

Gardening Made Easier: Taking Steps towards a universal design



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Overview



- Making the garden accessible
 - Walkways
 - Curbs
 - Ramps
 - Garden Beds
 - Tools
- Safe Gardening
 - Warm-up's and stretching
 - Body mechanics
 - Safe gardening from a wheelchair

Accessible Walkways



- Garden path surfaces must be firm, smooth, stable, level, and provide traction in areas which are slippery
- Surfaces are most effective when continuous without cracks such as asphalt and concrete
- Use edge guides if you have ambulating and/or visual disabilities. Audible water features and wind chimes also help with orientation

Accessible Walkways



- An area designated to park scooters in the garden is useful for people who can not walk long distances
- The grade of the path should be between 5 and 8 percent to decrease the amount of effort required for pushing manual wheelchairs/ walking with crutches

Accessible Walkways



- The edges of the pathway should be flush with the surrounding grade to accommodate for use of a wheelchair, crutches, or a scooter
- One-way traffic needs a five-foot minimum width to accommodate the turning radius of a wheelchair. Two-way traffic requires a seven-foot minimum width.

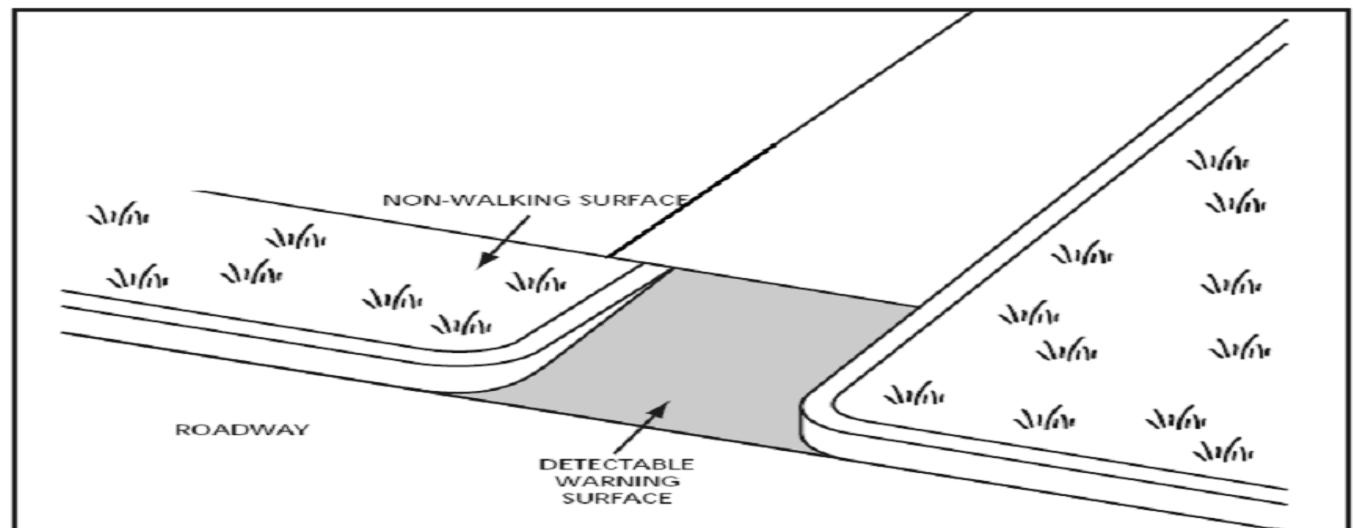
Accessible Curbs

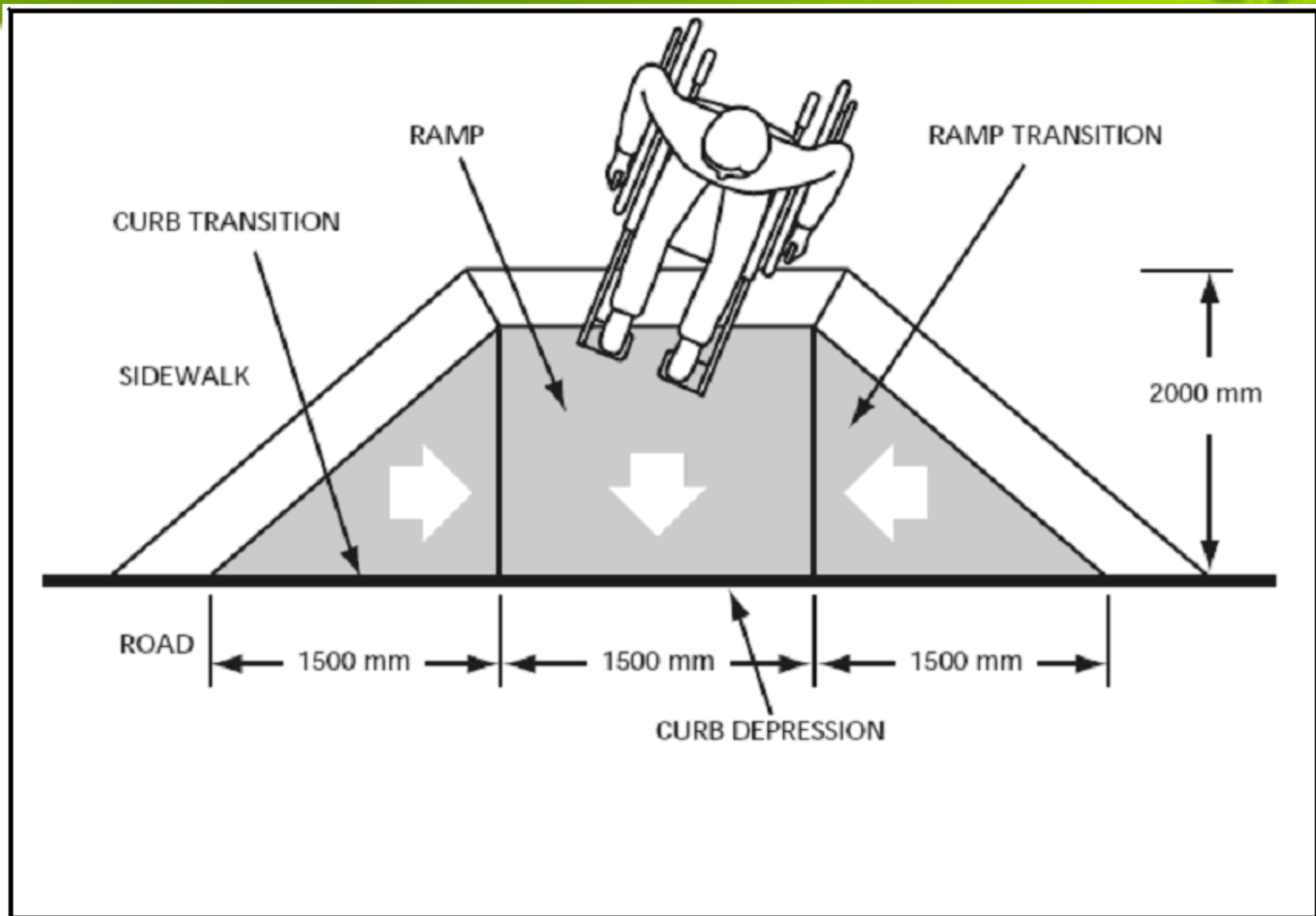


- Curb ramps should be a minimum of 1500 mm wide, non-slip sides, and be of a clearly different, cane detectable texture (e.g., incised lines, 13 mm (1/2") deep)
- It is also useful to be in a contrasting colour to the road surface and also be of a different textured material to allow the surface to be easily identified for people with visual impairments

Accessible Curbs

- Generally, curb ramps should be located so that they are free of accumulation
- Should contain no manhole covers, storm gratings, or other obstacles that limit free movement
- Where catch basins are necessary, they should be positioned on the upstream side of the crosswalk

