

RESOURCE GUIDEBOOK

*For Residential & Commercial
Development*



December 2011



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INTRODUCTION

The Resource Guidebook was created in order to graphically illustrate and explain key points of the City of Gastonia Unified Development Ordinance (UDO) with a focus on Planned Residential Developments (PRD). It is intended to assist City Council, the Gastonia Planning Commission, the development community, residents and staff in understanding commonly used terms and concepts, using pictures and simple descriptions.

The Guidebook is general in nature and does not cover all development requirements. These are minimum standards and, in many instances, developers opt to exceed these standards. This Guidebook is not meant to be a substitute for adopted codes and ordinances or replace any existing development standards. Anyone wishing to develop or build within the city's zoning jurisdiction should consult applicable, adopted codes. An electronic copy of this Guidebook and the entire UDO are available online at www.cityofgastonia.com.

SAMPLE HOME TYPES

SINGLE-FAMILY DETACHED

Single-Family Detached

A single family detached home is roughly centered on the lot and has large front and rear yards and narrow side yards. The larger yards make it especially attractive to families with children.



Patio House

The patio house is a single-family detached unit. It is built on a small lot, typically enclosed by walls which provide privacy. The patio house appeals to those who want privacy without the maintenance of a larger yard.



SAMPLE HOME TYPES

SINGLE-FAMILY DETACHED

Village House

The village house is placed close to the street to maximize the rear yard; alleys are encouraged to reduce the visual impact of cars on streets. The result is a lot which is smaller than that of the lot-line house.



Lot-Line House

The lot-line house is a single-family detached unit which, instead of being centered on the lot, is placed against one of the side lot lines. This makes the side yard usable and requires less land than a house centered on its lot. The front yard, which is seldom used, may be substantially reduced.



SAMPLE HOME TYPES

SINGLE-FAMILY ATTACHED

Town House / Row House

The town house/row house is a form of single-family attached dwelling in which units share common side walls and are often designed in rows (although good design attempts to deemphasize the “lined up” appearance). Yard areas are small and privacy requires careful design.

Twin House

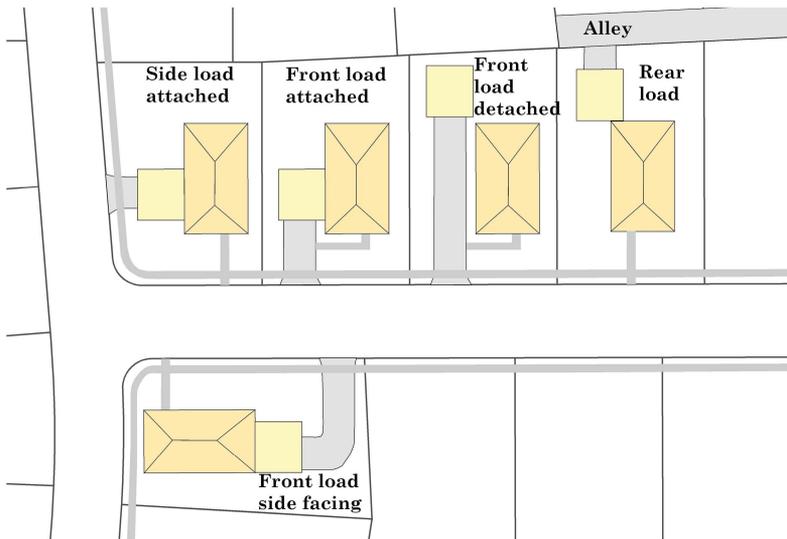
The twin house is an attached single-family house, which is connected along a common party wall to a similar unit. Each structure has only two dwellings. Space is saved by eliminating two side yards. A twin house is different than a duplex, in that a duplex is one structure divided into two living areas on one lot.



GARAGE PLACEMENT & DESIGN

The design and placement of a garage is important to the overall street appearance. As a prominent feature of a house, a garage's appearance can dominate the entire front view of a house. The visual impact of garages can be reduced by the use of additional setback from the curb face where garage doors must face the street or by the use of side-facing or rear garages (including detached garages) where possible. Residential plans that feature attached garage designs whose entries are from the side ("side-loaded garages") are also encouraged. Rear alley loaded is ideal.

Sample Garage Placement



GARAGE DESIGN EXAMPLES



GARAGE PLACEMENT & DESIGN



12



13

Graphic Key

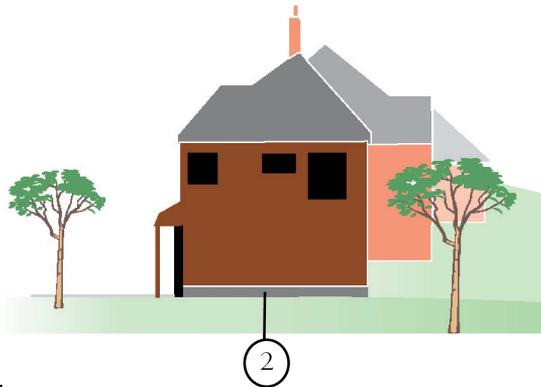
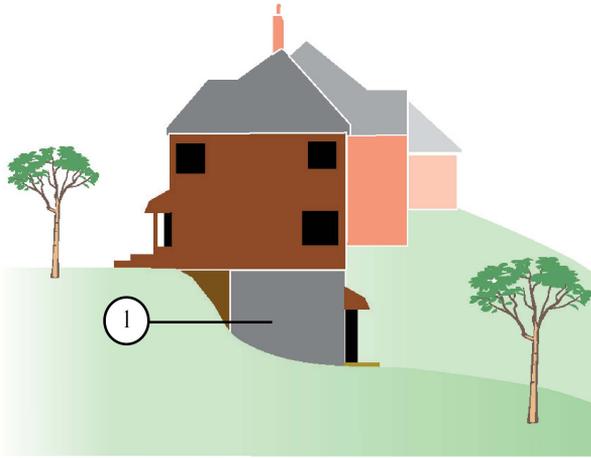
- 1 Carriage garage door
- 2 Divided garage and cornice
- 3 Detached garage in rear yard
- 4 Side loaded courtyard garage
- 5 Split garage
- 6 Windows & roofline over garage
- 7 Rear-loaded garage
- 8 One car garage
- 9 Minimum 50' wide lot needed for 1 car front loaded garage (PRDs post 3/2007)
- 10 Garage as primary feature
- 11 Minimum 60' wide lot needed for 2 car front loaded garage (PRDs post 3/2007)



