THE CORPORATION OF THE MUNICIPALITY OF THAMES CENTRE

BY-LAW NO. 84-2002

Being a By-law to adopt guidelines for tree planting within the Municipality of Thames Centre.

(Tree Planting Guidelines)

WHEREAS the *Municipal Act*, R.S.O. 1990, c. M.45 Section 312(4) authorizes the Council of every municipality to pass by-laws for authorizing, regulating and prohibiting the planting of shade or ornamental trees upon or adjacent to any public highway;

AND WHEREAS the Council of The Corporation of the Municipality of Thames Centre deems it is expedient to adopt guidelines for regulating and prohibiting the planting of shade or ornamental trees upon or adjacent to any public highway;

NOW THEREFORE the Council of The Corporation of the Municipality of Thames Centre **HEREBY ENACTS AS FOLLOWS**:

1. **THAT** the tree planting guidelines described in Schedule 'A' attached hereto and forming a part of this By-law be and the same are hereby adopted by the Municipality of Thames Centre as guidelines for tree planting within the urban areas of the Municipality of Thames Centre.

2. **THAT** the tree planting guidelines described in Schedule 'B' attached hereto and forming a part of this By-law be and the same are hereby adopted by the Municipality of Thames Centre as guidelines for tree planting within the rural areas of the Municipality of Thames Centre.

3. **THAT** By-law No. 44-97 adopted by the former Township of West Nissouri on the 18th day of August, 1997 be and the same is hereby repealed.

4. **THAT** this By-law shall come into force and take effect upon the final passing thereof.

READ a **FIRST** and **SECOND** time this 28th day of October, 2002.

READ a **THIRD** time and **FINALLY PASSED** this 28th day of October, 2002.

Mayor, A. Marr

Clerk, M. Casavecchia

BY LAW INDEX

Highways	✓
Regulatory	✓
Roads + Streets	✓

SCHEDULE 'A'
to
By-law No. 84-2002

MUNICIPALITY OF THAMES CENTRE

TREE PLANTING GUIDELINES

FOR URBAN AREAS

2002

INTRODUCTION

Tree planting on the public right-of-way is a long term initiative. **What is done today can have a serious impact on street tree maintenance activities for years to come.** It is therefore imperative that tree planting be done with care and planning. Planning is critical to ensure that the final product is sustainable and aesthetically pleasing. Trees of similar shape but different species, if carefully selected, will provide the desired effect of tree arch over the street. The mix of species is essential to reduce the chances of insect epidemics, to guard against the spread of disease as trees are trimmed in efficient block treatments, to prevent widespread neighbourhood complaints and to eliminate extensive tree removal programs when single species planting die (eg. Dutch Elm Disease on American Elm, Verticillium wilt on Norway Maples).

Designs which reflect strong linear patterns are encouraged to consider the breaking up of patterns through use of random plantings of diversified species composition. Consideration should be given to adjacent lands where existing street trees may exist to ensure that continuous plantings are not created, in particular infill projects of limited frontage.

In general, **good common sense is required in the planning and planting of trees** but several guidelines are provided in the following to ensure that future homeowner and civic problems are minimized.

GUIDELINES

1.0 PROFESSIONAL CERTIFICATION

The services of a tree care professional such as Ontario Registered Professional Forester or a member of the Ontario Association of Landscape Architects in good standing must be retained. This is to ensure that an appropriate concept tree planting plan which considers species diversity, tree form, location and design can be prepared. The concept tree planting plan **stamped by the R.P.F. or L.A.** is to be shown on the standard plan of subdivision drawing or grading plan which shows lot dimensions (particularly frontages) as prepared by the consulting engineer. The drawing is concept in nature and shows the species of tree on each lot. The working detail identifying the actual planting locations, i.e. distance from driveways, hydrants, lights, etc. must be reviewed between the designer and landscaper at the time of tree installation. The actual tree locations must be adjusted, deleted or added as the built environment dictates according to the specifications in these guidelines. Appendix 1 is an example of the tree planting concept plan. The drawing must include tree planting detail (Appendix2), tree location with sidewalk or without sidewalk (Appendix 3) and general notes (Appendix 4) with the soil type indicated and a legend indicating tree species on each lot. The plan is to be submitted to the Municipality for approval. Drawings will be stamped, signed and dated once reviewed and/or approved by the Municipality. The R.P.F. or L.A. must also be retained to assess the planting and communicate with the Municipality with respect to provisional and final acceptance recommendations at the 1 year and 2 year growing season post planting dates. The simplified process including responsibility is outlined in Appendix 7. The tree assessment criteria are outlined in Appendix 8.

2.0 TREE LOCATION

The use of common sense when locating and planting trees is vital since there is tremendous variation in boulevard conditions. Tree planting is to be under taken after each lot has been developed and the final grading and sodding completed; **NOT BEFORE.** This will reduce tree stress and mortality. The overall goal is to plant one tree per lot or a tree every 15 metres (50 ft) where practical and where growing space is available. Since large trees contribute more to the environment than small ones, the largest tree at maturity that fits the location is to be planted. The following are guidelines which will help:

2.1 All trees are to be planted on Municipal property.

Lot Width Considerations (See Figure 1)

The intent is to plant 1 tree/ lot or a tree every 15 metres (50 ft) where practical and where suitable growing space is available. The lot width and curb to property line information must be combined to choose the best size of tree. **Consider the following in combination with figure 1.**

2.2 Plant one tree per lot centered approximately in the green space between the side yard property boundaries.

2.3 Where lot width is less than or equal to 9M (30ft), plant one tree per lot selecting a small shade or ornamental tree, depending on spacial constraints (Fig. 1) from the Approved Street Trees (Appendix 5).

2.4 Where lot width is between 9M (30 ft) and 15M (50 ft), plant one tree per lot selecting a large or small shade to ornamental tree, depending on spacial constraints (Fig. 1), from the approved Street Trees (Appendix 5).

2.5 Where lot width is 15M (50 ft) or larger, plant one tree per lot selecting a large or small shade to ornamental tree, depending on spacial constraints (Fig. 1), from the Approved Street Trees (Appendix 5).

Curb to Property Line Considerations (see Appendix 3 and Figure 1)

2.6 Where no sidewalks exist or where sidewalk construction is not planned, plant trees 1 meter outside the private property boundary on municipal property.

2.7 Where a boulevard between curb and sidewalk exists, that is greater than 2M (6 ft), plant large to small trees in the centre of the boulevard - assuming no overhead utility.

2.8 Where a boulevard between curb and sidewalk exists that is 1.2 m (4 ft) to 2 m (6 ft) plant, ornamental or small shade trees in the centre of the boulevard.

2.9 Trees are not to be planted on boulevards which are less than 1.2 m (4 ft) wide.

Other Considerations

2.10 Plant only ornamental tree varieties under high voltage overhead utility wires. Large and small shade trees are permitted near single phase, street light cable and homeowner service cables. The leader of the tree should not be directly under such wires.