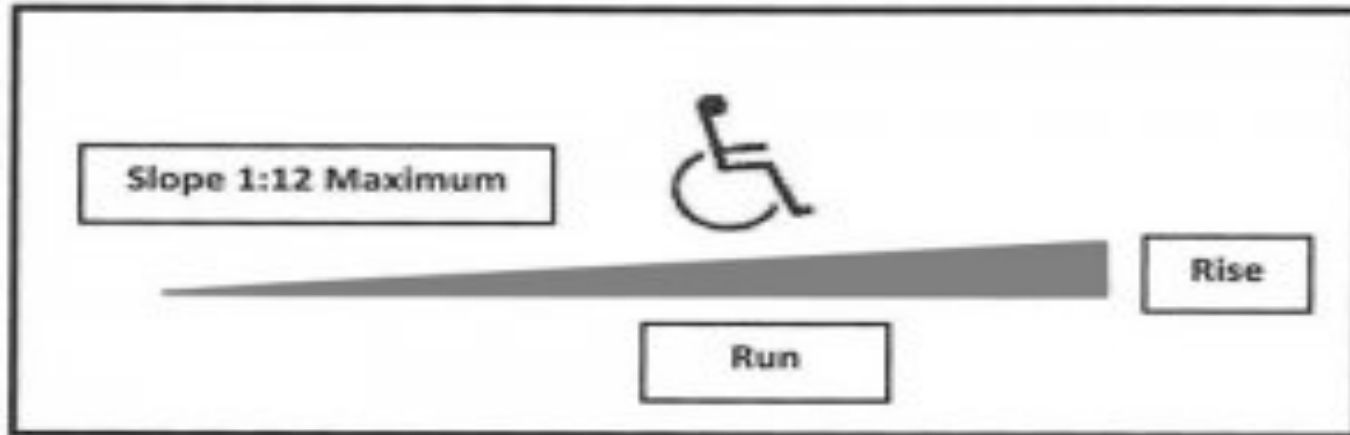




Ramp Rise



- 1 Inch of rise requires 12 inches of ramp
 - Ex. 3 inches of rise requires 36 inches of ramp length
- Maximum rise = 30 inches; after 30 inches a landing is required



Ramp width

- Ramp width should be minimum of 36 inches
- Level landings must be provided on top and bottom of ramp with a 5x5' turning radius



Rails

- If ramp height is greater than 6 inches it must have rails on both sides
- Rails should be installed between 2' 8" and 3' above ramp surface
- Provide a curb or low rail to keep casters on ramp



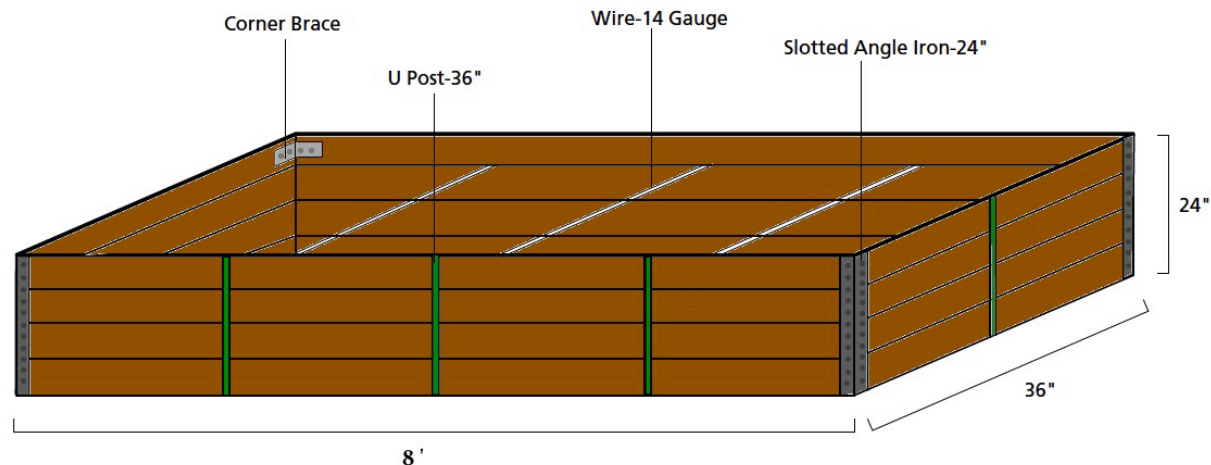
Ramp Materials



- Do NOT use a plywood surface; can become slippery when wet
- Composite wood products are best - they will require less maintenance and are cost effective
- Ramp must be covered with an anti slip material
- All bolts, nails and washers should be galvanized