14

- 12 Front loaded townhome
- 13 More than 2' above grade when setback is less than 20'; rear loaded
- 14 One car garage in townhome

FLOOR SYSTEM EXAMPLES

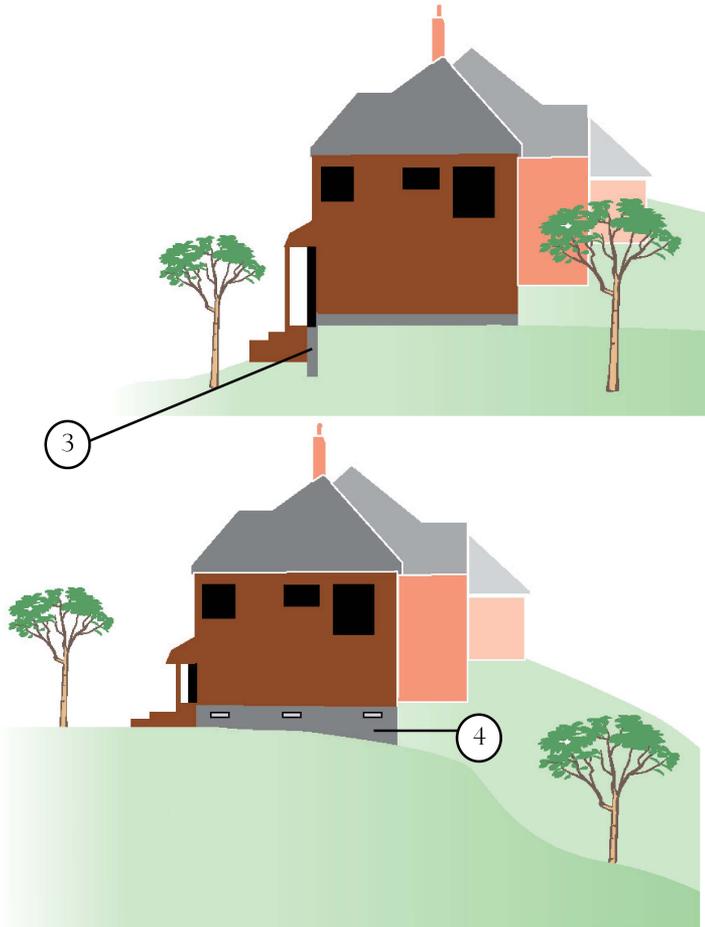


Graphic Key

- ① Basement - The lower story of a building below or partly below ground level in which a person can walk upright under all or part of the building.
- ② Slab on grade - A type of foundation with a concrete floor which is placed directly on the soil. The edge of the slab is usually thicker and acts as the footing for the walls.

FLOOR SYSTEM EXAMPLES

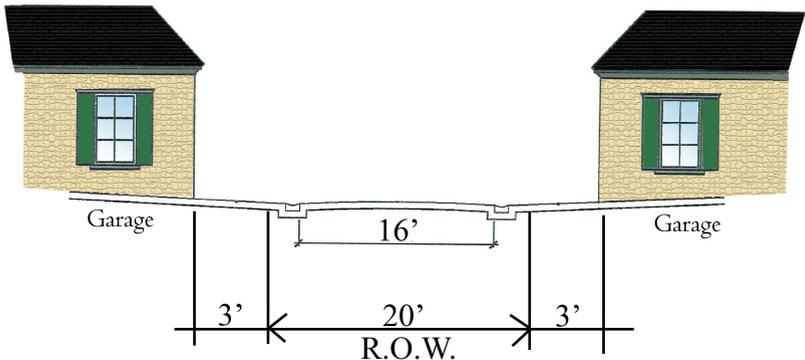
- ③ Stem wall - The small (usually 6 - 12 inches high), vertical, concrete extension of the slab foundation usually surrounding the perimeter and intended to keep exterior water/moisture from finding its way to the interior. Stem walls are often used in garages, where the slab floor is below exterior finished grade.
- ④ Crawl space - A shallow, unfinished space beneath the first floor of a house which has no basement, used for visual inspection and access to pipes and ducts.



ALLEYS



Public alleys may be utilized in residential neighborhoods to eliminate front yard driveways and provide an alternate space for underground utilities, solid waste storage and collection, and emergency vehicle access. Public alleys must have sixteen feet of pavement with a twenty-foot, public right-of-way, curbing on each side, and drainage as approved by the City of Gastonia. Garages with alley access must be set back 18' from the alley right-of-way. When adequate, marked, on-street parking is available, the garage setback may be reduced to 3', with no parking between the alley and the garage (see graphic).



COMMON OPEN SPACE EXAMPLES

RECREATION AREAS & USABLE OPEN SPACE

Improved open space can be used for recreation purposes such as pedestrian trails, swimming pools, tennis courts, or playgrounds. Recreation areas and usable natural areas are at least 1/4 acre in size.

Graphic Key

- 1 Tot lot
- 2 Pocket park
- 3 Nature trail
- 4 Dog park
- 5 Pool amenity



COMMON OPEN SPACE EXAMPLES

NATURAL OPEN SPACE

Common open spaces can provide visual or aesthetic qualities such as a nature preserve or a tree save. Natural open spaces are at least 1/2 acre in size, remain undisturbed and are not located on environmentally sensitive land.

