

## Kitchens

### Design considerations

A universally designed kitchen is comfortable and safe for all family members; however, it is the most difficult space to make universal. Countertop heights cannot possibly be at one height to accommodate one individual sitting in a wheelchair and another standing at 1,980 mm (78 in.). Adjustable-height counters, sinks and cooktops will solve this problem. However, this solution can be costly.

Upper cabinets offer great storage space but cannot be reached by persons who are in wheelchairs or of shorter stature. Upper cabinets can be installed with hardware that can pull shelves out and down, allowing individuals in wheelchairs to access items that would otherwise be out of reach.

The key to the universal residential kitchen is to separate the stove cooktop and oven. The cooktop must provide open space underneath, and the wall oven must be positioned at a height that can accommodate as many people as possible (see figure 1).

A design for someone who uses a walker or wheelchair should allow manoeuvring space of 760×1,220 mm (30×48 in.) in front of controls, work areas and appliances. This work area can be part of the overall required minimum manoeuvring space of 1,525×1,525 mm (60×60 in.) in the work triangle.

Power wheelchair and scooter users need a larger turning radius, and the required minimum manoeuvring space is 1,830×1,830 mm (72×72 in.).



Figure 1: Kitchen layout complete with separate cooktop and wall oven  
Photo by: Ron Wickman

Planning for efficiency of effort and ease of use incorporates features such as more lighting, a place to sit down to work, a lower workstation, and storage of materials where they can be easily seen and reached.

Other kitchen design components that increase usability include:

- continuous countertops that allow pots, dishes and so on to slide along;
- hands-free faucets;
- a pot faucet at the cooktop;
- a wall-mounted oven at countertop height;
- a countertop convection/microwave oven;
- open shelving rather than cupboards with doors;
- space for using a wheeled trolley; and
- resilient flooring rather than a hard surface.

When making decisions about new appliances, floors and countertops, remember to consider surface finishes and low maintenance.

For example, glass cooktops tend to be easier to clean, whereas stainless steel appliances show fingerprints and may require specialized cleaning products. Some countertop surfaces need yearly maintenance with a sealer to protect them from staining and harbouring bacteria.

Safety considerations in the kitchen deserve the highest consideration. Small rugs and mats in the kitchen should be avoided because they are a tripping hazard and an obstacle for many people who use mobility devices and people who have dementia.

Consider providing wall space in the kitchen for a notice board. Although a notice board is a useful feature for everyone, it is of particular benefit to people whose cognitive abilities are changing or who are losing their memory. Post reminders and safety notes on the board.

Plan for easy access to water, a fire extinguisher and the gas shut-off valve in case of an emergency (see Other building features, for more details).

## Layout

The key to effective kitchen design for all users, especially those who use wheelchairs, is a layout that provides the right balance between countertop area, manoeuvring space and storage space. The layout should avoid compromising working areas with cross routes, limit travel distances and reduce the need to lift and move items from one counter to the next. For persons in wheelchairs, the kitchen layout must reduce the need for excessive manoeuvring and positioning and maximize the range of possible operations.

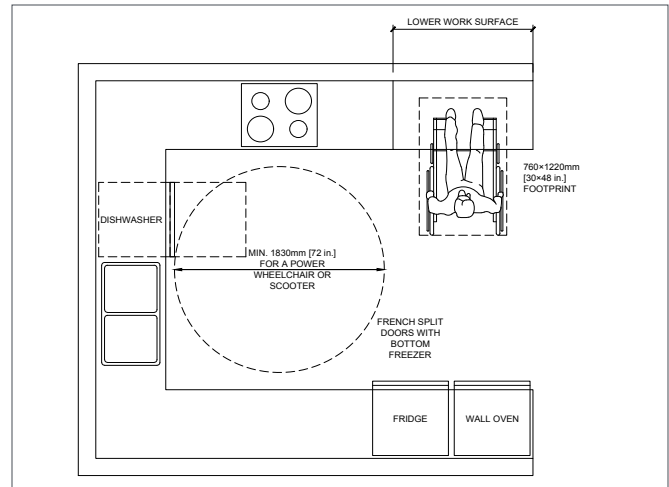
A U-shaped kitchen (see figure 2) may be the most convenient layout for one or two people working in a kitchen, but having a work area that is accessible from outside the “U” is also advisable.

A galley-style kitchen requires less space and sometimes provides people with more than one entry and exit point (see figure 3). However, a galley-style kitchen usually limits a person using a wheelchair to a side approach to counters and appliances and can limit the amount of turning space.

An L-shaped kitchen, with or without an island, provides several work surfaces, including some outside the primary work triangle, which means people can work without bumping into each other (see figure 4).

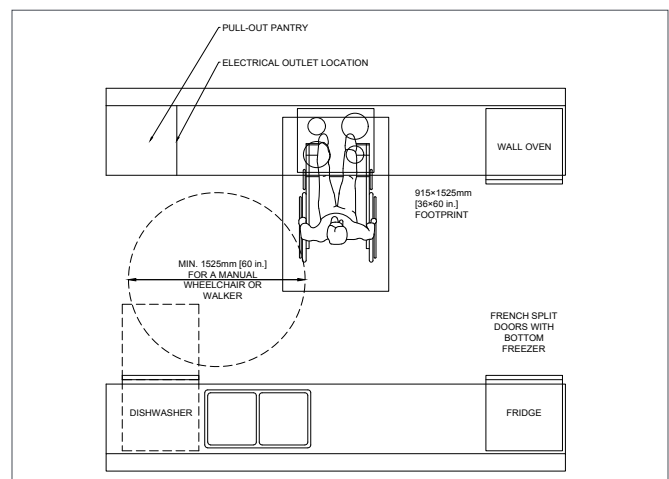
Also, consider placing windows at a height that will allow persons in wheelchairs to see through them. An island can create an alternate work area. A sink and an electrical outlet in the island can maximize usability and convenience for everyone.

