



**Bettendorf**

**Landscape**

**Handbook**

City of Bettendorf  
Handbook on Landscaping  
for New Development

Prepared by the Community Development Department  
Revised September 2010

## Table of Contents

Introduction	1
Applicability	1
Submittal Guidelines	1
Overview	2
Landscaping along Street Rights-of-way	2
Greenspace	2
Table 1. Street Yard Greenspace	3
Provision of Trees	3
Diagram 1	
Example	3
Diagram 2	
Buffer Yards	4
Zoning	4
Table 2. Buffer Yard Requirements	5
Table 3. Required Buffer Yards	5
Relationship	5
Diagram 3 (a) Common Lot Lines	
Diagram 3 (b) Intervening Alley	
Diagram 3 (c) Intervening Major Street	
Diagram 3 (d) Intervening Local Street	
Screening	6
Vehicular Use Areas	7
Greenspace	7
Provision of Trees	7
Front Yard	7
Other Requirements	7
Material Standards	7
Tree Factor Conversion Table	8
Prohibited Trees	9
Tree Preservation	10
Installation	10
Vision Clearance	11
Maintenance	11
Modifications	11

## INTRODUCTION

The landscaping regulations are intended to improve the physical appearance of the community; to improve the environmental performance of new development by contributing to the abatement of heat, glare, and noise by promoting natural percolation of storm water and by improving the quality of air; to buffer potentially incompatible land uses from one another; and to preserve the value of property and neighborhoods within the city.

By presenting these requirements and guidelines in a consistent manner, we can better meet our goals by minimizing subjectivity, retaining design flexibility, and expediting the review process. It is hoped that the establishment of the landscaping requirements will encourage the ethic that landscaping, open space, and landscaping preservation are integral parts of the development process.

Questions or comments should be addressed to the Community Development Department at 4403 Devils Glen Road or by phone at (563) 344-4100.

## APPLICABILITY

Landscaping is required on all new commercial, industrial, and multi-family residential developments. Additionally, landscaping is required for any addition to existing development which increases the building and/or parking area by 20 percent or more. In such cases, the requirements apply only to the portion of the lot where the new development occurs. The requirements do not apply to single-family and two-family residential developments. A common development that includes more than one lot or site shall be treated as one lot or site for the purposes of satisfying the requirements of this section.

## SUBMITTAL GUIDELINES

A landscape plan shall be submitted as part of the site development plan review process. If no site development plan review is required, a landscape plan shall be submitted to the City Council for approval before any building permits are issued. The Council may approve, approve with conditions, or deny the application. An applicant should submit three copies of the landscape plan with the application.

A landscape plan at a scale of 1 inch = 20 feet shall be prepared by a landscape architect, arborist, or other similar professional and shall show graphically and label clearly all items related to the project including, but not limited to, the following:

1. Title, scale, north marker, and date.
2. Zoning classification of site and adjoining property.
3. Location and dimensions of all retaining walls, fences, walks, existing and proposed structures, overhead utilities, refuse disposal areas, electrical and mechanical equipment, and vehicular use areas.
4. All lot lines, easements, and rights-of-way.
5. All surrounding roads including names.

6. The total square footage of the vehicular use areas.
7. Any condition listed in the Screening section.
8. Location, scientific name, common name, quantity, and size of all existing plant materials and designation of all vegetation to remain and/or be removed.
9. Proposed landscape plantings by location, scientific name, common name, quantity, planting size, and planting method. A plant list should be provided listing this information and keyed to plant locations on the plan.
10. Plant installation details.
11. Contours at 1-foot intervals of all proposed berms and the area within the drip line of all trees to be preserved.
12. Drainage and detention areas.
13. Any other feature as determined necessary by the Community Development Director.
14. Elevations, cross-sections, and other details as determined necessary by the Community Development Director.
15. Designation of area to be used for snow storage.

### OVERVIEW

The city does not require landscaping in specific places on the site; rather, the ordinance delineates certain general areas of the lot and requires a specific amount of greenspace to be placed within that area. The intent is to allow flexibility and site specific designs.

For example, seven percent of the interior area of large parking lots must be developed as greenspace. The greenspace necessary to meet the requirement can be located anywhere within the boundaries of the parking lot - including islands, planting strips, and corners. This flexibility allows for parking lots to be tailored to the site and the needs of the developer.

The ordinance has four main landscape requirements:

1. Minimum depth of greenspace along the street right-of-way.
2. Minimum percentage of vehicular use areas to be greenspace.
3. Buffering and screening of incompatible uses.
4. Within these greenspace areas, the ordinance requires a certain number of trees to be planted and maintained.