Graphic Key

- 6 Nature preserve - community green
- 7 Tree save



RADIUS TO OPEN SPACE

All property owners in planned residential developments shall have access to open space by means of a public or private street or a paved sidewalk, trail, or walkway in a publicly dedicated easement. All single family residential lots and attached dwelling units shall be within a 1/4 mile radius of improved open space.

SAMPLE 1/4 mile to improved open space

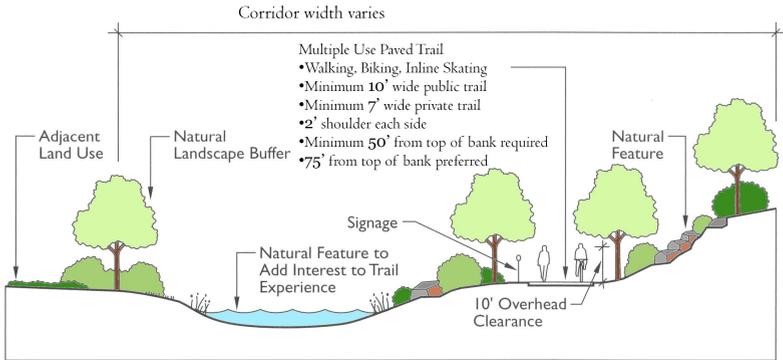
-  sample lot
-  1/4 mile buffer of sample lot
-  improved open space
-  subdivision
-  parcels
-  parks



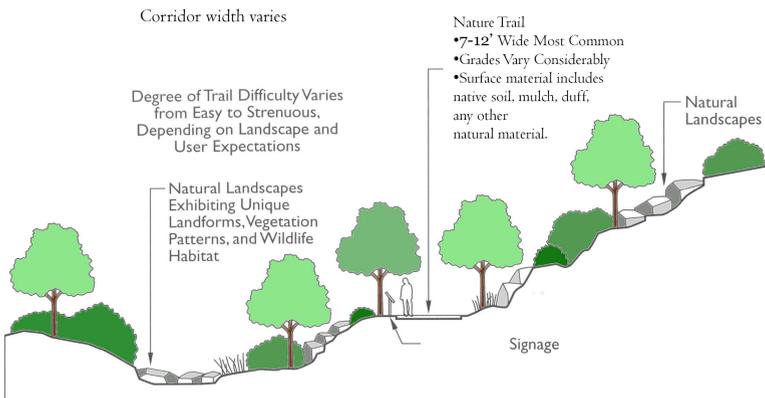
TRAILS

A public, multi-use trail considered as an “improved open space trail” must be a minimum of 10’ wide. This width is necessary to accommodate two-way bicycle and pedestrian traffic on the prepared trail tread. Surface materials may include asphalt or concrete or other hard-surface material approved by the City of Gastonia and must meet the NDCOT Bike Design Guidelines. The trail must also meet the requirements as specified in the “Improved Open Space Trail” diagram below. A private, “improved open space trail” must be at least 7’ wide. A “nature trail,” noted as different from an “improved open space trail” in the bottom diagram, can be included in residential developments, however, they are not counted towards open space requirements.

IMPROVED OPEN SPACE TRAIL (MINIMUM REQUIREMENTS)



NATURE TRAILS (NOT COUNTED AS IMPROVED OPEN SPACE)



TRAILS



Graphic Key

- ① Improved open space trail
- ② Nature trail



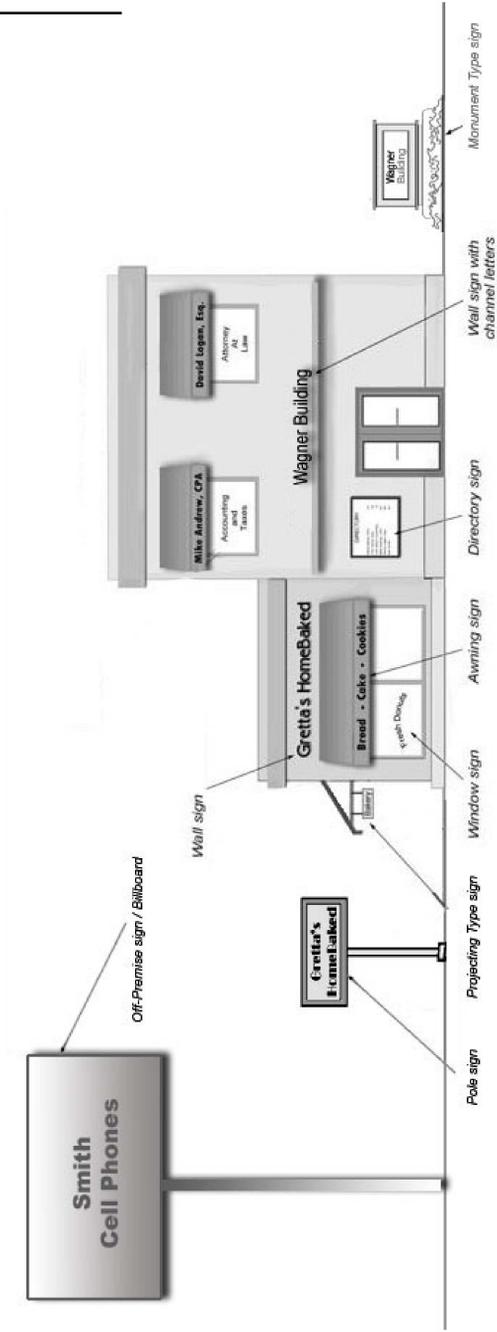
SAMPLE SIGN TYPES



Graphic Key

- ① Monument type
- ② Projecting type
- ③ Awning sign
- ④ Pole sign
- ⑤ Off-premise sign/billboard
- ⑥ Wall-mounted sign