2.11 No tree is to be planted closer than 2 meters (6.7 ft) to a driveway, lead sidewalk going into a property, underground vault, storm or sanitary sewer.

2.12 No tree is to be planted closer than 15 meters (50 ft) to a stop sign or traffic signal light.

2.13 No tree is to be planted closer than 6 meters (20 ft) to a street light pole, fire hydrant.

2.14 Trees only are to be planted on cul-de-sac islands 3 meters (10 ft) behind the curb at 12, 3 and 9 o'clock. Leave the 6 o'clock position at the entrance to the cul-de-sac open for snow piling.

2.15 Trees should not be planted in a direct line with the drainage swale between lots or directly above underground utilities.

		LOT WIDTH		
		< 30 ' (9 M)	**30 - 50 ' (9 - 15 M)**	**> 50' (>15 M)**
BLVD. WIDTH	**>6' (> 2 M)**	**S**	**L**	**L**
	4' - 6' (1.2 - 2 M)	**O**	**S**	**S**
	< 4' (1.2 M)	**NO TREE**	**NO TREE**	**NO TREE**
	NO SIDEWALK	**S**	**L**	**L**
	OVERHEAD HIGH VOLTAGE PRESENT	**O**	**O**	**O**

Figure 1: Tree size in combination with lot width, boulevard width and other factors.

Legend: S = small shade L = large shade O = Ornamental tree

3.0 TREE SPECIES/TIMING:

Species diversity is a goal to ensure variety, uneven aged trees, right tree in the right place and low incidence of pests and complaint calls.

3.1 All street trees are to be deciduous or broad leaved trees appropriate for Plant Hardiness Zone 6A.

3.2 A random design of street trees is most desirable to provide built-in resistance to insect and disease problems. **Therefore, no more than four trees of one species or variety are to be planted on one side of the street in a row.** Trees may be matched one side of the street to the other (maximum of 8 matched trees). **No species shall exceed 15% of the number of trees planted in each plan submitted.** Where several phases make up the M-Plan, the plan should reflect the character of plantings in adjacent phases.

Designs which reflect strong linear patterns are encouraged to consider the breaking up of patterns through use of random plantings of diversified species composition. Consideration should be given to adjacent lands where existing street trees may exist to ensure that continuous plantings are not created, in particular, infill projects of limited frontage.

3.3 Trees with similar shape, (eg. vase, oval, upright) are to be selected to provide a closed canopy effect. Only in extenuating circumstances are trees of the same species be planted in numbers exceeding four in a row (eg. a four - way intersection may have 32 trees only if a design statement is required).

3.4 No species other than those listed in Appendix 5 are to be planted without consulting the Municipality. Take care to recognize all characteristics of the mature tree in making species selections.

3.5 Trees with large or messy fruit may be planted in limited situations; trees with large thorns are not permitted and species such as poplar and willow are not permitted for street tree planting. Coniferous needle-bearing trees or other species are not to be planted on the right-of-way where they will cause sight line obstructions.

3.6 Tree substitutions will only be considered in exceptional circumstances. Therefore, with a spring and fall tree planting window, it is important to consider species specific requirements and attempt to plan for the most probable planting season to satisfy the client. It may be necessary to plant over two seasons to allow for spring and fall plant material diversity.

3.7 Trees are to be planted as the development continues and at a maximum, 1 year after the date on the Final Lot Grading Certificate as prepared by the Consulting Engineer.

4.0 TREE SIZE/HEALTH

4.1 **Stem Size**
The minimum acceptable tree caliper is 50 mm (2 in) measured at 15 cm (6 in) above the stem flare. **All trees must be single stemmed.**

4.2 **Tree Health**
Trees must be in good health with no bark scrapes, broken branches, insect or disease presence, heading back or excessive root pruning.

4.3 **Tree Form**
Tree form must meet the Canadian National Nurseryman's Standards, i.e. branch scaffold must be well established, main leader must be preserved, growth over the past three years must be well developed, stem must be single.

4.4 **Root Ball**
Only trees dug with a tree spade and balled and burlapped are acceptable. No false root balls will be approved. All trees must be balled and burlap or wire basket. Balls with nylon rope will not be accepted unless completely removed from the tree pit.

4.5 **Guarantee**
All trees must be guaranteed for a minimum of two growing seasons after the planting date. **A growing season is May 1 to September 1.**

4.6 **Provisional Acceptance**
The R.P.F. or L.A. is responsible for contacting the Municipality and providing a lis of species, at each address at the completion of planting as this will trigger provisional acceptance. The communication must include a list of addresses planted, the species planted at each address (see Appendix 6) and a sample of the public notification card/pamphlet provided to each homeowner (see sec. 6.0).

Provisional acceptance will be provided in writing to indicate that trees meet standards (See Appendix 8) and are planted in the proper location. The date of written provisional acceptance is the start of the two growing season guarantee period. Provisional acceptance will only be granted upon total completion of the work or for planting of greater than 20 trees.

4.7 **Final Acceptance**
Final acceptance will be provided in writing by the Municipality after receipt of a recommendation from the consultant indicating survival of trees and completion of physical works (see Appendix 8) after the two growing season guarantee period.

Where trees are of doubtful health the Municipality reserves the right to extend the guarantee or require replacement planting. Prior to written final acceptance the developer will be responsible for removal of all stakes and ties.

4.8 **Inspections**
Inspection will be undertaken **only during the growing season - i.e. May 1 through September 1.**

4.9 **Replacement Trees**
Replacement trees are subject to the same quality standards as outlined in sections 4.1 - 4.4. Replacement trees must be planted within six months of written notification from the Municipality.

5.0 PLANTING DETAIL (see Appendix 2)

5.1 **Hole Dimensions:** Maximizing the hole diameter has been shown to be most beneficial to tree survival. Therefore, holes are to be dug as large as possible, but at a minimum of 500 m. Meyer. larger all around than the soil ball. The hole must be deep enough to accommodate the ball but the **bottom of the hole is to be undisturbed**. The contractor/developer is responsible for obtaining all locates prior to digging.

5.2 **Soil and Soil Amendments:** No soil amendments are necessary under normal conditions. Any foreign debris (eg. bricks, dry wall) is to be removed from the hole and replaced with screened topsoil.

5.3 **Planting Depth:** Trees must be planted so that they are at the same root collar depth as they were in the nursery. Tress planted in clay may be planted 75-100 m. Meyer high and tapered to the root collar. **Soil in the bottom of the hole must not be disturbed.** Do not mound soil around base of tree. A soil saucer 100 m. Meyer high is to be prepared to hold water at the outer limit of the planting hole. The root collar must be flush with finished grade (except where clay exists as noted above). Burlap, wire baskets and ropes must be removed from the top third of the ball.

5.4 **Fertilization:** No fertilization is required at the time of planting.

5.5 **Branch Trimming:** Only broken, damaged, or cross over branches are to be trimmed. Trees with no leader or which have been "headed-back" will not be accepted.