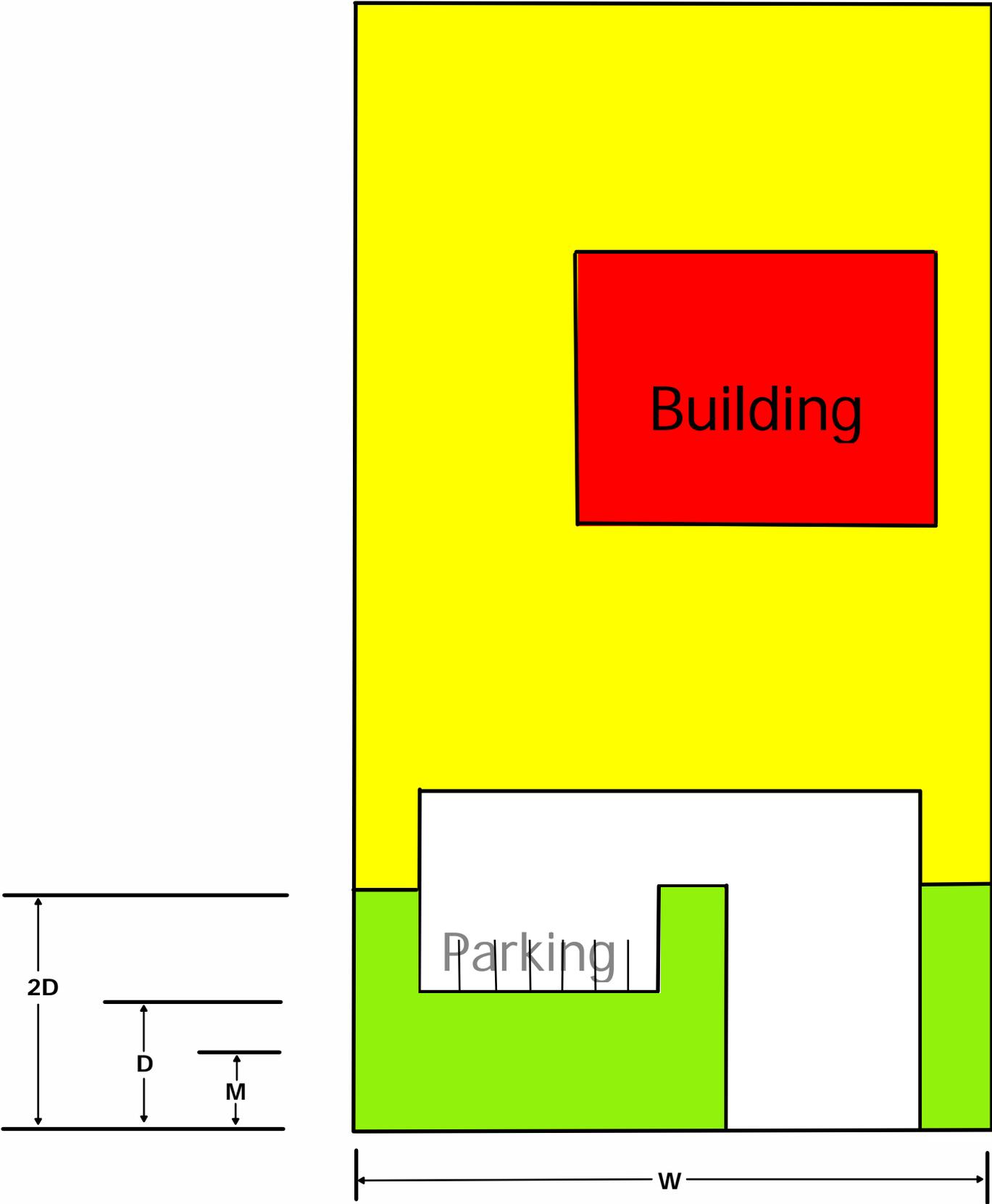
The following sections detail the guidelines for each general requirement.

### LANDSCAPING ALONG STREET RIGHTS-OF-WAY

**Greenspace.** A contiguous greenspace area, hereafter referred to as a "Street Yard Greenspace", is required along the street right-of-way. The depth of this Street Yard Greenspace shall be no less than the "minimum depth" (M) as set forth in Table 1.

The minimum depth is measured starting from each street right-of-way line and extending perpendicularly into the lot. (See Diagram 1.) The Street Yard Greenspace is determined by multiplying the minimum depth (M) by the width of the lot (W). Access

Diagram 1



Street Yard Greenspace Area



drives generally perpendicular to the street right-of-way are the only permitted structures within the minimum depth area.