SAMPLE SIGN TYPES



STREET CROSS SECTIONS

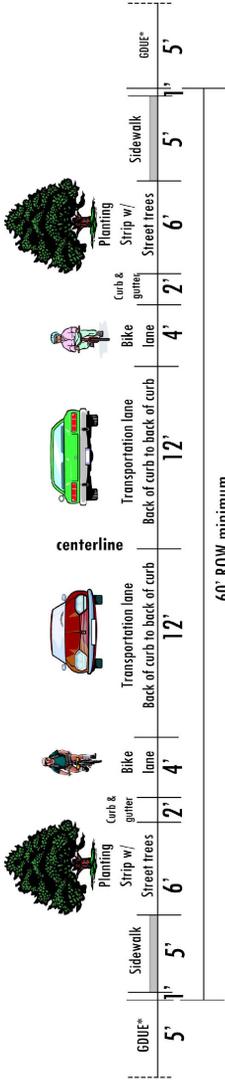


On-street bike lanes bring enormous benefits to both the cycling and non-cycling public. Bike lanes improve safety for all users by providing a distance buffer between vehicles and pedestrians on the sidewalk. Bike lanes also help motorists to be aware of the presence of bicyclists and their right to be on the road. Bike lanes are encouraged on new and reconstructed major and minor thoroughfares.

Pedestrian-friendly streets are designed to be more accommodating to pedestrian traffic than are conventionally designed streets. Pedestrian traffic here includes bicyclists, the physically handicapped, transit users and those of all ages on foot. Pedestrian-friendly streets are becoming a popular design strategy for creating walkable neighborhoods, new or retrofitted. Sidewalks are required on both sides of residential streets within a Planned Residential Development (PRD) and must be separated from the curb by a 6' (minimum) planting strip.

SAMPLE STREET CROSS SECTIONS

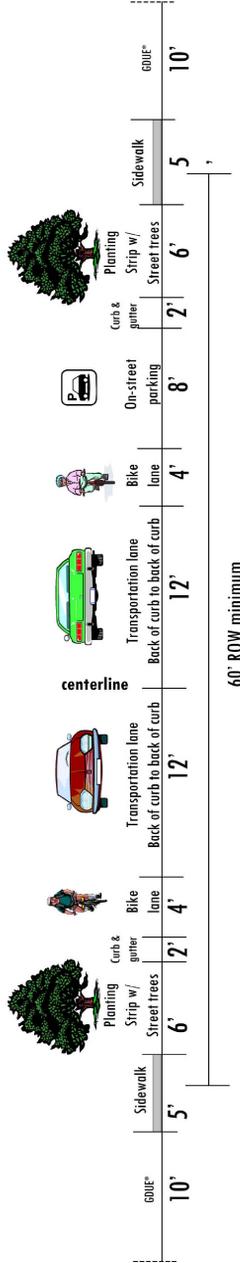
Option A - 60' ROW (with a general drainage and utility easement on each side)
Option B - 50' ROW (with a general drainage and utility easement on each side) when no bike lanes included



*GDU = general drainage & utility easement
 Parking prohibited on both sides

Garages setback 40' from right-of-way (to allow for ample parking in driveways)

Option C - 60' ROW (with a 10' general drainage and utility easement on each side)



*GDU = general drainage & utility easement
 Parking permitted on one side

STREET TREES: RECOMMENDED SPECIES

Large Trees

NC Department of Environment and Natural Resources
Division of Forest Resources

RECOMMENDED STREET TREES FOR NORTH CAROLINA

Below is a list of recommended street trees for North Carolina. Special attention has been given to species with the ability to handle air pollution and heat stress involved with urban environments. Other environmental tolerances and sensitivities are listed below. Be aware that some site preparation may be necessary to ensure tree survival, proper soil and water conditions are necessary for any species to survive. This does not mean that pruning and other kinds of maintenance won't be required during the life of the tree. Also, be aware that species listed as large trees will require more growing space to remain healthy (both below and above ground), for they will have larger root systems and wider crowns. Species listed as small trees are particularly useful when utility lines are present. Many of the species listed below have multiple cultivars available for purchase, please be sure to choose the correct one for the site.

LARGE TREES: Mature height greater than 50 feet tall							
TREE SPECIES Common Name	SHAPE	GROWTH RATE			VISUAL INTEREST	ENVIRONMENTAL TOLERANCE	PROBLEMS
		Slow	Medium	Fast			
Hardy rubber tree	Rounded	•				Drought	
Green ash	Rounded		•			High pH/Salt/Drought/Compaction	Numerous seeds can be problematic on females
Thornless honeylocust	Rounded		•			Wet soils/Drought/Salt/High pH/Compaction	Plant bugs, mites, webworm
Kentucky coffeetree	Rounded		•			Drought/Salt/High pH	Pods may be problematic; Needs adequate growing space
Sweetgum	Pyramidal		•			Wet soils	Needs adequate growing space; Fruit litter may be problem, 'Rotundiloba' may be alternative
Dawn redwood	Pyramidal		•			Wet soils/High pH	
Black gum	Pyramidal		•			Acid soils	
London planetree	Rounded			•		Compaction/Drought/ Salt	Adequate space; Anthracnose can be problem.
Swamp white oak	Rounded	•				Wet soils/Drought/Salt/Compaction	Acorn litter. Requires ample space and acid soil
Shingle oak	Rounded		•			Dry soils	

STREET TREES: RECOMMENDED SPECIES & SPACING

Large Trees

Swamp white oak	Rounded	•								Acorn litter. Requires ample space and acid soil
Shingle oak	Rounded		•							
Overcup oak	Rounded		•							
Pin oak	Pyramidal		•							Adequate space
Willow oak	Pyramidal			•						
Northern red oak	Rounded			•						Acorn litter
Shumard oak	Rounded		•							Acorn litter
Live oak	Rounded	•								
Japanese pagodatree	Rounded		•							Litter problems; Canker can be a problem
Baldcypress	Pyramidal			•						
Silver linden	Rounded		•							Aphids
Lacebark elm	Rounded		•							
Japanese zelkova	Rounded		•							Narrow crotch angle susceptible to splitting