Raised Garden Bed: Dimensions

- At least 24 inches (or 2 feet) in height
 - Maximum height of 30 inches
- 36 inches (or 3 feet) in width
 - Maximum width of 48 inches (or 4 feet)
- Between 8 – 12 feet in length



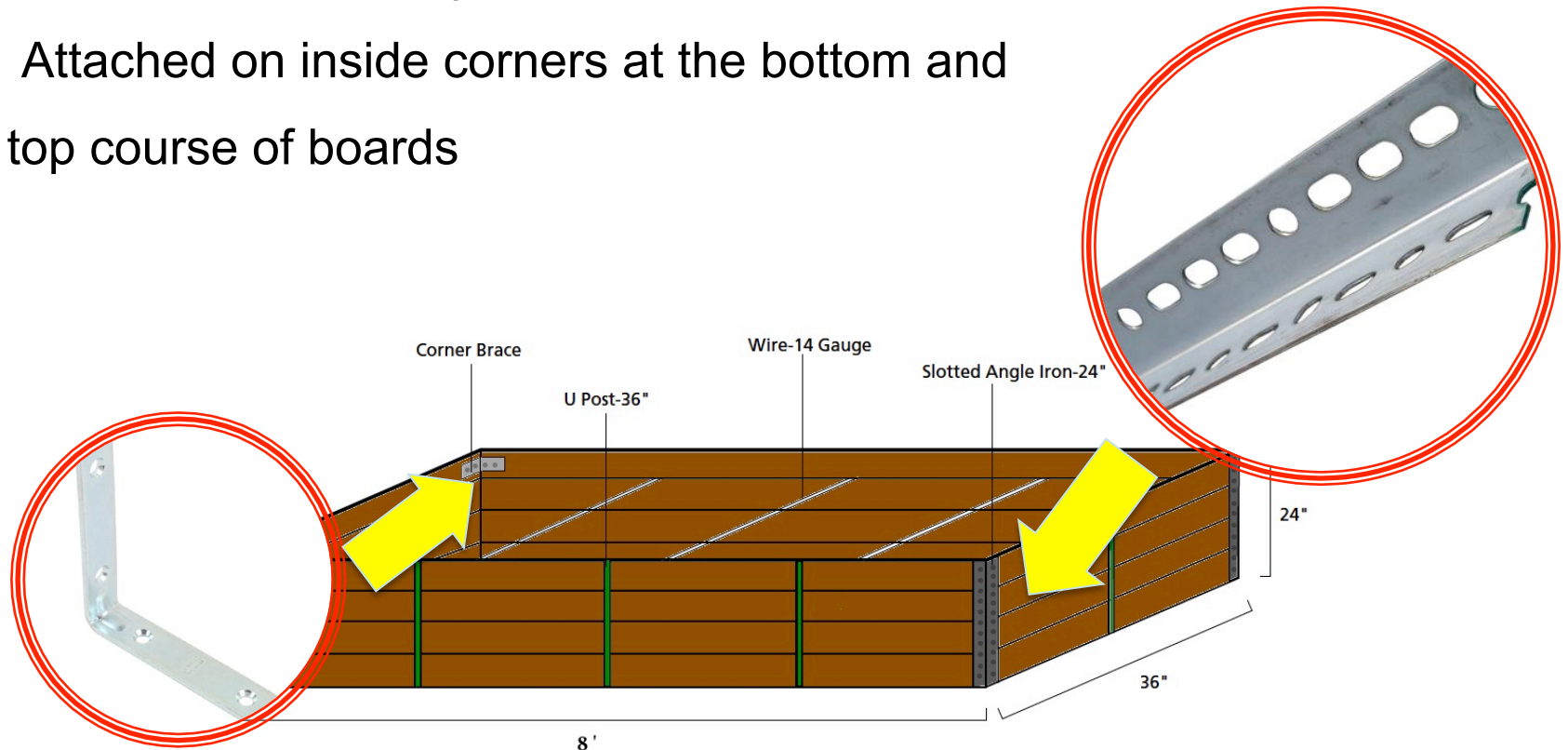
Raised Garden Bed: Materials



- 12 pieces of 1" x 6" boards per bed, either 8 feet or 12 feet in length
 - **Untreated lumber** – cheap but may need replacement after a few years due to extreme weather
 - **Pressure-treated lumber** – slightly more expensive than untreated lumber but will resist rotting and insects
 - **Cedar** – naturally rot-resistant however more expensive
 - **Composite decking** – combination of plastic and wood; very expensive but will last for many years

