type.</td>
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<td>FIRE</td>
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<td>Dashed</td>
<td>Location of hydrants, Siamese connections, and fire route and associated text. (dashed line applies to the fire route)</td>
<td>Line &amp; Text</td>
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<td>Flood-line boundaries and associated text.</td>
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<tr>
<td>LANDSCAPING</td>
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<td>Proposed landscaped areas labeled 'Landscaped'</td>
<td>Text</td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------------------</td>
<td>------------</td>
<td>-----------------------------------------------</td>
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</tr>
<tr>
<td>MISC</td>
<td>White-Index 7 (255,255,255)</td>
<td>Continuous</td>
<td>Miscellaneous</td>
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<tr>
<td>OUTDOOR_CONTAINERS</td>
<td>White-Index 7 (255,255,255)</td>
<td>Continuous</td>
<td>Proposed containers, vaults, facilities for waste collection and associated text</td>
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<tr>
<td>PARKING</td>
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<td>Parking space lines, handicapped space symbol indicating handicapped parking and associated text</td>
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<tr>
<td>PAVEMENT</td>
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<td>Lines showing the edge of pavement, curbs and sidewalks and associated text.</td>
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<td>PLAN_DIM</td>
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<td>Line &amp; Text</td>
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<td>PLAN_TEXT</td>
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<td>Line &amp; Text</td>
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<td>Lines showing the proposed building and any new structure and associated text. All line work must be closed (snapped together at meeting points).</td>
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<tr>
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<tr>
<td>SERVICES</td>
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<td>Existing and proposed service connections and associated text.</td>
<td>Line &amp; Text</td>
</tr>
<tr>
<td>Block Type</td>
<td>Color</td>
<td>Line Style</td>
<td>Description</td>
<td>Element Type</td>
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<td>--------------</td>
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<td>Survey monuments, iron bars, and associated text.</td>
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<td>Storm water management areas (ponds etc) and associated text.</td>
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<td>TITLEBLOCK_TXT</td>
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<td>Titleblock text and Site Statistics</td>
<td>Text</td>
</tr>
<tr>
<td>TRAFFIC ARROWS</td>
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<td>Directional arrows on pavement. One way arrows, left turn arrows, etc.</td>
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<tr>
<td>WETLANDS</td>
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<td>Wetlands, marshes and associated text.</td>
<td>Line &amp; Text</td>
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</tbody>
</table>