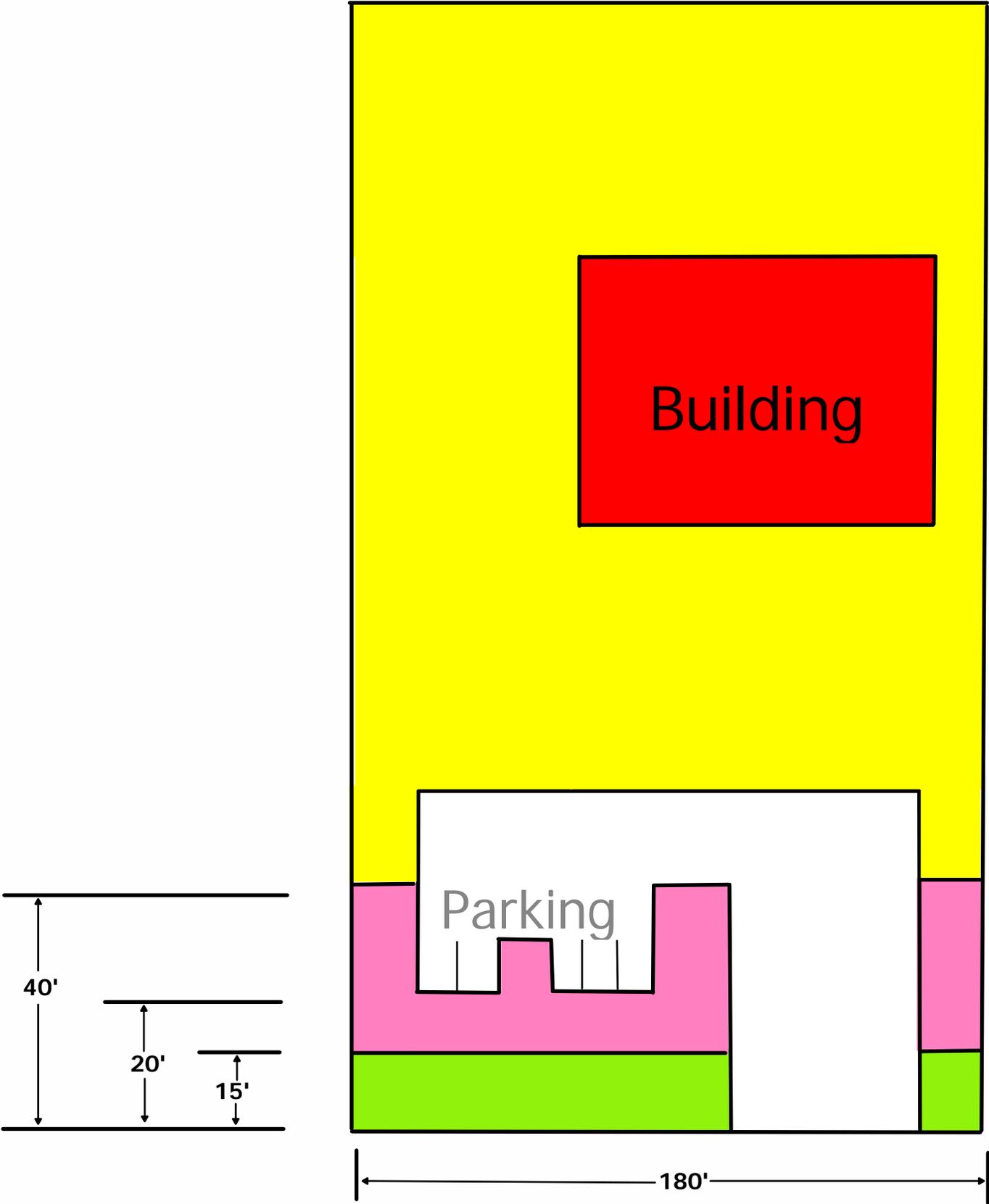
Table 1. Street Yard Greenspace		
District		Minimum Depth (M)
A-1	Agricultural	50 feet
A-2	Rural Residence	40 feet
R-1	Single-family Residence	30 feet
R-2	Single-family Residence	25 feet
R-3	Single-family and two-family Residence	25 feet
R-4	Multi-family Residence	20 feet
R-5	Multi-family Residence	20 feet
C-1	Local Shopping	20 feet
C-2	Community Shopping	15 feet
C-3	General Business	15 feet
C-4	Automotive Service	15 feet
C-5	Office/Transitional	20 feet
C-6	Office and Research Park	50 feet
C-7	Public Gathering and Recreational Activity	15 feet
I-1	Limited Industrial	45 feet
I-2	General Industrial	20 feet
I-3	Heavy Industrial	45 feet

**Provision of Trees.** The city does not require a specific number of a specific size and type of tree to be provided. Instead, the city requires that a certain number of "tree factors" be provided. Different sizes and types of trees are worth a various value of tree factor. Tree size and conversion rates are listed in the Material Standards section. The intent of using tree factors instead of a specific number of specific trees is to allow the design flexibility.

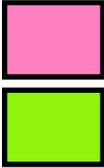
One tree factor shall be required for every 700 square feet of the Street Yard Greenspace. A bonus of one percent of the tree factor shall be granted for every three percent that the area of the street yard exceeds the minimum area acceptable (M x W). The tree factors used to meet this requirement shall be located within the greenspace area.

**Example.** For example, the landscaping that would be required along the right-of-way for a development is illustrated in Diagram 2.

The property is zoned C-2. From Table 1 it can be determined that the required minimum depth of the greenspace area is 15 feet (M = 15 feet). The lot is 180 feet



**Additional Street Yard Greenspace Area**  
**Required Street Yard Greenspace Area**



wide ( $W = 180$  feet). Therefore, the minimum area of Street Yard Greenspace required is 180 feet x 15 feet ( $M \times W$ ) or 2,700 square feet.

