

# Design Guidelines

## Overview

1. Rectilinear – A rectilinear design uses vertical and horizontal lines set on a square grid. Think raised beds.
2. Radial – A radial design uses various sizes of circles that branch out from a central point and multidirectional straight lines on a radial grid. Think herb garden or a larger area with a seating space in the middle.
3. Curvilinear – A curvilinear design consists of compound curves and the absence of straight lines on a square grid. Water features work well in this kind of space.



Generally try to improve the overall appearance of the landscape by taking into consideration the shortcomings of your site and using design to compensate for it. Rectilinear designs are more formal and traditional and complement formal architecture; radial designs are bold and can liven up a boring area and provide focus; curvilinear designs are free flowing and can create a soothing space.

## Design elements

- Repeat a shape, but vary the size.
- Vary the height of elements.
- Line up elements to create an organized, clean, systematic effect.
- Use parallel lines and 90 degree angles to maintain an orderly and structured appearance.
- Don't place elements at random as it creates visual chaos.
- Mass like objects and balance the mass.
- Establish an axis and use focal points to terminate views.
- Use lines of trees or mounds of shrubs to create "rooms" for activities.
- Incorporate paths and storage areas in your plan as they take up space.
- A 50 square foot garden with 10 foot rows creates 40 square feet of paths; however, a raised bed only needs 10 square feet of paths. A keyhole garden may only need 6 square feet of space for paths.
- After designing your layout, add nitrogen fixing plants, insectary plants and wildlife food to the wasted spaces.

## Accessibility

- Width: optimal recommended width is 60 inches with a minimum recommended width of 48 inches

- Surface should be firm and stable: pavement, textured concrete and screenings. Brick and boardwalk pathways become slick when wet and can be a safety risk. Rock, wood chip, and stepping stone paths are not recommended.
- Slope: recommended 5% or less running slope. Recommended cross slope is 2 to 3%.
- Ramps: any time the grade of a path exceeds 5% provide a ramp. If a ramp is needed, the least amount of slope possible is recommended. A maximum acceptable slope is 1:12. Ramps are required to have a level, 60-inch minimum landing immediately before and after a sloped run, and landing must be installed for ever 30' of sloped run.
- Handrails are recommended any time an element such as a ramp or bridge is present on a path.
- Obstacles: paths should be free of any obstacles such as roots, rocks, and/or steps.
- Create raised planting beds or boxes to accommodate individuals who use wheelchairs, senior citizens and other individuals with limited mobility.
- Create a sensory garden in a raised bed or standing planter box for individuals with visual impairments.
- Use trellises to raise plants vertically so there's no stooping.
- Containers are an inexpensive way to create raised plantings.
- Use multi-layered landscape design to increase access.
- Use adaptive gardening tools if necessary.
- Have aprons with pockets to secure a lightweight bag or basket for carrying tools.



Provide kneelers, knee pads or a small stool for people having difficulty bending or with joint pain.

Use tools with brightly colored handles or paint or tape the handles white to provide contrast for gardeners with low vision.

Add benches or chairs for people to rest.

Choose plants for scent and tactile recognition for gardeners and visitors with visual impairments.

Use sound producing elements such as wind chimes, a waterfall or a fountain to help provide orientation for visitors with visual impairments.

### Bring in people & celebrations

- Add gathering places— tables, chairs, hammocks, etc.
- Schedule special events in the garden— eating a meal or snack, reading, holidays, visitor day, celebrations.
- Make the garden an extension of your living space.
- Make additions to your garden reason to celebrate— adding a new section, do something special to commemorate it, even pictures are celebratory and capture the memories; first tomato of the season is a photo op, tasting room, cheers all around.

- Give extra vegetables and fruits, flowers, herbs to family, friends, neighbors, homeless shelters, food pantries, etc. Let your child know that the garden benefits many people and his/her work is valuable and appreciated.

Things to consider for the plants you choose:

- Space requirements of individual plants.
- Mounding requirements individual plants.
- Climbing requirements of individual plants.
- Spreading requirements of individual plants.
- Air & light sufficient for healthy plants.
- Avoid monoculture beds.
- Allow for access to interior plants without disturbing exterior plants.

Design for plants that do and don't do well together/companion plants.

