

Section 15.7.1 Appendix A Density Factor Analysis

A basic condition of this article is that all applicable sites maintain a minimum tree density of thirty (30) units per acre. The term "unit" is an expression of basal area and is not synonymous with "tree".

The minimum tree density requirement must be met whether or not a site had trees prior to development. The density may be achieved by counting existing trees to be preserved, planting new trees, or some combination of the two (2).

For density factor analysis, the following formula shall apply:

$$\text{SDF} = \text{EDF} + \text{RDF}$$

Where:

SDF (Site Density Factor) = The minimum tree density required to be maintained on a developed site (30 units per acre).

EDF (Existing Density Factor) = Density of existing trees to be preserved on a site.

RDF (Replacement Density Factor) = Density of new trees to be planted on a site.

PROCEDURE FOR CALCULATING THE REQUIRED TREE REPLACEMENT:

Step 1. Calculate the Site Density Factor (SDF):

The SDF is calculated by multiplying the number of site acres by 30.

EXAMPLE: A 2.2 acre site has a SDF of $2.2 \times 30 = 66$

Step 2. Calculate the Existing Density Factor (EDF):

The Existing Density Factor, EDF, is determined by converting the diameter breast height (dbh) of individual existing trees to density factor units as shown in the following table 1. These units are totaled to determine the EDF for the site.

EXAMPLE: A total of 8 existing trees will remain on the 2.2 acre site in Step 1. These existing trees include:

- 3 - 14" pines
- 3 - 18" oaks
- 1 - 20" hickory
- 1 - 30" oak

When converted to density factor units using table 1 (on the following page), we arrive at the following values for existing trees on the site:

dbh UNITS X NUMBER OF TREES

14" $4.8 \times 3 = 14.4$

$$18" \ 5.7 \times 3 = 17.1$$

$$20" \ 6.0 \times 1 = 6.0$$

$$36" \ 8.4 \times 1 = 8.4$$

45.9 units total

The total units, 45.9, is the EDF (Existing Density Factor). This is the density value of existing trees that will remain on the site.

Step 3. Calculate the Replacement Density Factor (RDF):

Replacement Density Factor (RDF) is determined by subtracting the EDF from the SDF.

$$\text{EXAMPLE: } 66 \text{ (SDF)} - 45.9 \text{ (EDF)} = 20.1$$

This means that 20.1 tree units are required as replacements for the total site to meet the requirement of 30 units per acre.

The Density Factor credit for each caliper size of replacement (new) trees is shown in table 2 on the following page.

TABLE 15.7.1
CONVERTING EXISTING TREE DIAMETERS TO DENSITY UNITS

TABLE INSET:

DBH Existing Tree	Density Units for Existing Tree	DBH Existing Tree	Density Units for Existing Tree
3"	1.0	26"	6.9
4"	1.5	28"	7.2
5"	2.0	30"	7.5
6"	2.4	32"	7.8
8"	3.0	34"	8.1
10"	3.6	36"	8.4
12"	4.2	38"	8.7
14"	4.8	40"	9.0
16"	5.3	42"	9.3
18"	5.7	44"	9.6
20"	6.0	46"	9.9
22"	6.3	48"	10.2
24"	6.6	50" or more	10.5

TABLE 15.7.2
CONVERTING REPLACEMENT TREES TO DENSITY UNITS

TABLE INSET:

Caliper of Replacement Tree	Density Units for Replacement Tree	Caliper of Replacement Tree	Density Units for Replacement Tree
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Caliper of Replacement Tree	Density Units for Replacement Tree	Caliper of Replacement Tree	Density Units for Replacement Tree
2" understory only	0.5	6"	2.4
3"	0.5	7"	3.2
4"	0.9	8"	4.0
5"	1.5	9" or more	6.0

A seven-gallon container grown pine tree is given replacement credit of 0.3 units. The minimum size for an understory tree is two (2) inches. The minimum size for an overstory tree is three (3) inches.

For tree relocation, replacement units will be granted to trees relocated on site. Tree relocation is subject to arborist approval.