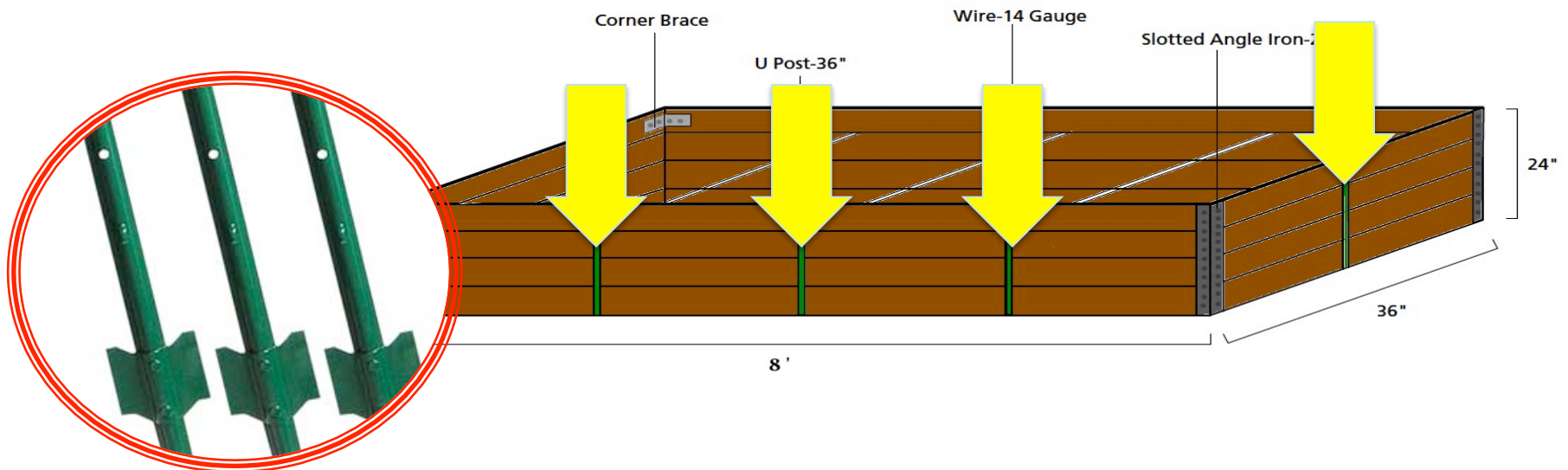
Raised Garden Bed: Materials

- 24" slotted angle irons, 4 per bed
 - Attached to outside corners
- Metal corner braces, 8 per bed
 - Attached on inside corners at the bottom and top course of boards



Raised Garden Bed: Materials

- 36" U-posts, 8 per bed
 - Three per side, evenly spaced, and one per end, centered
 - Driven into the ground until just below top of bed and attached to boards



Raised Garden Bed: Materials



- Galvanized Wire
 - Strung through gaps between the second and third layer of boards
 - Wrapped around the outside of the U-posts and tightened
 - This keeps bed from bowing outward when filled with soil
- **Optional:** Turnbuckle for adjusting the tension of wires

