



P.O. Box 2430
 Indian Trail, North Carolina 28079

PLANNING AND NEIGHBORHOOD SERVICES

Zoning Staff Report

Case: ZT 2014-004 Amendment to UDO Chapter 1710 Related to Trees and Shrubs		
Referenced Name	Chapter 1710 of the Unified Development Ordinance	
Applicant	Town of Indian Trail	
Submittal Date	November 18, 2014	
Location	Town-wide	
Tax Map Number	N/A	
Plan Consistency	Town of Indian Trail Comprehensive Plan	Consistent with Goals of the Adopted Comprehensive Plan
Recommendations & Comments	Planning Staff	Recommends Approval of Proposed Text Amendment

Project Summary

This is a request to amend Unified Development Ordinance (UDO) Chapter 1710 (Appendix 1) to reflect improvements to the Town approved street tree list. The proposed amendments ensure an appropriately sized planting bed space is provided based on the anticipated mature growth of the planted street tree. This amendment was requested by the Indian Trail Tree Board October 21, 2014.

Staff Recommendation - Town Staff recommends that the text amendment be supported through recommending its approval to the Town Council.

Overview/Analysis

Proposed text amendment ZT2014-004 was initiated at the request of the Indian Trail Tree Board to help refine the Town approved street tree list. Street trees are trees that are planted parallel to public roads, typically within the public right-of-way and that provide shade to public sidewalks while giving other added public benefits. The primary purpose of the proposed amendments is to ensure the width of the street tree planting bed is taken into account by land developers when selecting specific tree species to plant. More simply put, the proposed amendments ensure smaller trees will be planted in narrower planting beds and larger trees will be planted in wider planting beds. Presently, large street tree species like Oaks and Chestnut trees may be planted in any size planting bed.

Taking into account the planting bed width when selecting street trees to plant will minimize damage to public infrastructure like sidewalks and roads, while ensuring a suitable planting space for trees to thrive. Other housekeeping changes were also incorporated into the updated street tree list. The Indian Trail Tree Board unanimously supported the proposed amendments. The following points below outline the specific changes proposed:

- Addition of tree spread information
- Correction of tree height information, where applicable
- Removal of invasive or threat species from the list
- Addition of invasive and/or threat species to the invasive and threat lists
- Addition of more native species so as to add more native tree variety for developers
- The categorization of small, medium and large trees based upon mature height and spread
- The creation of a minimum planting bed standards based on the tree size categories above
- Removal of trees that are not easily obtained in this area

Required Consistency Findings

The Town Planning Board has a requirement of two consistency findings, regarding both the benefit to the public and the consistency with respect to adopted plans. The proposed UDO amendment is consistent with the Comprehensive Plan.

Staff is of the opinion that the following consistency findings may be made:

- 1) The proposed UDO amendment is consistent with the goals of the Comprehensive Plan outlined below:
 - ***Natural Environment Goal 4:*** This Amendment provides for more variety in the tree selection process and encourages trees to grow to mature height and spread.
 - ***Infrastructure Goal 2:*** This Amendment helps minimize infrastructure damage to town roads through the use of planting bed spaces to support mature growth.
- 2) This UDO amendment is in the best interest of the public because it allows more variety of tree and shrub species and ensures an appropriately sized planting bed space is provided based on the anticipated mature growth of the planted street tree.

Staff recommends that the Planning Board make the required consistency findings and recommend adoption of this UDO Text Amendment ZT2014-004 as presented.