To determine the number of tree factors which must be included in this area, the Street Yard Greenspace (2,700 square feet) is divided by 700 square feet. Therefore, 3.9 tree factors must be provided.

In this example, additional greenspace is provided, and the number of trees required may be reduced. In order to meet the requirements for a reduction, the additional greenspace area must be contiguous with the required greenspace.

In this example, the depth of the total greenspace is 20 feet. The total Street Yard Greenspace is the depth ( $D$ ) of 20 feet multiplied by the width ( $W$ ) of 180 feet, which equals 3,600 square feet, while the required Street Yard Greenspace is 2,700 square feet ( $M \times W$ ) (15 feet x 180 feet). Therefore, the bonus area of 900 square feet ( $3,600 - 2,700$ ) may be used to reduce the number of tree factors by 10 percent ( $900 \div 2,700 = 30$  percent) ( $30$  percent  $\div 3 = 10$  percent). Reducing the 3.9 tree factor by 10 percent results in a 3.5 tree factor which the developer would be required to provide in the Street Yard Greenspace. The Material Standards section lists the tree types and sizes which can be used to achieve this number.

### **BUFFER YARDS**

A buffer yard is a landscaped area along lot lines provided to separate and partially obstruct the view of two adjacent land uses or properties from one another. No structures other than fences shall be allowed in a buffer yard.

A buffer yard shall be required when a use is established in a more intense zoning district which is adjacent to a less intense zoning district. The owner or developer of the property within the more intense district shall install and maintain a landscaped buffer yard on said property as set forth in this section. Buffer yard requirements apply only to those districts listed in Table 2.

The width of the buffer yard is based upon the zoning of the districts, the relationship of the districts, and the amount of screening provided.

**Zoning.** The basic buffer yard width requirements are set forth in Table 2. When the development is adjacent to property zoned A-1 and likely to be developed, the Land Use Plan can be used as a guide to determine the future zoning and buffer yard requirements in anticipation of that future use.

Table 2. Buffer Yard Requirements

		Adjacent, Less Intense District													
		A1	A2	R1	R2	R3	R4	R5	C1	C2	C3	C4	C5	C6	C7
More Intense District	R-4	See Table 3.													
	R-5	See Table 3.													
	C-1	20	20	20	20	20	10	10					10	10	
	C-2	25	25	25	25	25	15	15					15	15	
	C-3	30	30	30	30	30	20	20					20	20	
	C-4	30	30	30	30	30	20	20					20	20	
	C-5	25	25	25	25	25	15	15							
	C-6	25	25	25	25	25	15	15							
	C-7	30	30	30	30	30	20	20							
	I-1	30	30	30	30	30	20	20	10	10	10	10	10	10	10
	I-2	60	60	60	60	60	50	50	40	40	30	20	30	30	30
	I-3	70	70	70	70	70	60	60	50	40	30	30	40	40	40

Table 3 establishes required buffer yards in the R-4 and R-5 zoning districts and applies only when the adjacent district is zoned A-1, A-2, R-1, R-2, or R-3.

Table 3. Required Buffer Yards

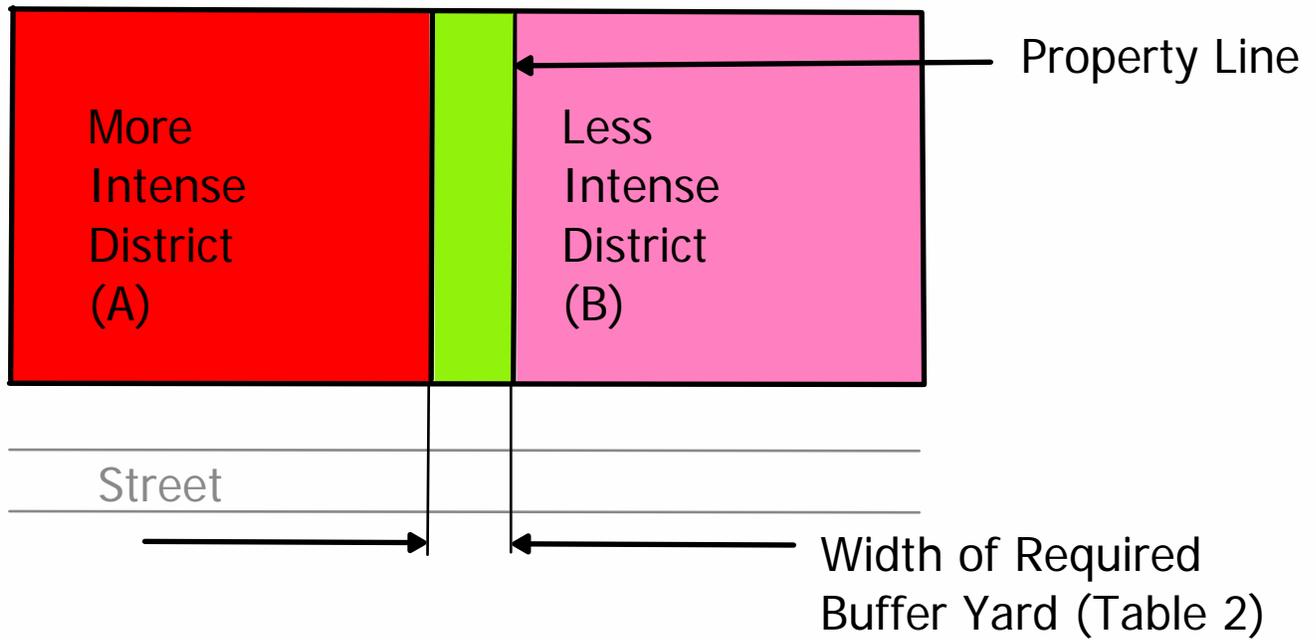
Maximum Height of Building Nearest Common Property Line	Buffer Yard Required
0 to 15 feet	15 feet
15 to 35 feet	20 feet
Over 35 feet	30 feet