5.6 **Staking:** A double 2 x 2" wooden stake system or equivalent is to be used. Stakes are inserted outside the root ball and tied to the tree using non-fungicide treated binder twine or approved alternative. Tie at top of stake to prevent trunk from hitting stake. Stakes should be in the direction of the prevailing wind to provide best support. **All stakes and ties must be removed prior to the final acceptance.**

5.7 **Mulch:** All trees are to be mulched with wood chips to a minimum depth of 100 m. Meyer (4 inches). The root ball diameter plus 500 m. Meyer (20 in.) all around is to be mulched. Do not mound soil/mulch around tree trunk. Do not maintain turf to base of tree.

5.8 **Stem Protection:** A length of black, perforated plastic pipe 450 m. Meyer x 150 m. Meyer (18 in x 6 in) slit down one side is to be placed at the ground line on the stem of each tree. Mulch can be installed up to the pipe but not inside.

5.9 **Watering and Maintenance:** All trees must be watered at the time of planting to ensure good soil root contact and thereafter to maintain healthy life. Trees are to be maintained throughout the 2 growing seasons guarantee (Section 4.5). This includes the tree, mulch and stake whether destroyed by vandalism or natural causes.

6.0 PUBLIC RELATIONS:

6.1 **Homeowner Notice:** Homeowners are to be notified with a developer/landscaper card or pamphlet. The pamphlet should include information about the necessity to leave the woodchip mulch, do not trim tree, do not remove the tree or guard, the existence of the two growing season guarantee period, do not pile soil around base of tree, etc.

6.2 **Complaints:** Complaints about survival, vandalism, and need for replacement trees are to be directed to the developer/landscaper. The drop off card must include the contact name and telephone number and a statement encouraging homeowners to retain the card for future reference.

6.3 **Refusal:** The developer/consultant/landscaper is to attempt to persuade a

homeowner who does not want a tree on municipal property to accept one. In the event that a strenuous refusal arises, the developer/consultant/landscaper is to indicate this on the tree planted list (Appendix 6). Refusals are allowed only in very exceptional circumstances.

Example: **TREE PLANTING NOTICE**

A tree has been planted on Municipal property in front of your home. With your help, we can ensure the survival of our trees. Please pull weeds and grass from around the base of the tree, do not mound soil up around the stem, do not cut branches, roots or injure the bark on the tree. Feel free to water the tree twice a week if the weather is dry - otherwise it is probably not needed. If the tree dies and needs to be replaced please contact: ___(Developer/name)_____ at (phone) _____.
Retain this card for future reference.

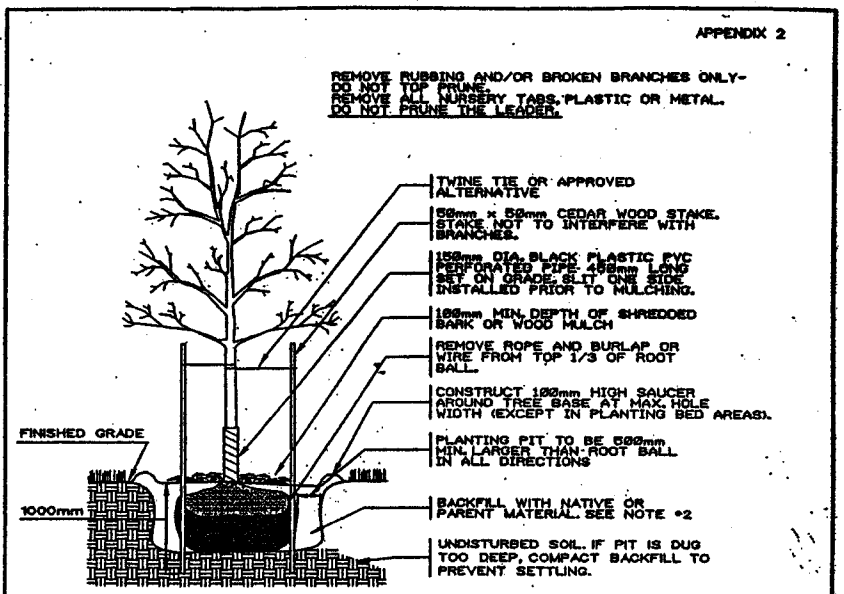
Municipality of Thames Centre
Operations Department
4305 Hamilton Road
Dorchester, ON N0L 1G3
Ph. 519-268-7334
Fax 519-268-3928

APPENDIX 1

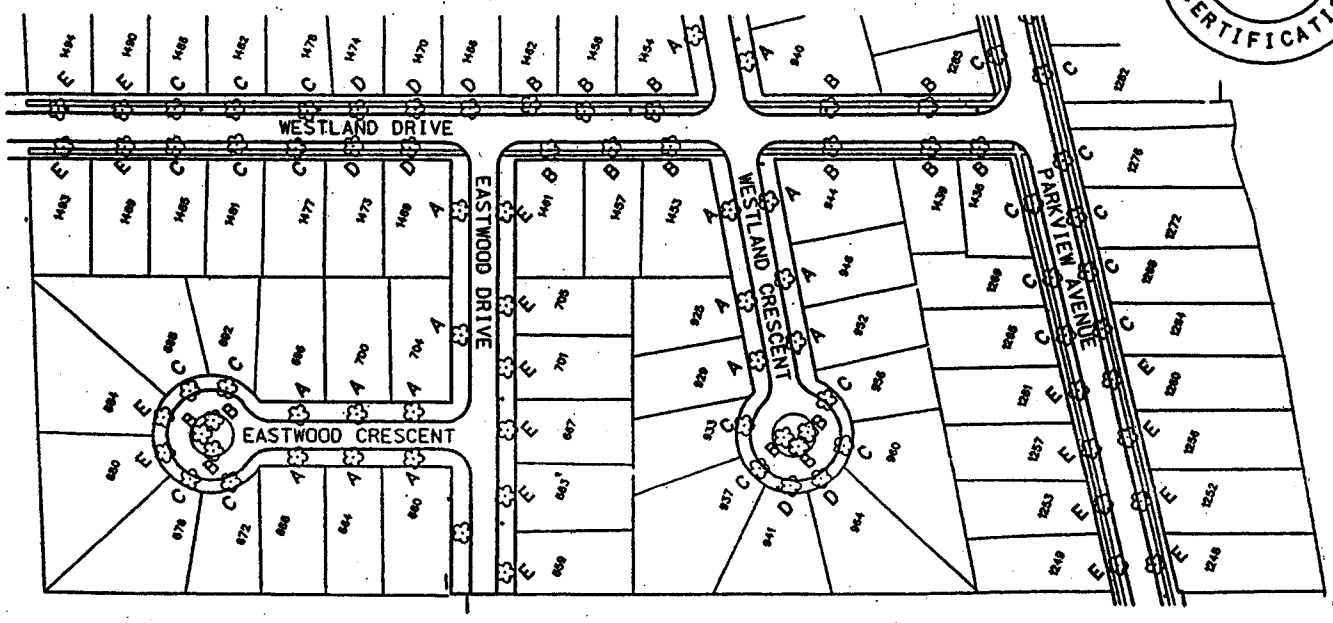
TREE PLANTING CONCEPT PLAN:

KEY	BOTANICAL NAME	COMMON NAME	TOTAL	SIZE (CALIPER) mm
A	GLEDITSIA TRIACANTHOS "SKYLINE"	SKYLINE HONEY LOCUST	16	50mm
B	ACER RUBRUM	RED MAPLE	17	50mm
C	FRAXINUS PENNSYLVANICA "PATMORE"	PATMORE ASH	23	50mm
D	QUERCUS MACROCARPA	BUR OAK	7	50mm
E	TILIA CORDATA "GREENSPIRE"	GREENSPIRE LINDEN	20	50mm

APPENDIX 2



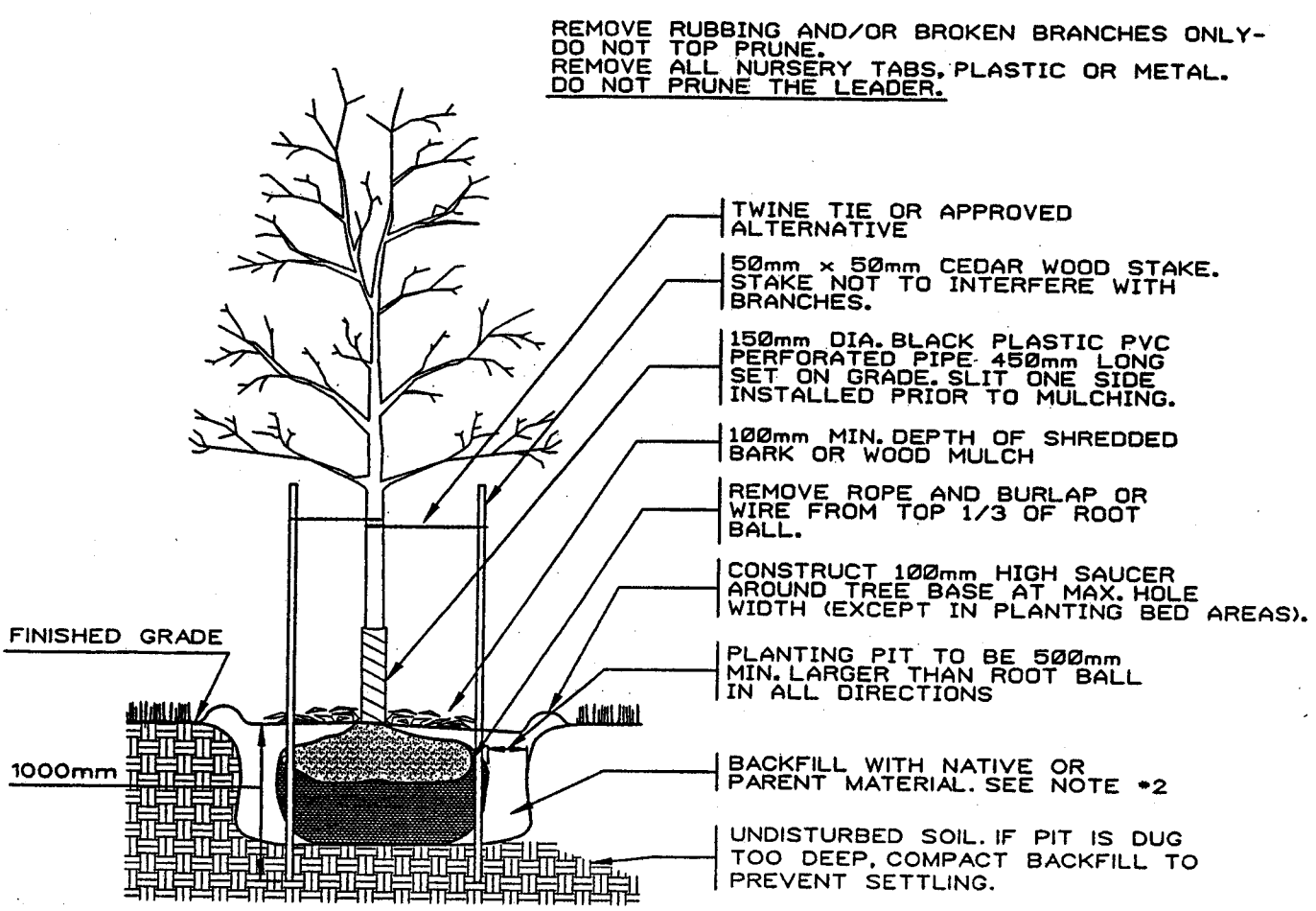
BALLED AND BURLAPPED DECIDUOUS TREES



PROFESSIONAL CERTIFICATION

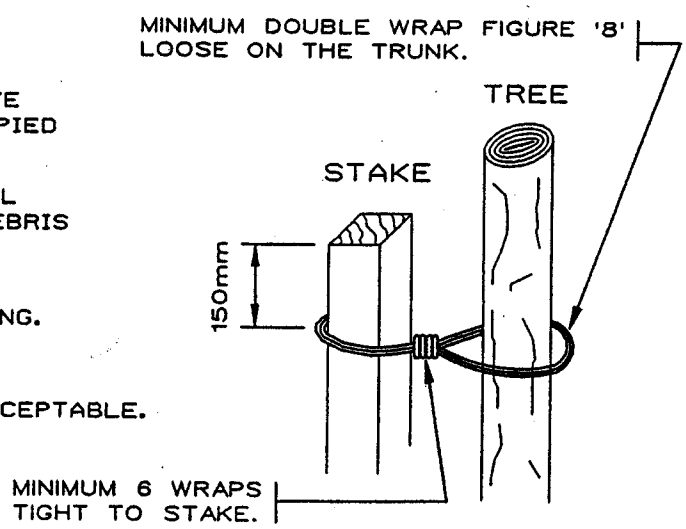
APPENDIX 2

TREE PLANTING DETAIL:



NOTE:

1. TRUNK TO HAVE SAME ELEVATION RELATIVE TO FINISHED GRADE AS PREVIOUSLY OCCUPIED PRIOR TO TRANSPLANTING.
2. BACKFILL TREE-PIT WITH NATIVE BACKFILL OR PARENT MATERIAL. REMOVE FOREIGN DEBRIS AND REPLACE WITH SCREENED TOPSOIL.
3. SAUCER TO BE SOAKED WITH WATER AND MULCHED IMMEDIATELY FOLLOWING PLANTING.
4. ALL DIMENSIONS ARE IN MILLIMETERS.
5. ON STRING BALLS, ONLY HEMP ROPE IS ACCEPTABLE.