Staff Contact

Lindze Flowers
Planner I, GIS Technician
LFlowers@planning.indiantrail.org

Attachment 1: Proposed Text Amendment

Attachment 2: Draft Ordinance

PB ATTACHMENT 1: DRAFT APPENDIX

Chapter 1710. Appendix 1: Trees and Shrubs (DRAFT)

****This is not an inclusive list. Other species that can grow in cold hardiness zone 7b and/or are otherwise not listed on NCDOT's or the USDA'S invasive species list are permitted upon review and approval of Staff.**

Recommended Trees and Shrubs and List of Invasive Species

Common Name	Latin Name	Mature Height And Spread (feet)
LARGE MATURING DECIDUOUS TREES		
Ash, Green ¹	Fraxinus* pennsylvanica	50-60; 25-30
Baldcypress	Taxodium distichum	50-70; 20-30
Birch, River	Betula nigra	40-70; 40-60
Hackberry, Common	Celtis occidentalis	40-60; 40-60
Hackberry, Sugar	Celtis laevigata	60-80; 60-80
Ginkgo	Ginkgo biloba	50-80; 50-80
Maple, Red	Acer rubrum	40-60; 25-40
Maple, Sugar	Acer saccharum	60-75; 40-50
Oak, Laurel	Quercus hemisphaerica (laurifolia)	50-75; 40
Oak, Northern Red	Quercus rubra	60-70; 45-60
Oak, Pin	Quercus palustris	50-70; 40
Oak, Sawtooth ²	Quercus acutissima	40-60; 40-60
Oak, Shumard	Quercus shumardii	50-75; 40
Oak, Southern Red	Quercus falcata	70-80; 50-60
Oak, Water	Quercus nigra	50-80; 50-80
Oak, White	Quercus alba	50-80; 50-80
Oak, Willow	Quercus phellos	40-80; 40
Pagoda Tree, Japanese	Sophora japonica	50-60; 40-60
Poplar, Tulip	Liriodendron tulipifera	70-90; 30-50
Sycamore, American	Platanus occidentalis	75-100; 75-100
Willow, White	Salix alba	75-90; 50-70
Zelkova, Japanese ²	Zelkova serrata	50-80; 50-75
MEDIUM MATURING DECIDUOUS TREES		
Black Gum/Tupelo	Nyssa sylvatica	30-50; 20-30
Carolina Silverbell	Halesia tetraptera	30-40; 20-35
Dogwood, Flowering	Cornus florida	15-35; 20-35
Dogwood, Kousa	Cornus kousa	20-35; 15-25
Redbud, Eastern	Cercis canadensis	20-30; 15-30
Hornbeam, European/Common	Carpinus betulus 'fastigiata'	40; 25-35
Katsura Tree	Cercidiphyllum japonicum	40-60; 25-30
Magnolia, Saucer	Magnolia soulangiana	20-30; 20-25

¹ Species with many varieties.

² Species may become invasive and should be planted with care.