**Relationship.** After the basic buffer yard width is established based on the zoning of the properties, it may be modified based upon the relationships of the properties. One of the following adjustments can be made:

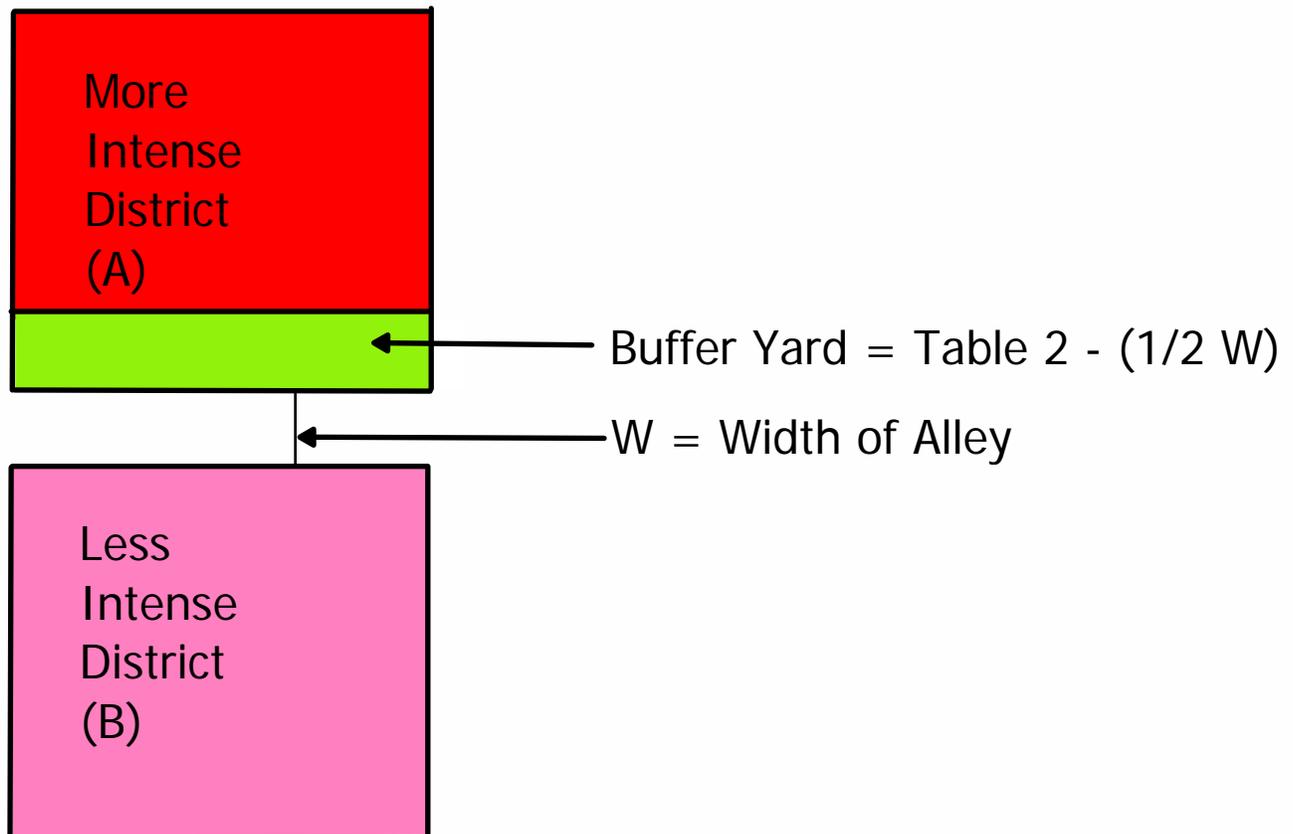
1. *Districts with common lot lines.* When the use in the more intense zoning district has a common lot line with a less intense zoning district, the required buffer yard is set forth in Table 2. See Diagram 3 (a).
2. *Districts with intervening alley or street.* When an alley or street separates adjacent districts requiring a buffer yard, one-half the width of the alley or street shall be credited toward meeting the required buffer yard. See Diagram 3 (b).
3. *Railroad right-of-way.* Any lot or site which is adjacent to an active railroad right-of-way shall be exempt from any buffer yard requirement along the common property line with such right-of-way.