Key:  Fall Leaf Color
 Flower Color
 Flower Color

STREET TREES: RECOMMENDED SPECIES & SPACING

Medium Trees

NC Department of Environment and Natural Resources
Division of Forest Resources

MEDIUM TREES: Mature height between 35 feet and 50 feet tall							ENVIRONMENTAL TOLERANCE	PROBLEMS
TREE SPECIES Common Name	SHAPE	GROWTH RATE		VISUAL INTEREST				
		Slow	Medium	Fast				
Red maple	Rounded		•			Wet soils/compaction	Tends to have cankers under heavy stress; Over planted.	
Horsechestnut	Rounded	•				PH adaptable/salt tolerant/compaction	Susceptible to leaf blotch and scorch	
Red horsechestnut	Rounded	•				Compaction/acidic soil		
European hornbeam	Narrow		•			Dry soils/pH adaptable		
American hornbeam	Pyramidal	•				Acidic soils	Sensitive to drought and compacted soils	
Sugar hackberry	Rounded		•			Wet soils/compaction /salt	Intolerant of high pH	
Turkish filbert	Narrow		•			Drought/pH adaptable		
Easter redcedar	Pyramidal		•			Drought/High pH/Compaction/Salt		
Goldenraintree	Rounded		•			Drought/Salt/High pH		
Amur corktree	Rounded		•			Drought/Wet soils/pH adaptable	Fruit may be a problem on females	
Sargent cherry	Narrow			•		Drought/Salt/Acid soils	Avoid poorly drained sites. Japanese beetles	

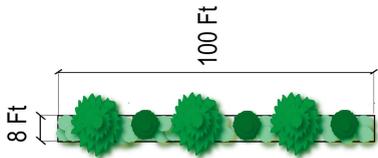
STREET TREES: RECOMMENDED SPECIES & SPACING

Small Trees

SMALL TREES: Mature height less than 35 feet tall (suitable for planting under utility wires)							PROBLEMS
TREE SPECIES	SHAPE	GROWTH RATE			VISUAL INTEREST	ENVIRONMENTAL TOLERANCE	
Common Name		Slow	Medium	Fast			
Hedge maple	Rounded	•				High pH/Drought/compaction	
Serviceberry	Rounded		•		 		Specify tree form. Good alternative to crapemyrtle.
Eastern redbud	Rounded			•	 	pH adaptable	
Chinese fringetree	Rounded	•					
Kousa dogwood	Rounded	•			 	Acidic soils	
Green hawthorn	Rounded		•		 	PH adaptable/ Drought/Wet soils	
Carolina silverbell	Rounded		•		 	Acid soils	Specify tree form. Good alternative to crapemyrtle.
Crapemyrtle	Rounded			•	 	Wet soils	Over planted and often unnecessarily topped.
Amur maackia	Rounded	•				Drought/pH adaptable	
Flowering crabapple	Rounded		•		 	Wide range of soils/Salt/Compaction	Specify tree form; fruit litter problem; scab is a problem for many species
Chinese pistache	Rounded		•			High pH	
Carolina Cherrylaruel	Pyramidal			•		Drought/pH adaptable	Avoid poorly drained sites
Chokecherry	Narrow			•	 	Drought/Salt	Avoid poorly drained sites
Japanese tree lilac	Pyramidal			•		Drought/pH adaptable	

Key: Fall Leaf Color
 Flower Color

MINIMUM TYPE A LANDSCAPED BUFFER



Required plant units per 100 feet
3 canopy trees
3 understory trees
20 shrubs

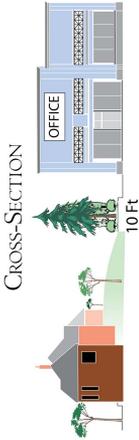
PLAN VIEW

TYPE A BUFFER:
Between office/commercial and residential uses
(mature depictions)

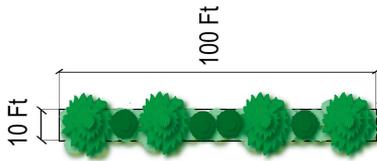


TYPE B BUFFER:
Between residential and office uses
(mature depictions)

MINIMUM TYPE B LANDSCAPED BUFFER



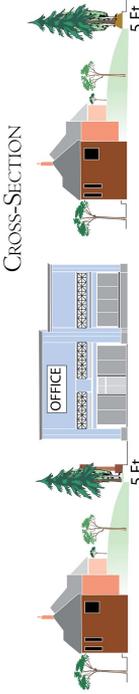
CROSS-SECTION



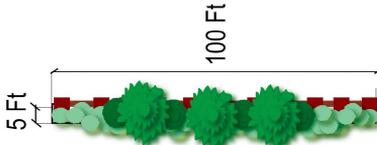
Required plant units per 100 feet
4 canopy trees
4 understory trees
35 shrubs

PLAN VIEW

WITH WALL, FENCE OR BERM

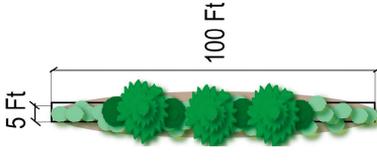


CROSS-SECTION



Required plant units per 100 feet
3 canopy trees
3 understory trees
25 shrubs

PLAN VIEW



Required plant units per 100 feet
3 canopy trees
3 understory trees
25 shrubs

PLAN VIEW



MINIMUM TYPE C LANDSCAPED BUFFER

WITH WALL, FENCE OR BERM

CROSS-SECTION

CROSS-SECTION



25 Ft

15 Ft

15 Ft

Required plant units per 100 feet

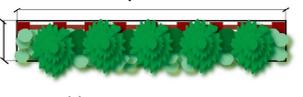
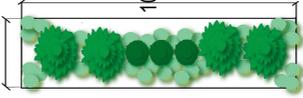
Required plant units per 100 feet