Common Name	Latin Name	Mature Height And Spread (feet)
SMALL MATURING DECIDUOUS TREES		
Chaste Tree	<i>Vitex negundo</i>	15-20; 15
Cherry, Japanese	<i>Prunus serrulata</i>	15-25; 15-25
Cherry, Yoshino	<i>Prunus x yedoensis</i>	30-45; 25-40
Cherry-Laurel, Carolina	<i>Prunus caroliniana</i>	20-40; 15-25
Crabapple, Flowering	<i>Malus</i> spp.	7-25; 15
Higan Cherry, Japanese Weeping	<i>Prunus subhirtella</i>	20-30; 15-25
Crape Myrtle	<i>Lagerstoemia indica</i>	15-25; 15
Hawthorn	<i>Crataegus</i> sp.	15-30; 25
Magnolia, Sweetbay	<i>Magnolia virginiana</i>	10-20, some var.
Common Name	Latin Name	Mature Height And Spread (feet)
Magnolia, Star	<i>Magnolia stellata</i>	15-20; 10-15
Maple, Amur	<i>Acer ginnala</i>	15-20; 20
Maple, Hedge	<i>Acer campestre</i>	20-30; 20-30
Maple, Japanese	<i>Acer palmatum</i>	15-25; 20
Serviceberry	<i>Amelanchier</i> sp.	10-20; 8-15
Smoketree	<i>Cotinus coggyria</i>	10-15; 10-15
LARGE MATURING DECIDUOUS SHRUBS		
Althea	<i>Hibiscus syriacus</i>	8-12; 6-10
Burkwood Viburnum	<i>Viburnum X burkwoodii</i>	8-10; 6-8
Common Fig Tree	<i>Ficus Carica</i>	10-20; 10-20
Common/Fragrant Lilac	<i>Syringa vulgaris</i>	10-12; 6-8
Common Witch-hazel	<i>Hamamelis virginiana</i>	15-30; 15-20
Doublefile Viburnum	<i>Viburnum plicatum</i>	8-10; 10
Fringetree	<i>Chinonanthus virginicus</i>	12-20; 8-12
Possumhaw	<i>Ilex decidua</i>	10-15; 3-10
Silverberry	<i>Eleagnus commutata</i>	10-12; 10
EVERGREENS		
Cherry-Laurel, Carolina	<i>Prunus caroliniana</i>	40; 15-25
Eastern Red Cedar	<i>Juniperus virginiana</i>	40-50; 8-20
Holly, American	<i>Ilex opaca</i>	30-50; 15-25
Holly, Chinese (Tree Form)	<i>Ilex cornuta</i>	15-25; 15-25
Holly, Foster	<i>Ilex X attenuata 'fosteri'</i>	20-30; 8-12
Holly, Hume	<i>Ilex opaca 'Hume #2'</i>	30-50; 15-20
Holly, Nellie R. Stevens	<i>Ilex X 'Nellie R Stevens'</i>	15-25; 10-15
Holly, Savannah	<i>Ilex X attenuate 'Savannah'</i>	25-35; 6-10
Holly, Yaupon	<i>Ilex vomitoria</i>	15-20; 15-20
Loquat	<i>Eriobotrya japonica</i>	10-30; 15
Magnolia, Southern	<i>Magnolia grandiflora</i>	60-80; 30-40
Myrtle, Wax	<i>Myrica cerifera</i>	15-25; 15-25

Pine, Loblolly	<i>Pinus taeda</i>	60-90; 25-35
Pine, Shortleaf	<i>Pinus echinata</i>	80-100; 30-50
Spruce, Norway	<i>Picea abies</i>	40-60; 25-30

1. This is a species with many varieties.
2. Species may become invasive and should be planted with care.

RECOMMENDED TREES FOR PARKING LOTS AND PAVED AREAS

Common Name	Latin Name	Mature Height and Spread(feet)
Maple, Hedge	<i>Acer campestre</i>	20-30; 20-30
Maple, Amur ¹	<i>Acer ginnala</i>	15-20; 20
European Hornbeam	<i>Carpinus betulus 'fastigiata'</i>	40-60; 15-30
Katsuratree	<i>Cercidiphyllum japonicum</i>	40-60; 30
Cornelian Cherry	<i>Cornus mas</i>	20-25; 15-20
Cockspur Hawthorne ¹	<i>Crataegus crusgalli</i>	25; 25
Cypress, Arizona	<i>Cupressus glabra</i>	40-50; 25-30
Ash, Green ²	<i>Fraxinus pennsylvanica</i>	50-60; 25
Ginkgo	<i>Ginkgo biloba</i>	50-80; 25-40
Honeylocust	<i>Gleditsia triacanthos</i>	40-80; 30-40
Foster's Holly, Foster	<i>Ilex X attenuate 'fosteri'</i>	20-30; 8-12
Savannah Holly, Savannah	<i>Ilex X attenuate</i>	30-45; 6-10
Juniper, Chinese	<i>Juniperus chinensis</i>	Many varieties, variable heights and spreads
Juniper, Rocky Mountain	<i>Juniperus scopulorum</i>	30-40; 10-15
Eastern Red Cedar	<i>Juniperus virginiana</i>	40-50; 8-20
Goldenraintree	<i>Koelreuteria paniculata</i>	30-40; 30-40
Japanese Crape Myrtle	<i>Lagerstroemia fauriei</i>	30; 30
Magnolia, Southern	<i>Magnolia grandiflora</i>	60-80; 30-40
Magnolia, Sweetbay	<i>Magnolia virginiana</i>	10-20; 10-20
Crabapple, Siberian	<i>Malus baccata</i>	25-35; 15-25
Crabapple, Japanese Flowering	<i>Malus floribunda</i>	18-25; 15-25
Hophornbeam, American	<i>Ostrya virginiana</i>	25-40; 20-30
Persian, Parrotia	<i>Parrotia persica</i>	25-40; 15-30
Pistache, Chinese	<i>Pistacia chinensis</i>	25-40; 25-35
Oak, Sawtooth	<i>Quercus acutissima</i>	40-60; 40-60
Oak, Scarlet	<i>Quercus coccinea</i>	60-80; 40-60
Oak, Overcup	<i>Quercus lyrata</i>	45-70; 30-50
Oak, Swamp Chestnut	<i>Quercus michauxii</i>	60-80; 45
Oak, Chinese Evergreen	<i>Quercus myrsinifolia</i>	20-40; 30-40
Oak, English	<i>Quercus robur</i>	50-70; 40-60
Oak, Pin	<i>Quercus palustris</i>	50-70; 40