# Diagram 3. Buffer Yard Requirements

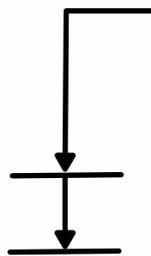
(a) Common Lot Lines



(b) Intervening Alley



(c) Intervening Major Street



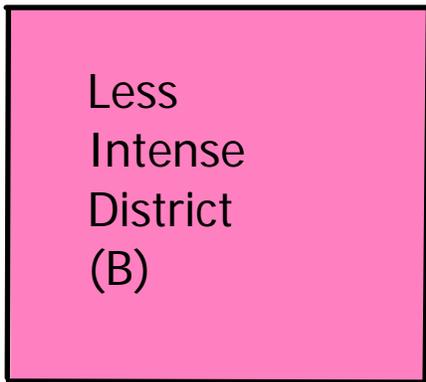
Buffer Yard = Greater of

1/2 Value of Table 2

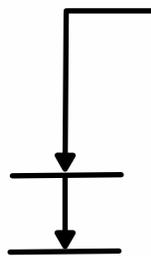
or



Minimum Depth of Street Yard Landscaping for Zoning District



(d) Intervening Local Street

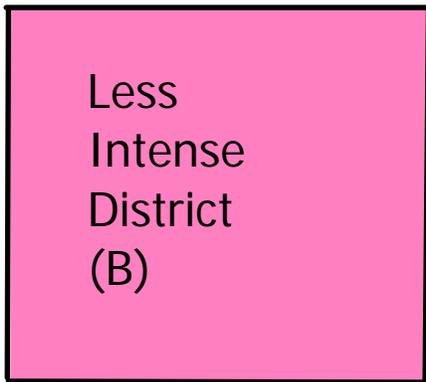


Buffer Yard = Greater of  
Value on Table 2

or



Required Depth of Street Yard  
Landscaping for Zoning District  
(Table 1)



4. *Screening in Buffer Yards.* The amount of screening in the buffer yard may reduce the required width. (See Screening section for details.)

### SCREENING

Screening is required on all properties requiring a buffer yard when one or more of the following conditions in the more intense zoning district is directly visible from the boundary of the less intense zoning district:

1. Outdoor storage areas.
2. Loading/unloading areas, refuse collection points, and other service areas.
3. Major machinery or areas housing a manufacturing process.
4. Vehicular use areas.
5. Sources of glare, noise, or other environmental effects.
6. On- and above-grade electrical and mechanical equipment, including but not limited to, transformers, heat pumps, and air conditioners.
7. Satellite dishes.
8. Other noxious uses as determined by the Community Development Director.

Any screening material required by this ordinance shall be an opaque barrier at least 6 feet in height in all yards except the front yard which shall be between 2 ½ feet and 3 feet in height measured relative to the street grade. The design of the screen shall be such as to completely obscure the view of the noxious use from the neighboring property. The following are acceptable barriers:

1. A solid wood and/or masonry fence or wall of a design approved by the Community Development Director.
2. A hedge or random, informal screen of conifer (evergreen) plant material attaining the required minimum height within 3 years of planting. The initial height of plantings shall not be less than one-half the required minimum height.
3. A landscaped earth berm with a maximum slope of 3:1, rising no less than the required minimum height above the existing grade of the lot line separating the zoning districts.
4. Any combination of these methods that achieves a cumulative height no less than the required minimum height.

One tree factor shall be planted and maintained for each 700 square feet of the buffer yard. The required tree factors shall be located within the buffer yard. Tree size and conversion rates are listed in the Material Standards section. The width of the buffer yard based upon the zoning and the relationship of the properties assumes that no further landscaping occurs. If additional screening is installed, the width of the buffer yard may be further modified as follows:

1. When 50 percent opacity of the standards established the Screening section is achieved, only two-thirds of the required buffer yard must be provided.
2. Only one-half of the required buffer yard must be provided if the buffer yard includes screening meeting the standards established in the Screening section.

Screening shall be installed no closer to the less intense district than one-half the width of the required buffer yard. Screening shall not adversely affect surface water drainage.

### VEHICULAR USE AREAS

Vehicular use areas are all areas subject to vehicular traffic including accessways, driveways, loading areas, service areas, and parking stalls for all types of vehicles. Covered parking areas and underground parking structures are not included in this definition. Landscaping for those types of facilities will be determined on a case-by-case basis. Vehicular use areas less than 4,000 square feet in size shall be exempt from interior landscaping requirements.

**Greenspace.** Landscaping must be provided within the boundaries of the vehicular use areas such as islands, planting strips, and corners. The amount of landscaping required varies with the area of the vehicular use area.