Required plant units per 100 feet

- 4 canopy trees
- 3 understory trees
- 35 shrubs

- 5 canopy trees
- 4 understory trees
- 30 shrubs

- 5 canopy trees
- 4 understory trees
- 30 shrubs



PLAN VIEW

PLAN VIEW

PLAN VIEW



Canopy Trees

Understory Trees

Shrubs

TYPE C BUFFER:
Between residential and commercial uses (mature depictions)

MINIMUM TYPE D LANDSCAPED BUFFER

CROSS-SECTION



WITH WALL, FENCE OR BERM

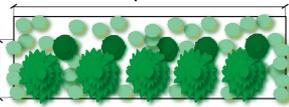
CROSS-SECTION



Required plant units per 100 feet

- 5 canopy trees
- 4 understory trees
- 35 shrubs

30 Ft

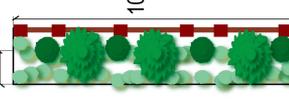


PLAN VIEW

Required plant units per 100 feet

- 6 canopy trees
- 5 understory trees
- 40 shrubs

20 Ft

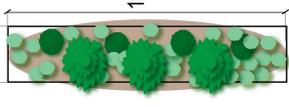


PLAN VIEW

Required plant units per 100 feet

- 6 canopy trees
- 5 understory trees
- 40 shrubs

20 Ft

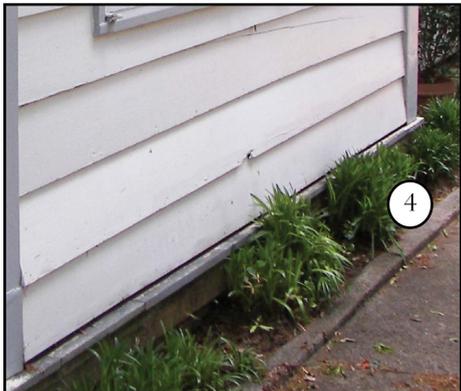
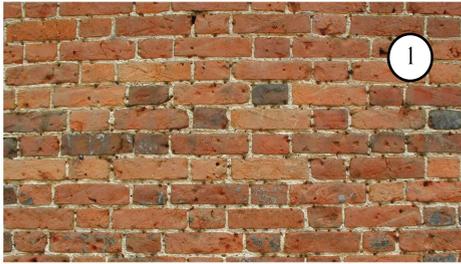


PLAN VIEW



TYPE D BUFFER:
Between residential and industrial
uses (mature depictions)

BUILDING MATERIAL SAMPLES



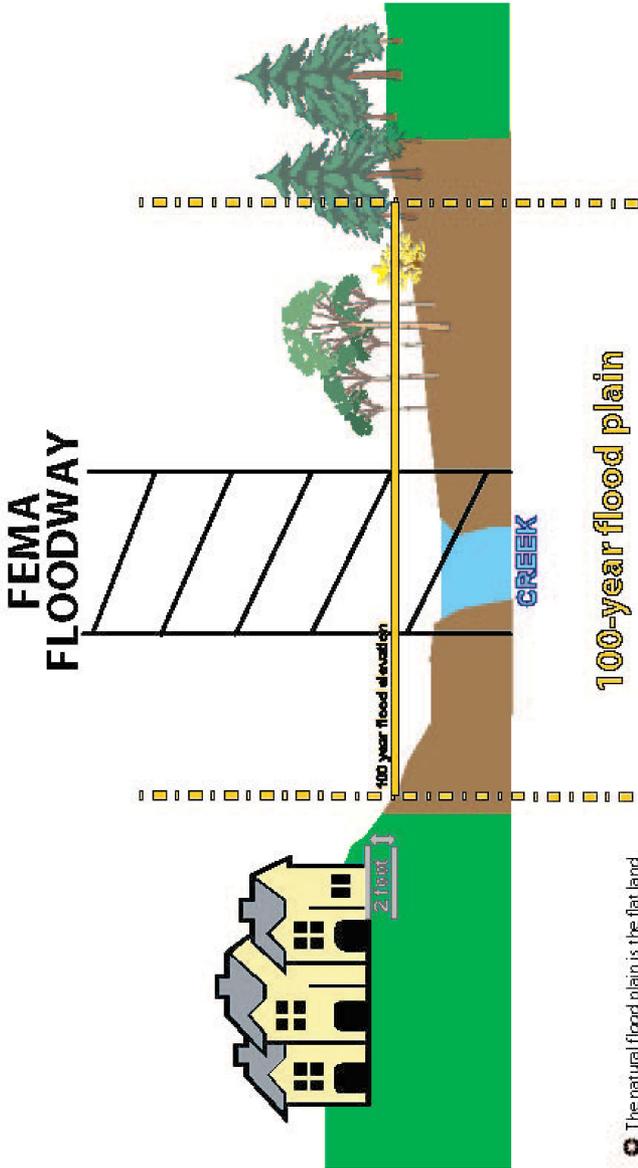
Graphic Key

- 1 Brick
- 2 Fiber cement (Hardi Plank®)
- 3 Vinyl siding
- 4 Wood siding
- 5 Stone
- 6 Vinyl shakes
- 7 Stucco