¹ Species may become invasive and should be planted with care.

² Native species.

<u>Common Name</u>	<u>Latin Name</u>	<u>Mature Height And Spread (feet)</u>
Japanese Pagodatree	Sophora japonica	50; 40-60
Pondcypress	Taxodium ascendens	50-60; 10-15
Arborvitae, Eastern	Thuja-orientalis	40-60; 10-20
Arborvitae/Red Cedar, Western	Thuja plicata	50-60; 15-20
Elm, Lacebark	Ulmus parvifolia	25-40; 40-50
Chaste Tree	Vitex agnu-castus	20; 20
Japanese Zelkova ¹	Zelkova serrata	50-80; 50-75

1. Species may become invasive and should be planted with care.

2. Indicates native species.

STREET TREES

Common Name

LARGE MATURING DECIDUOUS TREES OVER 40 FEET TALL

Minimum 8 feet planting strip required (As measured inside of the curb/natural space)

Ash, Green ¹	Fraxinus* pennsylvanica	50-60; 25
Baldcypress	Taxodium distichum	50-70; 20-30
Birch, River ¹		
Eastern Red Cedar ¹	Juniperus virginiana	40-50; 8-20
Ginkgo, 'Princeton Sentry'	Ginkgo, biloba 'Princeton sentry'	45; 15-35
Hackberry, Sugar	Celtis laevigata	60-75; 50-65
Honeylocust	Gleditsia triacanthos	40-80; 30-40
Japanese Pagodatree	Sophora japonica	50-80; 50-80
Japanese Zelkova ²	Zelkova serrata	50-60; 45-50
Maple, Red ¹	Acer rebrum	70-80; 30-40
Maple, Sugar ¹		
Oak, Southern Red	Quercus falcata	60-80; 60-70
Oak, Willow	Quercus phellos	40-60; 30-40
Poplar, Tulip	Liriodendron tulipefera	70-80; 30-40
Redwood, Dawn	Metasequoia glyptostroboides	70-100; 15-25

MEDIUM MATURING DECIDUOUS TREES UP TO 40 FEET TALL

Minimum 6 feet planting strip required (As measured from the inside of the curb/natural space)

Black Gum/Tupelo ¹	Nyssa sylvatica	30-50; 20-30
Carolina Silverbell ¹	Halesia tetraptera	30-40; 20-35
Chinese Pistache	Pistacia chinensis	25-40; 25-35
Elm, Lacebark	Ulmus parvifolia	25-40; 40-50
Dogwood, Kousa	Cornus kousa	20-35; 15-25
Hawthorn, Green ¹	Crataegus viridis 'Winter King'	25-35; 25-35
Holly, Nellie R. Stevens	Ilex X 'Nellie R. Stevens'	15-25; 10-15
Holly, Savannah	Ilex X attenuate 'Savannah'	25-35; 6-10
Hornbeam, European	Carpinus betulus 'fastigiata'	35-40; 15-30 (Upright, semi-maturing variety ideal for street tree planting)
Oak, Chinese Evergreen	Quercus myrsinifolia	20-30; 20-30