For vehicular use areas greater than 4,000 square feet but less than 30,000 square feet, an area equivalent to a minimum of 5 percent of the total vehicular use area shall be landscaped. The required landscaped area shall be located in the interior of the vehicular use area.

For vehicular use areas greater than 30,000 feet, an area equivalent to a minimum of 7 percent of the total vehicular use area shall be landscaped. The required landscaped area shall be located in the interior of the vehicular use area.

**Provision of Trees.** One tree factor shall be required for every 500 square feet of required greenspace within the interior of vehicular use areas. Tree size and conversion rates are listed in the Material Standards section.

**Front Yard.** Vehicular use areas, including parking, shall be allowed in the front yard of properties conforming to the requirements of these landscape regulations. However, the minimum depth requirement of landscaping shall be strictly enforced.

If any vehicular use area other than a driveway is located within the required front yard, screening shall be provided between said vehicular use area and the front property line.

**Other Requirements.** There shall be sufficient barriers to protect all landscaped areas from vehicular damage.

The vehicular use area must terminate at least five feet from any exterior building wall. Exceptions may be made where it is necessary to cross the non-vehicular use area to gain access to the buildings and for drive-up facilities such as banks and restaurants.

### MATERIAL STANDARDS

The following definitions will be used for plant material types.

*Deciduous Overstory Tree.* A shade-producing woody plant having a mature height and spread of at least 30 feet with one well-defined trunk and having no branches at or near the base. For a list of trees that are considered overstory trees, see Iowa State Extension Office website for hardwood tree listings.

*Deciduous Understory Tree.* A woody plant at least 10 feet tall at maturity with one or more well-defined trunks.

*Deciduous Shrubs.* Woody plants that range from 3 to 10 feet tall at maturity and often are multi-stemmed with low branching.

*Evergreen/Conifer Tree.* An upright cone-bearing plant having green needle-like foliage throughout the year and at least 20 feet tall at maturity.

*Evergreen/Conifers Shrub.* A woody plant having green needle-like foliage throughout the year and ranging from 3 to 10 feet tall at maturity and often are multi-stemmed with low branching.

Required plant material shall meet the following minimum size specifications at the time of installation. Additionally, the table indicates the number of plants by type and size necessary to equal one tree factor credited towards fulfilling the tree requirement.

<u>Type and Size of Tree</u>	<u>Number of Tree Factors</u>
<i>Deciduous overstory</i>	
2-inch caliper and 22-inch ball or pot	1.0
4-inch caliper and 40-inch ball or pot	2.0
<i>One-stem deciduous understory</i>	
1 ½ -inch caliper and 16-inch ball or pot	0.5
3-inch caliper and 30-inch ball or pot	1.0
<i>Multi-stem deciduous understory</i>	
6-foot height and 16-inch ball or pot	0.5
12-inch height and 30-inch ball or pot	1.0
<i>Evergreen</i>	
6-foot height and 16-inch ball or pot	0.5
12-foot height and 30-inch ball or pot	1.0
<i>Deciduous or Evergreen Shrub</i>	
5 gallon	0.0
<i>Ground Covers</i>	
1 gallon	0.0

Note: Preservation of existing trees counts as double the tree factor credit. See Tree Preservation section and City tree ordinance regarding preservation of existing trees.

For bare root plant material, the root spread should be as large as the specified diameter of the ball or pot.

All new vegetation shall have an area equivalent to two-thirds of the area defined by the drip line at maturity to allow for normal growth. All existing vegetation shall have an area equivalent to three-fourths of the area defined by the mature drip line. Sufficient spacing between other vegetation, buildings, pavement, and utilities shall be provided. All fences, walls, and other barriers shall be maintained in good repair, meaning structurally sound and attractive in appearance. The finished face of all such barriers shall face outward toward the neighboring site or street.

The following types of vegetation are not considered suitable for an urban setting because they are weak wood trees and/or associated with disease or pests. The following shall be prohibited except under special circumstances and with the approval of the Community Development Director.

<u>Common Name</u>	<u>Scientific Name</u>
*Poplar and related species	Populus species
Box Elder	Acer negundo
Siberian Elm	Ulmus pumila
American Elm	Ulmus americana
*Willow	Salix species
Tree of Heaven	Ailanthus altissima
Mulberry (female)	Morus alba
European Mountain Ash	Sorbus aucuparia
Pin Oak	Quercus palustris
*Silver Maple	Acer saccharinum
*European Birch	Betula papyrifera
Ginkgo (female)	Gingko biloba

\*Acceptable in designated flood plains.

In addition to the above requirements, any required tree located within a vehicular use area shall be a deciduous shade tree and meet the following requirements:

1. At time of installation, the tree shall have a trunk caliper (diameter) of 2 inches measured 6 inches above the ground.
2. Because of shallow surface roots, fruit droppings, and/or low branches, the use of the following trees shall be prohibited in parking lots.