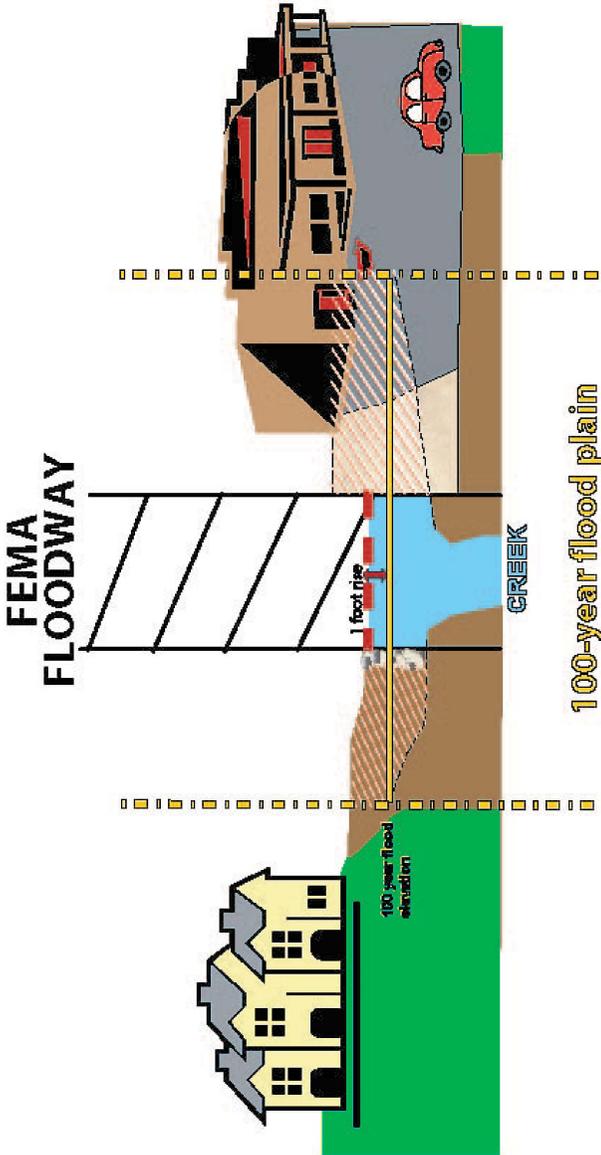
OTHER CONCEPTS FROM THE CITY CODE



- The natural flood plain is the flat land surrounding the creek that is prone to flooding.
- There is a 1% chance that a flood could reach the 100 year flood elevation in a given year.
- The 100 year flood plain is the area contained underneath the 100 year flood elevation.
- Current zoning ordinance requires finished floor elevation to be two feet above the 100 year flood elevation.

FLOODWAY & 100 YEAR FLOODPLAIN

Example: FEMA Floodway



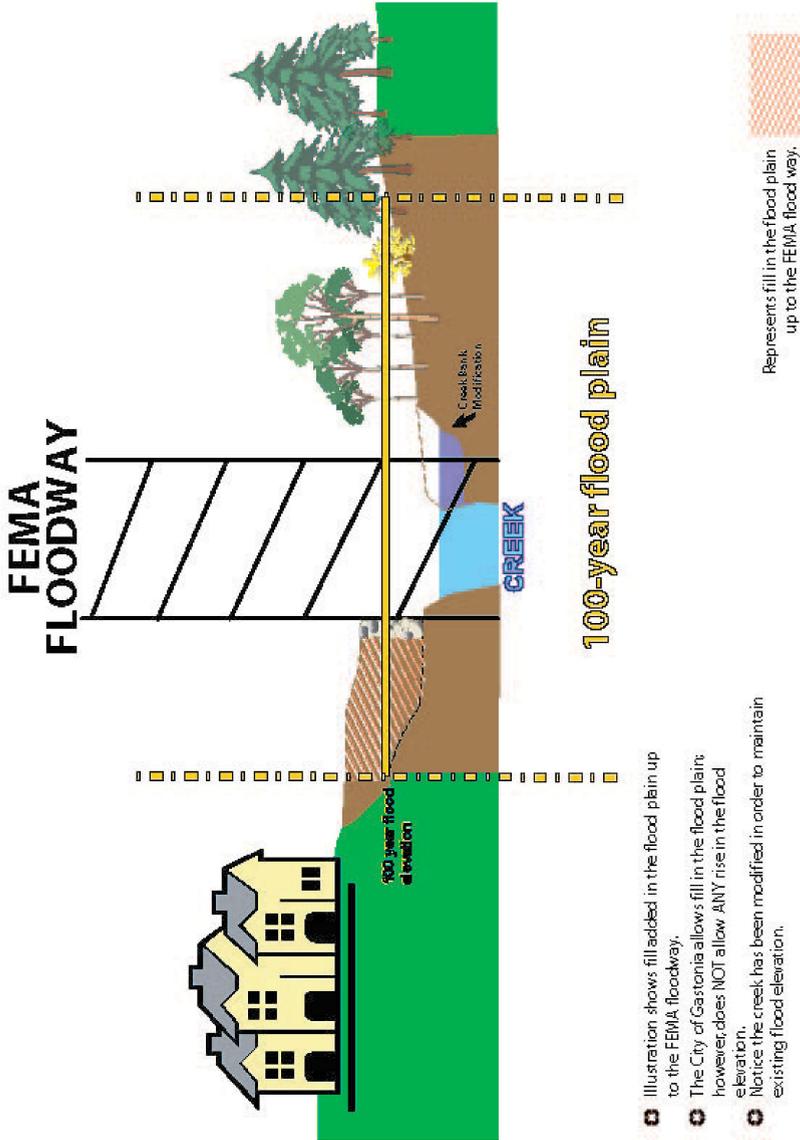
NOT ALLOWED IN CITY!

- FEMA allows fill in the flood plain up to where the 100 year flood elevation rises 1 foot.
- The City of Gastonia has a higher standard and DOES NOT allow ANY rise in the flood elevation.

Represents fill in the flood plain up to the FEMA flood way.