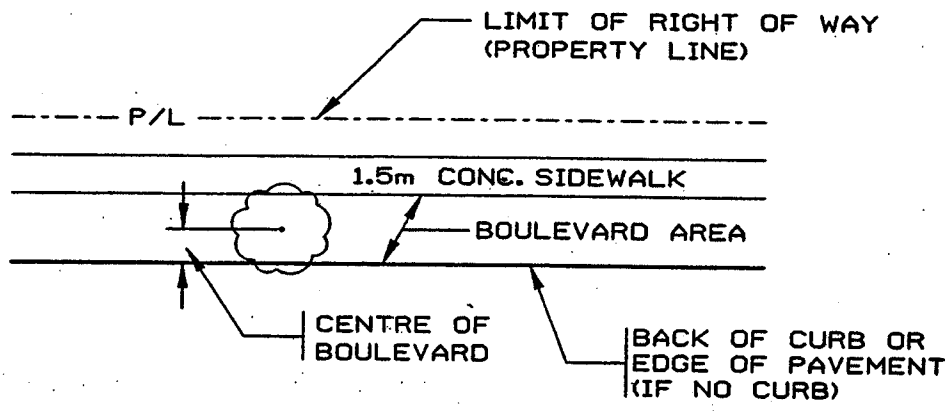


TWINE TIE DETAIL

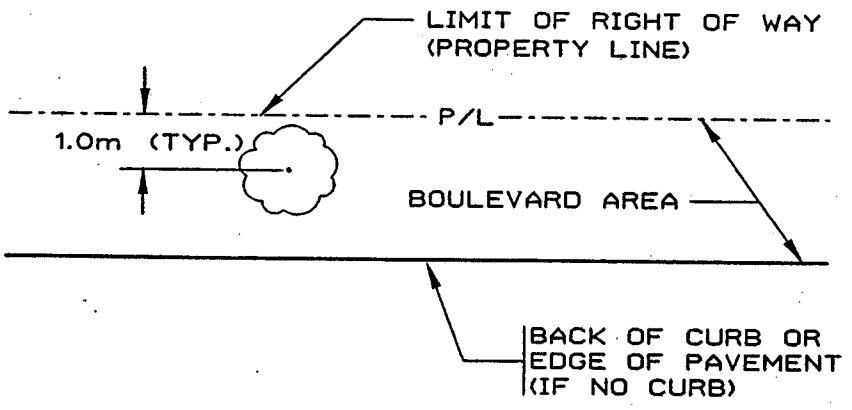
BALLED AND BURLAPPED DECIDUOUS TREES

APPENDIX 3

TYPICAL TREE LOCATION:



TYPICAL TREE LOCATION DETAIL
ON BOULEVARD WITH SIDEWALK



TYPICAL TREE LOCATION DETAIL
WITHOUT BOULEVARD SIDEWALK

APPENDIX 4

GENERAL NOTES:

1. All plant materials shall be # 1 nursery stock meeting Canadian Standards.

2. Stake all deciduous trees.

3. Dig all tree pits 500 m. Meyer larger all around than the root ball and place tree centered in pit on undisturbed soil. Backfill with parent material and replace debris (eg. brick, dry wall etc.) with screened topsoil.

4. For grading and drainage, see engineering plans prepared by _____
.

5. Specific tree location for each lot are to be determined by Tree Planting Guidelines set by the Municipality of Thames Centre and shown on Lot Grading Certification Plans.

6. All dimensions are in millimeters unless otherwise noted.

7. All plant materials to be guaranteed for two growing seasons from the date of provisional acceptance.

8. Prior to the commencement of construction, all existing underground utilities within the limits of the construction site shall be located and marked. Any utilities damaged or disturbed during construction shall be repaired or replaced to the satisfaction of the Municipality of Thames Centre.

9. Plant materials to be installed as shown; substitutions allowed only after consultation with the Landscape Consultant and the Municipality of Thames Centre.

10. Predominant soil type in the area is _____.

APPENDIX 5

APPROVED STREET TREES:

The selection of trees for individual locations is a difficult process. It must give careful consideration to the neighbourhood and the existing conditions including soil type, moisture, available growing space above ground, proximity to hard phycical plant (hydro wires, gas, lighting, hydrants, vaults, sidewalks) and future rooting and growing space demands. **In recommending the species in the table we recognize that they are not all suitable for all locations. Carefully select the species which posesses the characteristics which most closely meet the environmental conditions of each site (eg. Do not select salt sensitive species for high traffic areas).**

Other concerns include:

* STRESS → considers the tolerance to conditions such as compacted soil, diseases, drought, insects, road salt spray

*TIME → consider which species can be transplanted/moved at specific times in the year eg. spring only

* NATIVE → consider the suitability of trees indignous to this region for use in highly disturbed soils, traditionally found in streetscapes and new subdivisions

* FRUIT → consider the size and season and abundance of fruit produced by some species making them less desirable in specific locations

* DISEASE → consider the potential for widespread mortality and costly removal and replacement programs generating public and political complaints with trees such as Norway maple (Verticillium wilt) american elm (Dutch Elm Disease) Austrian Pine (Diplodia tip Blight). Avoid mass planting of single species.

VARIETY:

In an effort to promote long term sustainability, cost effective block trimming operations and increase ability to manage street tree risk management, we encourage a variety of tree species on each and every street. We also support aesthetically pleasing street tree designs and therefore encourage the planting of tree species mixtures which have similar form. Commonly recognized tree forms are as follows:

TREE FORMS:

VAUSE

PYRAMIDAL

OVAL

APPENDIX 5

APPROVED STREET TREES:

COLUMNAR

ROUNDED

SPREADING

The landscape architect or registered professional forester is responsible for proper design and species selection taking the above points into consideration.

In an attempt to assist the design and species selection process, a list of recommended street trees is included. The list has been prepared using a number of references and you are encouraged to search these out and provide input with respect to other species for consideration. References include:

Dirr, M.A. 1990 Manual of Woody Landscape Plants

Farrar, J.L. 1995 Trees in Canada

Gerhold, H.D. et.al., 1989 Street Tree Factsheets

Himelick, E.B., 1981 Tree & Shrub Transplanting Mannual

Poor, J.M. (Editor) 1984 Plants That Merit Attention Vol. 1

Rehder, A. 1940 Manual of Cultivated Trees & Shrubs

Sternberg, G, & J. Wilson 1995 Landscaping with Native Trees

Watson, G.W. 1992 Selecting and Planting Trees

APPROVED STREET TREES

TREE NAME	STRESS	LIME	USE	HYDRO	NATIVE	GENERAL COMMENTS	FORM	SIZE
Acer campestre Hedge Maple	GT/CS/DIS DRO/INS/ST	○	○	○	NN	compact form/trunk suckers require extra maintenance/best on dry alkaline soil /yellow fall colour	R	S
Acer ginnala Amur Maple	DRO/ST	○	●	○	NN	Compact form/red &yellow face colour/lots of seeds/tends to sucker/specify single stem form	R	O
Acer nigrum Black Maple	DIS/INS	●	●	●	○	Lots of seed for winter interest/rare/needs moist soil	O	L
Acer platanoides Norway Maple Varieties	GT/CS/DIS/ DRO/ST	○	○	●	NN	surface roots conflict with and turf/girdling roots/aphid and wilt problems	R	S
'Columnare Columnar	GT/CS/DIS/ DRO/INS/ST	○	○	●	NN	narrow form, 60' potential	C	S
'Crimson King' Crimson King	GT/CS/DRO/ INS	○	○	●	NN	dark foliage all season	R	S
'Deborah' Deborah	CS/DRO/INS	○	○	●	NN	Red foliage in spring and fades to dark green by late summer/girdling roots	R	S
'Emerald Queen' Emerald Queen	GT/CS/DRO/ INS	○	○	●	NN	excellent upright form	R	S
'Olmsted'/Olmsted	GT/CS/DRO/ INS	○	○	●	NN	good narrow form	C	S
'Schwedleri' Schwedler	GT/CS/DRO/ INS	○	○	●	NN	red foliage in spring & fades to dark green by late summer	R	S
'Erectum' Upright	GT/CS/DRO/ INS	○	○	●	NN	short lateral branches, the Lombary Poplar of Norway Maples	C	S
'Superform' Superform	GT/CS/DRO/ INS	○	○	●	NN	Excellent upright & tight form	O	S
Acer pseudoplatanus Sycamore Maple	GT/ST	●	●	●	NN	very pollution and salt tolerant/cankers cause high maintenance	O-R	L

APPROVED STREET TREES:

TREE NAME	STRESS	FIRE	USE	HYDRO	NATIVE	GENERAL COMMENTS	FORM	SIZE
Acer rubrum Red Maple 'October Glory' 'Red Sunset'	GT	●	○	●	○	Green summer foliage & yellow to red fall colour/tolerates wet soil	O-R	S
Acer saccharum Sugar Maple	INS/●	○	○	●	○	upright form/fall colour varies/prefers good drainage/shallow roots/salt sensitive	O-R	L
Acer tataricum Tatarian Maple	DRO/ST	○	●	○	NN	good red & yellow fall colour/tends to sucker/lots of seeds	R	S
Aesculus glabra Ohio Buckeye	GT/INS/DIS	○	●	●	⊗	untested in London area and may suffer winter problems/likes moist soil	O	S
Aesculus hippocastanum 'Baumannii' Bauman Horsechestnut	●	●	●	●	NN	good spring flower with no seeds/rare/disease susceptible	R	L
Alnus glutinosa Eropean Alder	GT	●	○	●	NN	showy flower & fruit/tolerent of wet & dry soil	P	S
Amelanchier canadensis Shadblow Serviceberry	●	●	●	○	○	difficult to maintain single stem/4 season interest/tolerates moist soil	R	O
Aralia spinosa Devil's Walking stick	GT/CS/DIS/ DRO/INS	○	●	○	●	thrives with neglect/suckers can be problem	O	O
Carpinus betulus 'Fastigiata'/Fastigiate European Hornbeam	●	●	●	●	NN	difficult to transplant/keep away from road salt & spray	P-R	S
Carpinus caroliniana American Hornbeam or Blue beech	●	●	●	○	○	difficult to transplant/keep away from road salt & spray/likes wet soil/thin bark and sculptured trunk	R	S
Celtis levigata Sugar Hackberry	GT/DRO	●	●	●	●	compact form/good in moist soils	V	L

APPENDIX 5

APPROVED STREET TREES:

TREE NAME	STRESS	HOME	USE	HYDRO	NATIVE	GENERAL COMMENTS	FORM	SIZE
Celtis occidentalis Hackberry	GT/DRO	●	○	●	○	requires pruning for witches broom and general form/good substitute for elms	V	L
Cercidiphyllum japonicum Katsura Tree	DIS/INS/●	●	●	●	NN	difficult to transplant/orange fall colour/thin bark/needs supplemental water	R	L
Cladrastis kentukea (lutea) Yellowwood	DIS/INS/●	○	●	●	●	few problems/use local seed sources or stock only/prune early	R	S
Cornus florida Flowering dogwood	●	○	●	○	○	use local winter hardy material only/good flower/specify single stem	R	O
Corylus colurna Turkish Hazal	GT	●	○	●	NN	good form/difficult to transplant/winter interest/needs supplemental water	P	L
Crataegus (varieties) Hawthorns	GT	●	●	○	NN	thornless & disease resistant varieties only.	R	O
Fagus sylvatica European Beech	●	●	●	●	NN	needs moist soil/different leaf colours with varieties/sensitive to activity within root zone/leaves persist through winter/thin bark	O-R	L
Fraxinus americana White ash	GT/DRO/ST	○	○	●	○	large tree/tolerates dry soil/susceptible to die back & numerous insects. 'Manitoo' is an upright variety	R	L
Ginkgo biloba (varieties) Maidenhair tree	GT/DIS/INS/ST	●	○	●	NN	good yellow fall colour/thin bark/male variety only	P-S	L
Gleditsia triacanthos varieties inermis/Thornless Honeylocust varieties Shademaster & Skyline	GT/DRO/ST	○	○	○	NN	provides a filtered shade/susceptible to defoliation	S	S
Gymnocladus dioicus Kentucky coffeetree	GT/CS/DIS/ DRO/INS	●	●	●	○	interesting winter texture/open lawn setting/large leaves/male variety only	O	L
Juglans nigra Black Walnut	GT	●	●	●	○	messy fruit/needs large area	○	L

APPENDIX 5

APPROVED STREET TREES:

TREE NAME	STRESS	FIRE	USE	HYDRO	NATIVE	GENERAL COMMENTS	FORM	SIZE
Koelreuteria paniculata Goldenraintree	GT/DIS/DRO/ INS	●	●	●	NN	good yellow flower & fruit/susceptible to winter damage/weak crotches	R	S
Labrunum (varieties) Goldenchain tree	GT	●	●	○	NN	yellow chain like flower/winter hardy local varieties only	R	O
Liriodendron tulipifera Tuliptree	●	●	●	●	⊗	good flowers and yellow fall colour/local sources/moist well drained soil/very large tree	R	L
Malus (most) Floweing & Domestic Crab Apple	GT/CS	○	●	○	NN	good flowers/fruit usually maintenance problems/disease & insect problems/tolerates most soils, select fruitless or persistent fruit varieties Spring Snow, Sugar tyme, Snowdrift, Red Jewel, Harvest Gold, Centurion, Radiant, Brandywine, Prince Georges, Profusion, Red Snow, White Candle	R-S	O
Phellodendron amurense Amur corktree	DIS/DRO/INS	○	●	○	NN	good winter texture in bark/lots of black berries/use in protected areas	S	S
Platanus x acerifolia London Planetree	GT/CS	○	○	●	NN	frost cracks on trunk/attractive peeling bark/fruit can cause problems	S	L
Prunus (varieties) Oranmental Cherry/Columnar/ Sargent/Kkwanzan	GT	●	○	○	NN	excellent flowers with no fruit/single stem to be specified/weeping cankers	V	O
Prunus virginiana 'Shubert" Shubert cherry	GT	●	○	●	NN	green spring foliage & red in summer/bark tends to split	R	O
Pyrus (varieties)/Ornamental Pear/Aristocrat/ Bradford/Capital Chanticleer/Redspire	GT	●	○	●	NN	good flowers/may have good fall colour/lush shinny leaves/fireblight problems	P-R	O
Quercus macrocarpa Bur Oak	GT/DRO	●	●	●	○	need large space/fruit maintenance/difficult to transplant	R	L