- Asparagus & tomato, basil, parsley
- Beans, bush: Irish potato, corn, cucumber, strawberry celery, summer savory, but NOT onion
- Beans, pole: corn, summer savory, radish, but NOT onion, beets, kohlrabi, sunflower
- Cabbage family: aromatic herbs, beets, celery, onion family, chamomile, spinach, chard, but NOT dill, strawberries, pole beans, tomato
- Carrots: english pea, lettuce, rosemary, onion family, sage, tomato, but NOT dill
- Celery: onion and cabbage families, tomato, bush beans, nasturtium
- Corn: Irish potato, beans, english pea, pumpkin, cucumber squash but NOT tomato
- Cucumber: beans, corn, english pea, sunflowers, radish but NOT Irish potato, aromatic herbs
- Eggplant: beans, marigolds
- Lettuce: carrot, radish, strawberry, cucumber
- Onion family: beets, carrot, lettuce, cabbage family, summer savory but NOT beans, english peas
- Parsley: tomato, asparagus
- Pea, English: carrots, radish, turnip, cucumber, corn, beans, but NOT onion family, gladiolus, Irish potato
- Potato, Irish: beans, corn, cabbage family, marigolds, horseradish but NOT pumpkin, squash, tomato, cucumber, sunflower
- Pumpkins: corn marigold, but NOT Irish potato
- Radish: english pea, nasturtium lettuce, cucumber but NOT hyssop
- Spinach, strawberry, fava bean
- Squash: nasturtium, corn, marigold but NOT Irish potato
- Tomato: onion family, nasturtium, marigold, asparagus, carrot, parsley, cucumber but NOT Irish potato, fennel, cabbage family
- Turnip: english pea but NOT Irish potato

Design with water in mind

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- Keep irrigation in mind from the start. Integrate stormwater management, rain garden, water catchment, swales, permeable surfaces, xeriscaping, etc.
- Incorporate Xeriscape design elements to reduce your need for water and take into consideration frequent drought conditions: improve your soil, plant in the right place (locate unthirsty plants where they'll get the sun or shade and soil drainage they need and water needs so none gets your grassy areas; control your plants; upgrade your irrigation system to make precision watering easier; water deeply so established plants are buffered from the water area; irrigate efficiently by efficient and water plants only calendar or clock, water at lower and the air calmer, don't leak and avoid runoff and Use permeable paving and plants that don't need a lot of water. Examples of easy to find, low-water plants are rosemary, sage and thyme, catmint and patio roses. Plant in the early fall so they will be established by the following summer. Manage your thirsty plants wisely.
- Choose plants that don't require a lot of water: African daisies, California poppies, celosia, creeping zinnia, cosmos, dwarf morning glories, gaillardia, marigolds, nicotiana (poisonous so use with discretion), petunias, portulaca, salvia, snow on the mountain, verbena, vinca.
- Plant for visual impact: limit plantings to areas where they'll be seen up close such as entry ways, and around patios and decks.
- Start with small plants or sow seeds. These develop more extensive roots systems than larger plants, use less water over the long haul.
- Plant in part shade.
- Plant when the weather is ideal for quick establishment such as the fall.
- Group plants close enough that mature plants shade the soil.



### Vegetables & water

- Start from seed. They develop stronger and deeper roots.
- Buy small transplants and avoid seedlings that are obviously root bound.
- Plant in furrows. Dig furrows 6-8 inches deep, then sow or plant in the bottom of the trench.
- Build basins around vegetables that need wide spacing: squash, melons, and tomatoes.
- Plant tomato seedlings deep. Leave just the top two leaves exposed so plants will develop better root systems.
- Plant close together. Space plants so the foliage will eventually touch so it will shade the soil and discourage weeds; not too close or you may prevent air circulation and create a mold/mildew problem.

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- Plant early ripening varieties. These need less irrigation.

### Roses & Water

Plant bare root in the winter when their roots have more time to get established before hot weather. Cut back on watering after spring bloom. Buy established roses that require little water. Mulch heavily. Use at least 3 inches and replenish often. Wait until the next winter to prune and don't deadhead. Let hips develop to suppress growth.

### Water storage

Incorporate water storage into your design: rain chains captures water from roofs/ gutters and direct water into a basin in the ground that you can filter with river rocks; a rain garden captures water and keeps it in the ground; rain barrels and cisterns hold water captured from roofs. A rain barrel can hold 50-60 gallons, which is enough to irrigate houseplants or pots on the deck. An inch of rain puts about 600 gallons of water on top of a 1,000 square foot house. Rain gutters capture it and from a downspout, direct it into a cistern.