FLOODWAY & 100 YEAR FLOODPLAIN

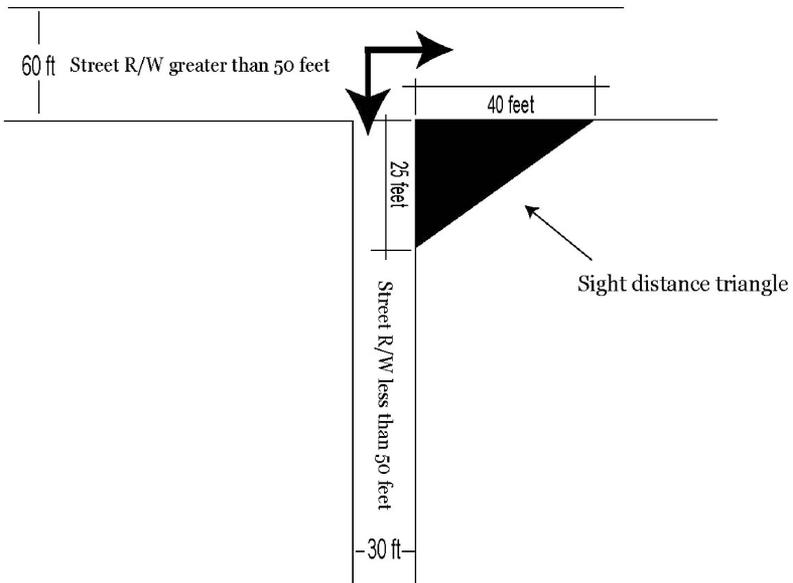
Example: City of Gastonia "No Rise" Policy



- ❏ Illustration shows fill added in the flood plain up to the FEMA floodway.
- ❏ The City of Gastonia allows fill in the flood plain; however, does NOT allow ANY rise in the flood elevation.
- ❏ Notice the creek has been modified in order to maintain existing flood elevation.

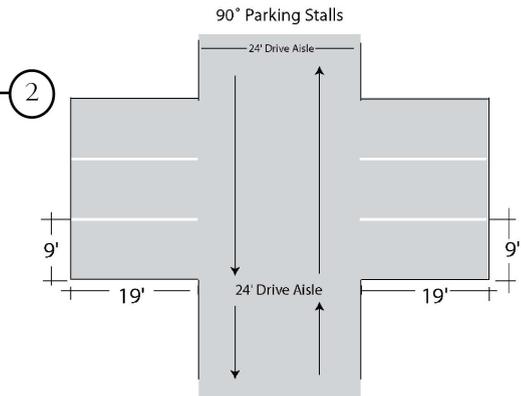
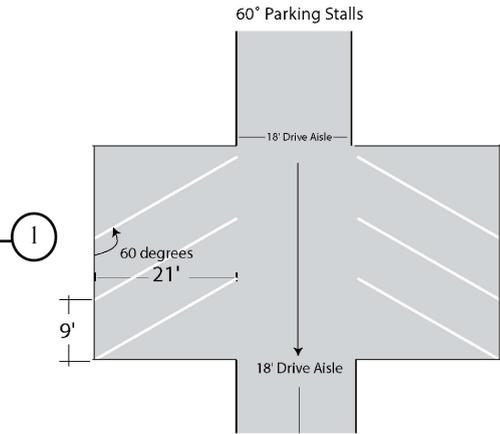
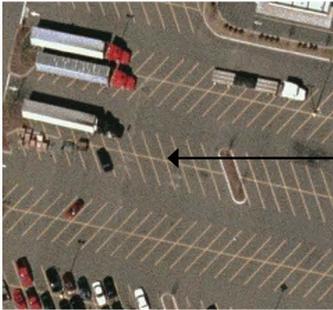
SIGHT DISTANCE TRIANGLES

Sight distance is the distance one can view along an unobstructed line of sight. Motorists approaching intersections need appropriate sight distances, unobstructed by trees or signs, to safely make turns and to confidently pass through an intersection.



PARKING SPACE DIMENSIONS AND DRIVE AISLES

Typical parking lot dimensions contain a rectangular area with 90° angles of at least 19 feet long and 9 feet wide. If the angle of parking is 60° , the rectangular area is 21 feet long by 9 feet wide. Typical drive aisles for 2 way traffic is 24 feet and 18 feet for one-way traffic.



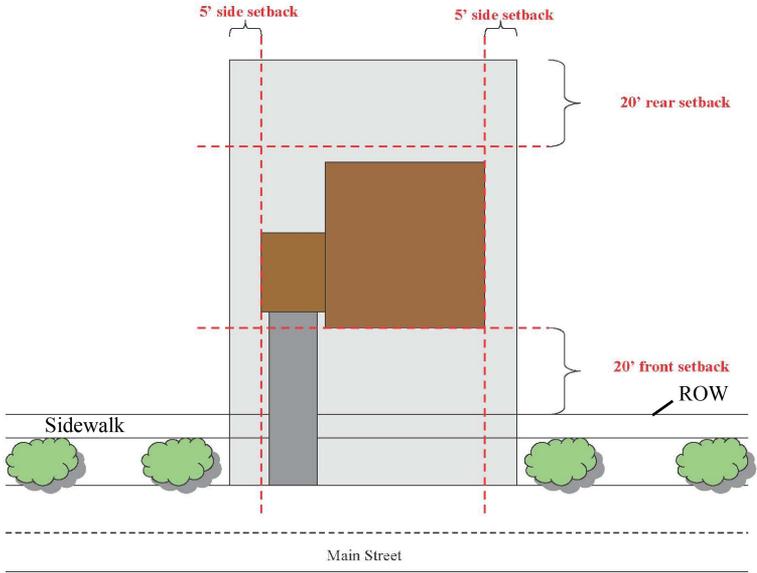
Graphic Key

- ① 60° angled parking
- ② 90° angled parking

SETBACKS

Setbacks include front, rear and side-yard setbacks. When density is higher, setbacks are typically smaller. Setbacks are closely linked to density and massing considerations.

Setback Sample





www.cityofgastonia.com

City of Gastonia Development Services Department: 704-854-6652