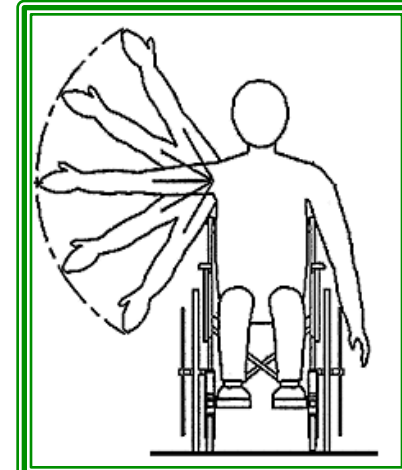
Raised Garden Bed: Materials



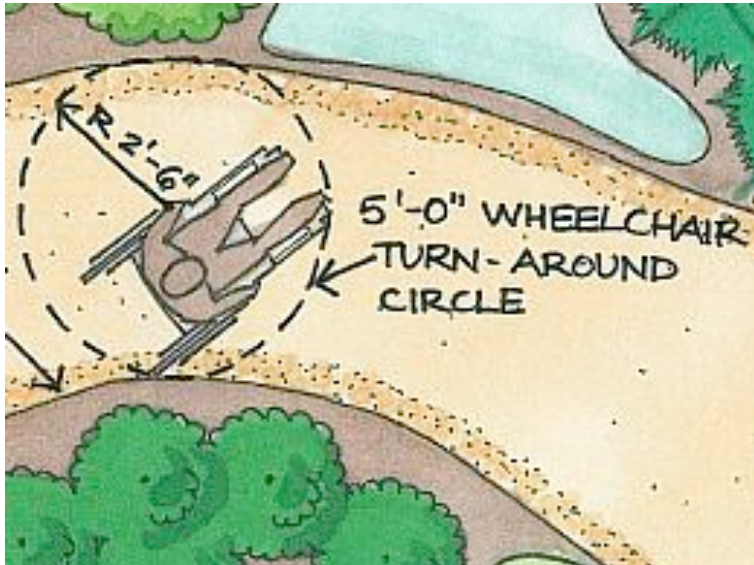
- Galvanized deck screws
- Soil
 - Layered mixture of equal parts topsoil and compost
 - Allow space for 1-2 inches of **mulch** on top of soil-compost mixture that will aid in soil moisture retention and reduce watering requirements

Things to consider

- Raised beds with a height of 24"-30" are ideal for gardeners who must work in a seated position
 - Enables person to dig or transplant without developing arm fatigue, since most work will be oriented slightly downwards
- 36 inches or 3 feet width for raised beds may be more convenient for seated gardeners who are unable to stretch as far to tend plants in the centre of a wider bed



Things to consider



- Allow for 4 -5 feet of space between accessible beds to allow wheelchair users to maneuver their chairs
- Height of raised beds will depend on what will be planted – 24” for taller plants (e.g. tomatoes) and maximum of 30” for shorter plants

Extra information



- **Untreated lumber**
 - Available in Kent for \$3.52 per piece
 - Available in a range of lengths
 - <http://www.kent.ca/kbs/en/product.jsp?prId=168SDCK&skuld=168SDCK&catalogId=50>
- **Pressure-treated lumber**
 - Available in Kent for \$3.92 per piece
 - Available in a range of lengths
 - <http://www.kent.ca/kbs/en/product.jsp?prId=168PT&skuld=168PT&catalogId=1398>
- **Cedar**
 - Available in Home Depot for at least \$7.85 per piece
 - <http://www.homedepot.ca/product/1x6x8-premium-western-red-cedar/959523>
- **Composite Decking**
 - Available in Kent and Home Depot for \$20++ per piece

Extra information



- **Slotted angle irons**

- Available in Home Depot for \$10.99 each
- Comes in 48” in length and can be cut in half to make 24”

- <http://www.homedepot.ca/product/papc1-5-8x074x48slt-angle-gal/955687#>

- **Corner Braces**

- Available in Home Depot for \$1.69 each

- <http://www.homedepot.ca/product/5-in-zinc-plated-2c-corner-brace/948112#>

- **36” U-posts**

- Available in Kent for \$4.99 each

- <http://www.kent.ca/kbs/en/product.jsp?skuld=5655022&navAction=jump&prdlId=5655022&catalogId=74>

Gardening Tools: Long handled

- Long handled cultivator and fork - \$35 each



© Easi Grip Long Reach Garden Tools Cultivator



© Easi Grip Long Reach Garden Tools – Fork

(Cont'd)...

Gardening Tools: Long handled



- Long handled hoe and trowel - \$35 each



© Easi Grip Long Reach Garden Tools - Hoe



©Easi Grip Long Reach Garden Tools - Trowel

Gardening Tools: Grip



- Handle - \$19

A cost effective consideration



©Easi Grip Add On Handles



Gardening Tools: Strength



- Cuff - \$10



©Easi Grip Arm Support Cuff

Ratchet Pruners



Seeding



Back/ knee pain: Seed sowing tool

- Cut PVC pipe, with a 45° angle at one end.
- Place the angled end of the pipe into the soil and use it to make a hole.
- Place the seeds in the top of the pipe and they will fall down into the hole.
- Use the pipe to cover the seeds over with soil.