### Design for Pest Management—Integrated Pest Management

- Integrated pest management is an important part of the design process. The overuse of pesticides and herbicides has become a world wide problem and are linked to cancer, learning problems, respiratory problems, and more. Use organic growing methods and integrated pest management rather than chemicals.



First, buy quality seeds & plants from reputable seed companies and nurseries.

Leave plenty of space between plants for air circulation, which reduces the chances for diseases.

Plant appropriately: set plant out when it is time to set them out so they aren't susceptible to a pest attack.

Set up barriers: use physical barriers by using row covers or nets that allow sunlight and water, but keep out pests. These will have to be removed during blossoming.

Pick the pests: hand-pick and destroy insects.

Prevent weeds: a layer of mulch helps control weeds and conserve soil moisture.

Monitor your garden for any new pests regularly.

- Keep it clean: discard any diseased plant material immediately. Remove debris.
- Rotate crops: move crops to different garden locations each year.
- Marigolds, garlic and nasturtiums are natural insect repellents. Marigold discourages root nematodes and ants, squash bugs, tomato hornworms and bean beetles. Garlic repels aphids and Japanese beetles. Nasturtiums repel pot bugs and white flies.
- Insecticidal soap and homemade insect repellents are other non-chemical ways of protecting your plants.

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### Design with a Theme

- Vegetable
- Flowers
- Butterfly
- Pizza garden: tomatoes, peppers, onions, basil, oregano, etc.
- Certified natural habitat (NWF)
- Certified butterfly habitat (NABA)
- Cracker Jack: peanuts & popcorn
- Enchanted Gardens: plants associated with mythical creatures
- Performing plants garden: plants that do things, mimosa leaves folding when touched, burs of burdock the inspired velcro, etc.
- Wildlife Habitat
- History Gardens
- Ecosystem Gardens: what your area looked like before buildings were placed there, the history of your local landscape (prairie garden, chaparral garden, woodland or meadow)
- Heritage Garden: importance of preserving biodiversity like heirloom vegetables.
- Nutrition gardens: learn more about where food comes from, eating local, eating seasonally.
- Rainbow— different flower colors OR collections of plants introduced or used by African-Americans, Hispanic-Americans, Asian-Americans, North American Indians, and early settlers
- three sisters/native american garden: corn, beans, squash are the three sisters. Corn grows up and provides a trellis for the beans and the squash grows beneath the corn protecting the roots from the harsh sun and keeping the ground moist. The nitrogen from the beans aids the corn and the squash.
- Salsa garden: peppers, tomatoes, garlic and onions (Mexican culture)
- Colonial 4-square: fava beans, pumpkins, cabbage and radishes were some of the plants the colonists brought to America.
- History garden: historically and contemporary significant plants grown in your state: peanuts, potatoes, gourds, corn, cotton.
- Top & bottom garden: we went the leaves of plants which grow above the ground and the roots of others hidden below the ground. (Lettuce, swiss chard, collards, spinach, kale) and (carrots, beets, radishes, potatoes, peanuts).
- Salad bowl garden: easy to grow plants for salads: leaf lettuces, radishes, cherry tomato plant, herbs like basil, dill, parsley
- Prairie garden
- Johnny appleseed orchard
- Zoo garden
- International smiles garden
- Weather garden: weather related terms and old wives tales
- Flag garden
- Lima bean sand pit (filled with buried treasure)



- Rabbit chow garden: rabbit-friendly garden, rabbit eating habits, and Peter Rabbit's world
- ABC garden: plants that start with the letter A, B, and C or any letter of the alphabet.
- School days garden
- Sensory garden
- Woodland garden
- Dinosaurs in the garden: plant-eating dinosaurs and the plants in the garden a dinosaur would eat
- Garden creatures garden: salamanders, spiders, worms, etc.
- Native American garden: squash, beans, and corn
- Secret Garden
- Fabulous fowl food garden/activity: grow the food of or learn about the feeding habits of birds.

#### Natural/Wildlife Garden Suggestions

- Use only native plants
- Avoid invasive exotic plants
- Maintain existing vegetation when possible
- Avoid turf grass
- Minimize impermeable surfaces

#### Design with child learning in mind

- Diversify plants
- Choose plants that require minimal watering and fertilizers
- Consider stormwater management