1. Indicates native species.

2. Species may become invasive and should be planted with care.

Common Name	Latin Name	Mature Height and Spread (Feet)
SMALL MATURING DECIDUOUS TREES UNDER 30 FEET TALL		
Minimum 4 feet or more planting strip required (As measured from the inside of the curb/natural space)		
Common/Fragrant Lilac	<i>Syringa vulgaris</i> , also <i>reticulata</i>	10-12-15; 8-12
Crabapple, Japanese Flowering	<i>Malus floribunda</i>	7-25; 15
Crapemyrtle, Common	<i>Lagerstroemia indica</i> and potentially others upon prior approval	15-30; 15
Dogwood, Pagoda ¹	<i>Cornus alterniflora</i>	20-30; 20-30
Fringtree ¹	<i>Chinonanthus virginicus</i>	12-20; 8-12
Fringetree, Chinese	<i>Chinonanthus retusus</i>	15-25; 10-20
Hornbeam, American ¹	<i>Carpinus caroliniana</i>	20-30; 15-20
Magnolia, Little Gem	<i>Magnolia grandiflora</i> ‘Little Gem’	20-30; 10
Magnolia, Saucer	<i>Magnolia X soulangiana</i>	20-25; 20-25
Maple, Amur	<i>Acer ginnala</i>	15-20; 20
Maple, Hedge	<i>Acer campestre</i>	20-30; 20-30
Maple, Trident	<i>Acer buergerianum</i>	20-30; 20-30
Redbud, Chinese	<i>Cercis chinensis</i>	10-30; 10-30
Redbud, Eastern ¹		20-30; 15-30
Serviceberry ¹	<i>Amelanchier</i> spp.	10-20; 8-15

1. Indicates native species.

2. Species may become invasive and should be planted with care.

3. Additional tree species may be proposed for consideration by Town staff with a recommendation by a licensed arborist, landscape architect, or other qualified tree expert documenting why the species is appropriate within the planted space.

Street tree planting spaces of less than 4-ft in width may generally be appropriate for use as a grass strip, shrub area, and/or the planting of appropriate small understory/flowering trees.

INVASIVE OR EXOTIC SPECIES IN NORTH CAROLINA: SEVERE THREAT (SHOULD NOT BE PLANTED)

COMMON NAME	LATIN NAME
Tree of Heaven	<i>Ailanthus altissima</i>
Mimosa, Silk tree	<i>Albizia julibrissin</i>
Oriental Bittersweet	<i>Celastrus orbiculatus</i>
Pampas Grass	<i>Cortaderia selloana</i>
Russian Olive	<i>Eleagnus angustifolia</i>
Autumn Olive	<i>Eleagnus umbellata</i>
Sericea, bushclover	<i>Lespedeza cuneata</i>
Chinese Privet	<i>Ligustrum sinense</i>
Japanese Honeysuckle	<i>Lonicera japonica</i>
Leatherleaf Mahonia	<i>Mahonia bealei</i>
Chinese Silvergrass	<i>Miscanthus sinensis</i>
Japanese Stillgrass	<i>Microstegium</i>
Sacred bamboo	<i>Nandina domestica</i>

Princess Tree	Paulownia tomentosa
Multiflora rose	Rosa multiflora
Japanese Spiraea	Spiraea japonica
Periwinkle, Vinca	Vinca spp.