APPENDIX 5

APPROVED STREET TREES:

TREE NAME	STRESS	ZONE	USE	HYDRO	NATIVE	GENERAL COMMENTS	FORM	SIZE
Quercus alba White Oak	GT	●	●	●	○	need moist soil/fruit maintenance/needs large space at maturity	R	L
Quercus robur English Oak	GT	●	○	●	NN	need well drained soil/fruit maintenance/difficult to transplant	R	L
Quercus robur 'Fastigata' Fastigate English Oak	GT	●	○	●	NN	need well drained soil/holds leaves through the winter/difficult to transplant/very upright in form	C	L
Quercus rubra Red Oak	GT	●	○	●	○	need sandy loam soil/fruit maintenance/difficult to transplant	R	L
Sophora japonica Japanese Pagoda Tree	GT/DRO	●	●	●	NN	excellent white flower/green stem when young/limit use due to messy characteristics	S	L
Sorbus aucuparin European Mountain Ash	GT/CS	○	●	●	NN	small flower & orange fruit/disease & insect problems/limited use due to problems	O	S
Sorbus thuringiaca 'Fastigiata' Oakleaf Mountain Ash							V	O
Syringa reticulata 'Ivory Silk' Ivory Silk Lilac	GT	○	○	○	NN	good white summer flower/excellent small specimen	R	O
Tilia americana Basswood	GT	○	●	●	○	prefers deep moist fertile soil/will grow on drier heavier soil/needs large space	O	L
Tilia cordata (varieties) Littleleaf Linden/Glenleven/ Greenspire/ Greenglobe	GT	○	●	●	NN	showy & fragrant flowers/ Greenglobe maybe used under hydro lines/aphid & borer problems/suckers from base/messy species/limit use	P-R	S
Tilia x euchlora Crimean Linden	GT/INS	○	●	●	NN	showy & fragrant flowers/fruit messy/suckers from base/limit use	R	S

APPENDIX 5

APPROVED STREET TREES:

TREE NAME	STRESS	TIME	USE	HYDRO	NATIVE	GENERAL COMMENTS	FORM	SIZE
Ulmus "Homestead" Homestead Hybrid Elm	GT/CS/ST	○	○	●	NN	aggressive species/arching form/elm leaf beetle susceptible	V	L
Ulmus "Pioneer" Pioneer Hybrid elm	GT/ST/CS	○	○	●	NN	vigorous growth/dense crown/elm leaf beetle susceptible	R	L
Ulmus "Sapporo autumn gold" Sapporo Autumn Gold Hybrid Elm	GT/ST/CS	○	●	●	NN	rapid growth/more cold hardy/requires extensive trimming/specify own-roots plants	V	L
Zelkova serrata "green Vase" and "Village Green" Japanese Zelkova	GT/ST/CS	○	●	●	NN	rapid growth/narrow branch angles promote crotch split/frost susceptibility when young	V	L

LEGEND:

STRESS	TIME	USE	HYDRO	NATIVE
GT General tolerance CS Compacted Soil tolerent DIS Disease resistant DRO Drought resistant INS Insect Resistant ST Salt Tolerant ● Not tolerant of urban conditions	○ Install throughout the season subject to availability and suitable ground conditions ● Spring planting only	○ No restrictions ● Use only in limited locations which meet specific requirements of species	○ Use under most hydro ● Do not use under any hydro	○ .Native to London region ⊗ Native to other parts of Ontario ● Native to other parts of Canada/USA NN Not native to North America

FORM	TREE SIZE (suggested uses)
P Pyrmidal C Columnar R Rounded S Spreading O Oval V Vase	O Ornamental (narrow boulevard, under overhead wires, small frontage) L Large (+50' frontages, no wires, large boulevard) S Small (small frontage, narrow boulevard)

APPENDIX 5

APPENDIX 6

LISTING OF ADDRESSES PLANTED AND SPECIES PLANTED:

SUBDIVISION NAME:________________________________ **DATE:**____________

M-PLAN NUMBER :________________________

ADDRESS	TREE SPECIES	DATE PLANTED	CONTRACTOR (Name)
355 Ambleside Dr.	G. triacanthos "Skyline"	June 5, 1999	Green Thumb Landscaping

APPENDIX 7

TREE PLANTING PROCESS:

	ITEM	RESPONSIBILITY
1)	Select landscape architect/consulting forestry firm (consultant)	Developer
2)	Using plan of subdivision drawing and the list of trees in the guidelines for tree planting select the most appropriate tree species for the lot size/conditions and soil types and plot on the plan.	Consultant
3)	Submit the tree planting concept plan to the Forestry Division, Environmental Services Department for review and approval.	Consultant
4)	Once plan receives final approval stamp and is signed and dated, the plan is submitted to Subdivision and Development for inclusion in their files.	Consultant
5)	When subdivision final grades are established and sodding complete, select landscape firm to plant trees according to planting plan and guidelines.	Developer
6)	Plant trees	Landscaper
7)	Inspect trees for compliance with plan and guidelines (location, species, etc.) and prepare listing of trees planted by address	Consultant
8)	Notify Forestry division of completion and provide listing by address of species planted.	Consultant
9)	Acknowledge provisional acceptance.	Operations Department
10)	At the end of 2 year guarantee, inspect all trees for condition/survival and recommend and arrange replacements and/or assumption to Forestry Division.	Consultant
11)	Inspect and prepare assumption letter for developer with copy to Subdivision & Development and authorize release of security.	Operations Department

APPENDIX 8

TREE ASSESSMENT CRITERIA:

It is critical that the inspections of trees are done in a consistent manner so that all developers and landscapers are treated fairly. We must also ensure that the Municipality assumes a quality product that will not result in high maintenance costs.

To help facilitate this, the following tree assessment criteria are to be followed by the L.A. or R.P.F. in recommending tree assumption to the Municipality. If these criteria are followed, Municipal staff should be able to quickly approve trees for assumption.
Tree assessments are to be conducted from May 1 to September 1 only.

TREE CROWN:

- leaf area must be 75% or more
- branch ratio must be 50% of total tree height and there must be 9 to 11 branches, well spaced and ascending the main trunk in a spiral fashion. The crown must be well balanced.
- leaf size must be normal for the species
- leaf colour must be normal for the species

TREE STEM:

- the main leader must be intact - not cut
- the trunk must be single and straight
- the tree must be planted straight
- there must be 175 - 200.cm of clean stem below the branches
- there must be no major scrapes or cuts on the bark
- the tree must meet the diameter class as specified on the concept plan
- trees must be planted as on the concept plan or an explanation provided
- trees must be planted at the same height as in the nursery. We will accept maximum 100 m. Meyer high where necessary for survival. We will not accept trees planted deep, i.e. below the level they were in the nursery.