Weak grip or arthritis

- Place the seeds on a piece of dry cloth.
- Dampen a piece of toilet paper and use this to pick up the seeds.
- Push the paper into the hole and cover with soil.

<http://www.flowerpotman.com/disabledgardening/toolsforthedisabled.html>

Tips!



- If you are kneeling to do your gardening, consider placing a cushion under your knees.
- Ergonomic tools have a 90° angle between the handle and the shaft to prevent twisting. Normal garden tools have the handle and the shaft in a straight line.
- There are tools designed to pull weeds, so that you do not have to bend and do this yourself!
- When choosing which plants to grow, consider the height the plants will grow to.

Tool Storage



- These adapted tools would not be able to be stored on shelves due to reach height.
- An idea is to have a short barrel on the floor with all of the long handled tools inside for easy accessibility.
- Or, a much lower shelf can be constructed at an appropriate height for individuals in wheelchairs.

Rain water accessibility



- Use a trolley/cart to carry water from barrel to garden beds
- Place water dispensers at a functional height

Warm Up and Stretching



- Gardening is a great form of exercise that utilizes the entire body. It is often used as a therapeutic tool for rehabilitation
- Like any exercise activity or sport, it is good practice to warm up the body and joints beforehand.
- Spend about 10 mins warming up and elevating the heart rate.

Stretching



- Neck rotation
- Shoulder rotation
- Wrist circles
- Trunk flexion/extension
- Trunk rotation
- Side bends
- Hamstring stretch
- Calf stretch

Body Mechanics



- Important for the body to maintain its neutral spine and its three natural curvatures (do not have bent or arched back).
 - Hold your head up straight with your chin slightly forward until it is held at right angles to the front of the neck
 - Do not tilt your head forward, backward or sideways
 - Keep your shoulder blades back
 - Elongate your spine (stretch the top of your head toward the ceiling)
 - Tuck your stomach in, but do not tilt your pelvis forward or backward

Body Mechanics



- Bend at the hips and knees, not at your waist (harmful to the lower back); keep feet shoulder width apart and your heels down
- When squatting, avoid twisting and bending at the same time
- When lifting, squat down, hold the item close to your body and then stand
- Position yourself close to the work whether standing or sitting; avoid straining forward at the neck or waist

Body Mechanics



- Shoulders - work below shoulder level when possible
 - Or limit task to 5 mins
 - Use both arms when possible
- Elbows- work with elbows in neutral position (thumbs up)
 - Partially bent – especially when doing resistive activities requiring elbow strength
 - Keep wrists in line with forearms when pushing, pulling and grasping.
 - Avoid twisting the forearms back and forth on repetitive basis

Body Mechanics



- Wrists – grip – Rule of “thumb”
 - Thumb and forefinger should meet when wrapped around a handle and indentations should encourage the neutral position (thumb up and wrist straight)
 - Avoid a tight sustained grip – use a light grasp or pinch
 - Grip strength is at a maximum when the wrist is a relaxed or neutral position

Gardening from a wheelchair

- Position wheelchair sideways to the raised garden bed; this will reduce extended reaching and bending forward at the waist, which can become tiring
- When working from a sideward position alternate sides for comfort and balanced exercise



Gardening from a wheel chair:

Reaching

- Use long handled gardening tools to reduce over reaching; Keep hands close to the body



- Keep gardening tools on a side table or bench within reach; avoid bending over to pick up tools
- Install hooks on raised beds to hang tools from if space for a side table is limited
- Use a small wagon to carry gardening equipment



Energy Conservation



- Planning ahead – having the necessary tools readily available for the task. Keep your work close to you.
- Eliminating unnecessary tasks – i.e multiple trips to retrieve water. The idea is to eliminate extra work.
- Pacing oneself
- Balancing activity with rest- use of stools, chairs, or stretch breaks
- Learning one's activity tolerance – the key to energy conservation

Questions?



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