SIGNIFICANT THREAT (SHOULD NOT BE PLANTED ADJACENT TO NATIVE FOREST)

COMMON NAME	LATIN NAME
Burning Bush	Euonymus alata
Winter Creeper	Euonymus fortunei
English Ivy	Hereda helix
Japanese Privet	Ligustrum japonicum
Common Privet	Ligustrum vulgare
White Mulberry	Morus alba
Bradford Pear	Pyrus calleryana
Chanticleer Pear	Pyrus calleryana
Chinese Wisteria	Wisteria sinensis
Japanese Wisteria	Wisteria floribunda

Pruning Standards

Pruning Standards: The ANSI pruning standards have been drafted to address pruning specifications across all geographic areas. Knowledge of the growth of tree species within a given environment may alter how the recommendations are interpreted. The following information is designed to help readers understand exactly what will be accomplished in a pruning operation.

Branch Specifications	Branch Size	Minimum or maximum diameter size of branches to be removed should be specified
Pruning Objectives	Hazard Reduction Pruning	Recommended when the objective is to reduce the danger caused by visibly defined hazards. E.g. Removing dead limbs hanging over a park bench.
	Maintenance Pruning	Recommended when the primary objective is to maintain or improve tree health.
Pruning Types	Crown Clearing	Selective removal of dead, dying or diseased branches, weak branches or water sprouts.
	Crown Thinning	Selective removal to increase light penetration, air movement, and to reduce weight.
	Crown raising	Removal of lower branches to provide clearance.
	Crown reduction or shaping	Pruning to decrease height and/or spread of a tree. Amount dependent on tree species.
	Vista Pruning	Selective thinning of framework limbs or specific areas of crown to allow views from specific spots.
	Crown restoration	Designed to improve structure, form, and appearance of trees that have been severely headed, vandalized, or storm damaged.

Caliper to Height Ratios for Deciduous Trees

Caliper in inches	Standard Shade Trees	Slow Growing Trees		Small Upright
	Average Range	Maximum	Minimum	Average Range

				2 to 3
5/16				3 to 4
7/16				4 to 5
9/16				5 to 6
11/16				6 to 8
7/8				
½ to ¾	5 to 6	8	3.5	
¾ to 1	6 to 8	10	4	
1 to 1 ¼	8 to 10	11	5.5	
1 ¼ to 1 ½	8 to 10	12	5.5	
1 ½ to 1 ¾	10 to 12	14	6.5	
1 ¾ to 2	10 to 12	14	6.5	
2 to 2 ½	12 to 14	16	8	
2 ½ to 3	12 to 14	16	8	
3 to 3 ½	14 to 16	18	9.5	
3 ½ to 4	14 to 16	18	9.5	
4 to 5	16 to 18	22	10.5	

	Standard Shade Trees	Slow Growing Trees		Small Upright
Caliper in inches	Average Range	Maximum	Minimum	Average Range
5 to 6	18 and up	26	12	

Height to Spread Ratios for Coniferous Nursery Trees	
Height in Inches	Spread Range in Inches
12 to 15	8 to 12
15 to 18	9 to 15
18 to 24	12 to 18
24 to 30	15 to 21
30 to 36	18 to 24
36 to 48	21 to 30
48 to 60	30 to 36
60 to 77	36 to 48

Equation 1: Height to Spread ratio should be no less than 2:1.

NOW THEREFORE, IT SHALL BE ORDAINED by the Town Council of the Town of Indian Trail, North Carolina hereby takes the following action:

Section 1 – Approves ZT2014-004 Zoning Text Amendment, outlined in Attachment 1 in this Ordinance, thereby granting the Zoning Text Amendment to update the Trees and Shrubs list outlined in UDO Chapter 1710.

Section 2 – This ordinance shall be effective immediately upon adoption.

SO ORDAINED THIS 9th DAY OF DECEMBER, 2014

THE TOWN COUNCIL OF INDIAN TRAIL

Attest:

TOWN OF INDIAN TRAIL COUNCIL

Peggy Piontek, Town Clerk

Michael Alvarez, Mayor

APPROVED AS TO FROM:

TOWN ATTORNEY