Section 15.7.2 Appendix B Tree Species Selection List

TABLE INSET:

Overstory Trees		
1.	<i>Acer floridanum</i>	Florida Maple or Southern Sugar Maple
2.	<i>Acer rubrum</i>	Red Maple
3.	<i>Acer saccharum</i>	Sugar Maple
4.	<i>Betula nigra</i>	River Birch
5.	<i>Carya species</i>	Hickories, Pecans
6.	<i>Castanea mollissima</i>	Chinese Chestnut
7.	<i>Celtis occidentalis</i>	Hackberry
8.	<i>Cercidiphyllum japonicum</i>	Katsura Tree
9.	<i>Cladrastis lutea</i>	American Yellowwood
10.	<i>Cryptomeria Japonica</i>	Cryptomeria
11.	<i>Cunninghamia lanceolata</i>	Common Chinafir
12.	<i>Cupressocyparis leylandii</i>	Leyland Cypress
13.	<i>Fagus grandifolia</i>	American Beech
14.	<i>Fraxinus americana</i>	White Ash
15.	<i>Fraxinus pennsylvanica</i>	Green Ash
16.	<i>Ginkgo biloba</i>	Ginkgo
17.	<i>Halesia carolina</i>	Carolina Silverbell
18.	<i>Ilex Opaca</i>	America Holly
19.	<i>Juniperus virginiana</i>	Eastern Red Cedar
20.	<i>Liquidambar styraciflua</i>	Sweetgum
21.	<i>Liriodendron tulipifera</i>	Yellow Poplar, Tulip Poplar
22.	<i>Magnolia grandiflora</i>	Southern Magnolia
23.	<i>Metasequoia glyptostroboides</i>	Dawn Redwood
24.	<i>Nyssa sylvatica</i>	Black Gum, Black Tupelo
25.	<i>Pinus elliottii</i>	Slash Pine
26.	<i>Pinua taeda</i>	Loblolly Pine
27.	<i>Pinus strobes</i>	White Pine

28.	<i>Pinus virginiana</i>	Virginia Pine
29.	<i>Platanus occidentalis</i>	Sycamore
30.	<i>Quercus species</i>	Oaks, except Live Oaks
31.	<i>Robinia pseudoacacia</i>	Black Locust
32.	<i>Sophora japonica</i>	Japanese Pagodatree
33.	<i>Taxodium disticum</i>	Bald Cypress
34.	<i>Ulmus parvifolia</i>	True Chinese Elm
35.	<i>Zelkova serrata</i>	Japanese Zelkova
<i>Understory Trees</i>		
1.	<i>Acer buergerianum</i>	Trident Maple
2.	<i>Amelanchier arborea</i>	Serviceberry
3.	<i>Carpinus caroliniana</i>	American Hornbeam
4.	<i>Cercis canadensis</i>	Eastern Redbud
5.	<i>Chionanthus virginicus</i>	Fringe tree, Grancy Graybeard
6.	<i>Cornus species</i>	Dogwoods
7.	<i>Cotinus obovatus</i>	American Smoketree
8.	<i>Crataegus phaenopyrum</i>	Washington Hawthorne
9.	<i>Hamamelis virginiana</i>	Witch-Hazel
10.	<i>Ilex species</i>	Holly
11.	<i>Illicium floridanum</i>	Florida Anise-tree
12.	<i>Koelreuteria paniculata</i>	Golden Raintree
13.	<i>Lagerstroemia species</i>	Crape myrtle species
14.	<i>Magnolia stellata</i>	Star magnolia
15.	<i>Malus species</i>	Flowering crabapple
16.	<i>Myrica cerifera</i>	Waxmyrtle
17.	<i>Ostrya Virginia</i>	Ironwood
18.	<i>Oxydendrum aboreum</i>	Sourwood
19.	<i>Ptachia chinensis</i>	Chinese Pistache
20.	<i>Prunus serrulata</i>	Japanese Flowering Cherry
21.	<i>Prunus x yedoensis</i>	Yoshino Cherry
22.	<i>Sassafras albidum</i>	Sassafras