<u>Common Name</u>	<u>Scientific Name</u>
Alder	Alnus species
Catalpa	Catalpa speciosa
Norway Maple	Acer plantinoides

3. Trees producing berries shall require the approval of the Community Development Director if located within the vehicular use area.

### **TREE PRESERVATION**

Existing trees approved by the Community Development Director for preservation shall be counted toward satisfaction of the requirement for provision of trees. Preservation of each healthy existing tree of an approved species shall count as double the tree factor credit. Additional credit can be counted toward the tree requirement for the preservation of exceptional trees as determined by the Community Development Director.

It is usually cheaper and easier to save trees than to replace them. If possible, a landscape architect, forester, nurseryman, horticulturist, arborist, or other tree expert should be asked to identify the kinds of tree and judge their condition and suitability for saving.

The key to saving trees is to protect the roots.. There is as much tree underground as above ground. The underground roots are much more delicate than the trunk, branches, or leaves. Since they can't be seen, they are often hurt. Root damage can slowly kill a tree without leaving an obvious mark. The roots within the drip line are critical. If this area is protected, the tree is not likely to be damaged by construction equipment. Keep construction activities outside of the drip line of trees to be saved. Fences shall be constructed 5 feet outside of the drip line of all trees to be preserved. No grading, filling, or other construction activity shall occur within the fence. Be sure all workers and visitors to the site understand that no one is to enter the fenced areas for any reason. Remove the protective fences only after all construction has been finished including final grading and smoothing of the site.

Changes in grade, cutting banks next to trees, or piling dirt close to them is almost always damaging to a tree. Although the deep roots that attach the tree to the ground may not be affected, the fine feeder roots, which are in the top 1 to 2 feet of soil, are very sensitive to changes in their environment. Cutting soil away from a tree changes the moisture level, and filling may suffocate the feeder roots. In all cases where either cutting or filling around the roots of a tree is considered, seek expert advice before deciding which trees to keep.

### **INSTALLATION**

All required landscaping shall be installed prior to occupancy or commencement of a use. On trees and shrubs, about one-third of the crown mass should be pruned out at the time of planting which will give the roots a chance to strengthen themselves. Prune out major branches by cutting as close to the branch collar as possible. Remove all broken, dead, diseased, and overlapping branches, but try to retain the natural shape of the plant. Never remove the central leader of a tree. Wrap tree trunks in tree crepe to protect against wind and sunburn. Water and fertilize all newly-installed plants according to the directions of the nursery. Occasionally, protection is required for newly-

installed plants in the form of barrier fences, staking for support, or warning signs. These items are specific to each individual project.

If the landscaping cannot be installed prior to occupancy or commencement of a use because of climatic conditions, the Building Inspector may issue a temporary certificate of occupancy and grant a delay of landscaping installation until the calendar date of June 1 immediately following the date of said temporary certificate of occupancy. However, in such case, the applicant will be required to post a surety or cash bond equal to 150% of the total cost of the landscaping. No final certificate of occupancy shall be issued until the landscaping is installed as approved.

### **VISION CLEARANCE**

No structures or plant materials shall obstruct a clear path of a motor vehicles driver's vision of approaching vehicles. An unobstructed vision clearance shall be maintained at all street intersections, private driveway and street intersections, and alley and street intersections. On corner lots, the clear vision area will be a triangular area determined by a diagonal line connecting two points measured 35 feet equidistant from the street corner. See Zoning Ordinance Section 18.29. Vision Clearance Triangle.

### **MAINTENANCE**

Upon installation or preservation of required landscape materials, appropriate measures shall be taken to ensure their continued health and maintenance including but not limited to removal of litter, pruning, mowing, adequate watering, and weeding. Each plant requires different types and frequency of care. Plants in stressful situations may require more care and more frequent inspections. A local expert should be consulted to determine the necessary maintenance. Required materials that do not remain healthy shall be replaced in a manner consistent with the approved landscape plan.

Topping is the severe cutting back of limbs to stubs within the tree's crown to such a degree so as to remove the normal canopy and disfigure the tree. Topping of required trees is not allowed. Topping may be practiced on trees severely damaged by storms only if other pruning measures are impractical.

Tree canopies over pedestrian and vehicular areas shall be pruned and maintained so there is 8 feet of clearance above the pavement. If trucks use the vehicular use area then 15 feet of clearance should be maintained.

### **MODIFICATIONS**

The landscaping shall be installed and maintained according to the approved landscape plan except where authorized changes are permitted. The approved landscape plan and supporting data shall be binding on the applicants, their successors, grantees, and assigns.

A change in the approved site development plan or landscape plan which alters the landscape requirements or the concept or intent of the landscape design including, but

not limited to, a change in the vehicle use area, type of screening, and general location, size, or type of landscape materials, shall be approved only by submission of a new landscape plan in accordance with the procedures previously set forth for the approval of site development plans.

The city planner may approve minor changes in the landscape plan which do not change the concept or intent of the development.

All approved landscape plans superseded by an approved revised landscape plan shall be considered to be null and void at the time of approval of the revised plan.