PLANTING METHODS:

- plastic pipe may be left in place
- stakes, ties, labels and wrap must be removed prior to acceptance
- saucer and mulch are to be left in place
- NO mounding of soil or "volcano" acceptable

A professionally stamped report by address is to be submitted with your recommendation to the Parks and Forestry Division. The following form is to be completed and submitted with your recommendation for assumption.

APPENDIX 8

TREE ASSESSMENT CRITERIA:

M-PLAN DATE OF SURVEY: SURVEYOR:

STREET NAME:

		TREE CROWN:					TREE STEM:				PLANTING METHODS:										
House No.	SPECIES PLANTED	% LEAF	BRANCH RATIO	LEAF SIZE	LEAF COLOUR	BALANCE	LEADER	STEM SIZE	LEAN / TRUNK STRAIGHT-NESS	SCARS & SCRAPES	PLASTIC PIPE	PLANTING HEIGHT	MULCH	SAUCER	STAKES	TIES	TREE WRAP	LABELS, TAGS, OTHER	TREE HEALTH UNACCEPTABLE AND DEFICIENCIES TO CORRECT (Replace tree)	TREE HEALTH ACCEPTABLE BUT DEFICIENCIES TO CORRECT	TREE HEALTH & WORKMANSHIP ACCEPTABLE - ASSUMED

SCHEDULE 'B'
to
By-law No. 84-2002

MUNICIPALITY OF THAMES CENTRE

TREE PLANTING GUIDELINES

FOR RURAL AREAS

2002

INTRODUCTION

Tree planting on the public right-of-way is a long term initiative. **What is done today can have a serious impact on road tree maintenance activities for years to come.** It is therefore imperative that tree planting be done with care and planning. Planning is critical to ensure that the final product is sustainable and aesthetically pleasing. Trees of similar shape but different species, if carefully selected, will provide the desired effect. The mix of species is essential to reduce the chances of insect epidemics, to guard against the spread of disease as trees are trimmed in efficient block treatments, to prevent widespread neighbourhood complaints and to eliminate extensive tree removal programs when single species planting die (eg. Dutch Elm Disease on American Elm, Verticillium wilt on Norway Maples).

Designs which reflect strong linear patterns are encouraged to consider the breaking up of patterns through use of random plantings of diversified species composition. Consideration should be given to adjacent lands where existing trees may exist to ensure that continuous plantings are not created, in particular infill projects of limited frontage.

In general, **good common sense is required in the planning and planting of trees** but several guidelines are provided in the following to ensure that future homeowner and civic problems are minimized.

GUIDELINES

1.0 TREE LOCATION

The use of common sense when locating and planting trees is vital since there is variation in right of way conditions. The overall goal is to plant one tree every 9 to15 metres (30 to 50 ft) where practical and where growing space is available. Since large trees contribute more to the environment than small ones, the largest tree at maturity that fits the location is to be planted. The following are guidelines which will help:

1.1 Tress planted for shade or ornamental purposes upon any highway shall be not more than 0.6 metres (2ft) from the property line marking the boundary of the road allowance.

1.2 No tree shall be planted within 20 metres (66 ft.) of the intersecting property line of any road allowances.

1.3 No tree shall be planted within 20 metres (66 ft.) of any known Municipal, Award of Private Drainage System.

1.4 No tree shall be planted closer than 2 metres of a laneway or underground vault.

1.5 No trees shall be planted on the same side of a road allowance where hydro or communication lines are located except those trees listed in Section 1 (a) and (b).

2.0 TREE SPECIES:

Species diversity is a goal to ensure variety, uneven aged trees, right tree in the right place and low incidence of pests and complaint calls.

2.1 All trees are to be deciduous or broad leaved trees appropriate for Plant Hardiness Zone 6A.

2.2 A random design of street trees is most desirable to provide built-in resistance to insect and disease problems.
Designs which reflect strong linear patterns are encouraged to consider the breaking up of patterns through use of random plantings of diversified species composition. Consideration should be given to adjacent lands where existing trees may exist to ensure that continuous plantings are not created, in particular, infill projects of limited frontage.

2.3 No species other than those listed in Appendix 1 are to be planted without consulting the Municipality. Take care to recognize all characteristics of the mature tree in making species selections.

3.0 TREE REMOVAL

3.1 No person shall injure or destroy any tree or trees growing on either side of a Highway until they have first obtained the written approval of the Municipal Road Department to remove or cut down the said tree or trees.

3.2 The Municipal Road Department is authorized to remove decayed or dangerous tress growing on the highways under the jurisdiction of the Municipality of Thames Centre.

APPENDIX "1"

SPECIES LISTING:

Tree species selection must take into consideration the rooting space, the overhead growing space and most importantly, the soil type.

1. a) **Native Trees (for use under Utility Wires)**

Flowering Dogwood	CORNUS FLORIDA - tree form
Redbud	CERCIS CANADENSIS
Service Berry	AMELANCHIER CANADENSIS
Choke Cherry	PRUNUS VIRGINIANA
Pin Cherry	PRUNUS PENSYLVANICA
Canada Plum	PRUNUS NIGRA
Alternate-Leaf Dogwood	CORNUS ALTERNIFOLIA

b) **Non-Native Trees (for use under Utility Wires)**

Crab Apple	MALUS CORONARIA
Cherry-flowering	PRUNUS SERRULATA
Japanese Tree Lilac	SYRINGA RETICULATA "Ivory Silk"
Chanticleer Pear	PYRUS CALLERYANA VAR "Autumn Blaze" "Capital", "Redspire"
Kwanzan Cherry	PRUNUS SERRULATA "Kwanzan"
European Hornbeam	CARPINUS BETULUS "Fastigiata"
Oakleaf Mountain Ash	SORBUS THURINGIACA "Fastigiata"

2. a) **Large Native Shade Trees (boulevards with no utility wires)**

Ash - Green	FRAXINUS PENNSYLVANICA
White	FRAXINUS AMERICANA
Kentucky Coffee Tree	GYMNOCLADUS DIOCUS
Chinquapin Oak	QUERCUS MUEHLENBERGII
Sugar Maple	ACER SACCHARUM
Bur Oak	QUERCUS MACROCARPA
Red Oak	QUERCUS RUBRA
Black Oak	QUERCUS VELUTINA
White Oak	QUERCUS ALBA
Tulip Tree	LIRIODENDRON TULIPIFERA
Hackberry	CELTIS OCCIDENTALIS

b.)	**Large Non-Native Shade Trees**	**(boulevards with no utility wires**
	Ginkgo (male)	GINKGO BILOBA
	English Oak	QUERCUS ROBUR
	Chestnut Oak	QUERCUS PRINUS