For people with limited agility or mobility, a wheeled trolley can be useful for carrying food from the kitchen to the dining area.



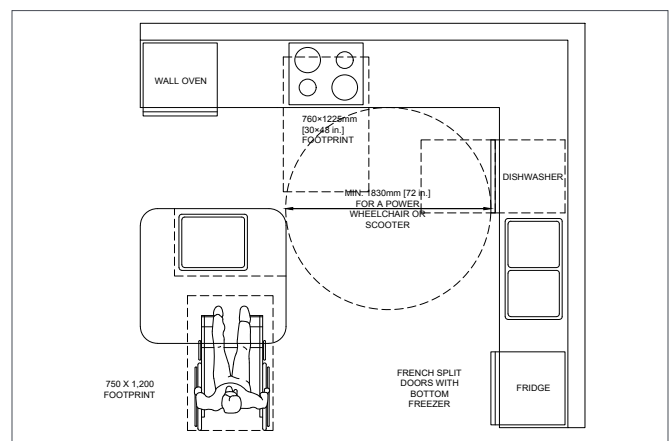
**Figure 2: U-shaped kitchen**

Diagram by: Ron Wickman Architect



**Figure 3: Galley-style kitchen**

Diagram by: Ron Wickman Architect



**Figure 4: L-shaped kitchen with an island**

Diagram by: Ron Wickman Architect

## Countertops

Countertops are traditionally 915 mm (36 in.) high, but a countertop 865 mm (34 in.) high is more convenient for children, people of a shorter stature and people who use a wheelchair. If the person who uses the wheelchair is a child or a shorter person, they may appreciate a counter and work areas that are 735 mm (29 in.) high (see figure 5).

The key to functional heights for countertops is to keep the counter to a minimum thickness. This maximizes the ability to keep the countertop low enough for those users in wheelchairs to reach into the sink; the countertop can also be high enough to allow the same users in wheelchairs to get underneath the counter. A grab bar located in front of the counter could assist those individuals with balance issues while standing at the sink (see figure 6).

Clear counter space should be provided beside all major appliances to put food or dishes as they are taken out of the refrigerator, oven or cupboard.

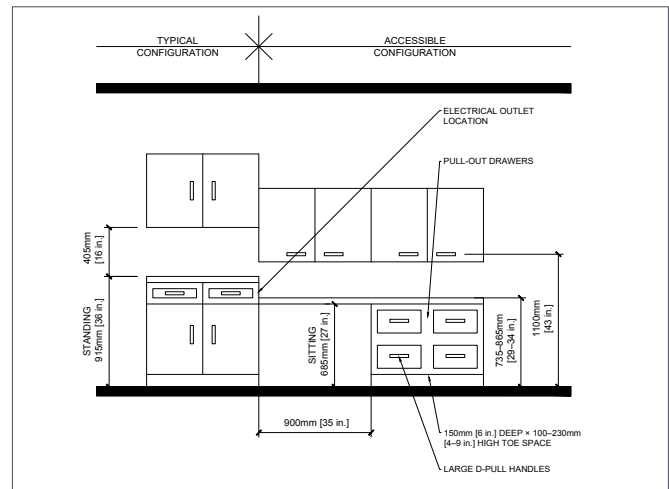
There should be multiple work surfaces in the kitchen, at least one with a minimum size of 785 mm (31 in.) wide by 610 mm (24 in.) deep, at a height of 735 to 865 mm (29 to 34 in.), with a minimum footprint in front of 760×1,220 mm (30×48 in.) to accommodate someone who is seated (see figure 7).

People with reduced vision or dementia should avoid countertop surfaces with busy patterns and many prefer to have a solid colour that will provide some contrast with their appliances and dishes.

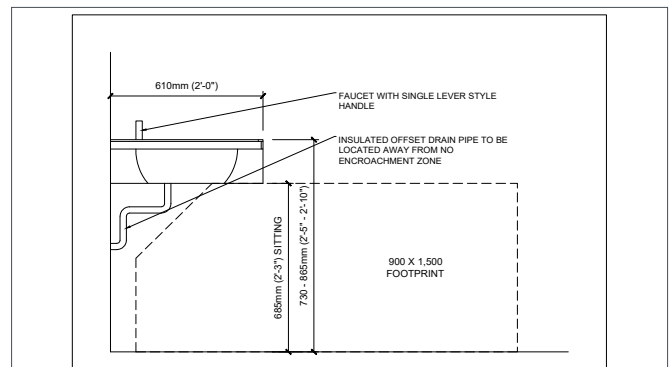
Some people select contrasting edging on the countertop to help in identifying the edge.

A backsplash in a contrasting colour can also help people with low vision better identify the extent and configuration of the counters.

Rounded or bull-nose edges on counters increase safety by eliminating the danger of sharp corners.



**Figure 5: Adjustable and flexible upper and lower cabinetry**  
Diagram by: Ron Wickman Architect



**Figure 6: Lowered work area**  
Diagram by: Ron Wickman Architect



**Figure 7: Lowered work area**  
Photo by: Ron Wickman

## Cupboards, drawers and pantries

Storing related things in the same cupboard where they are easy to find is especially important for people with limited mobility or with a visual impairment.

A large pantry with swing-out doors or large drawers allows food and condiments to be stored where they can be easily reached at a variety of heights (see figure 8).

Upper cupboards should be installed with the bottom edge 405 mm (16 in.) above the countertop, instead of the more traditional 455 mm (18 in.), to ensure that the lower shelf is within reach of someone seated. Cupboards should not be installed less than 405 mm (16 in.) above the counter, as this reduces storage space for appliances on the counter.

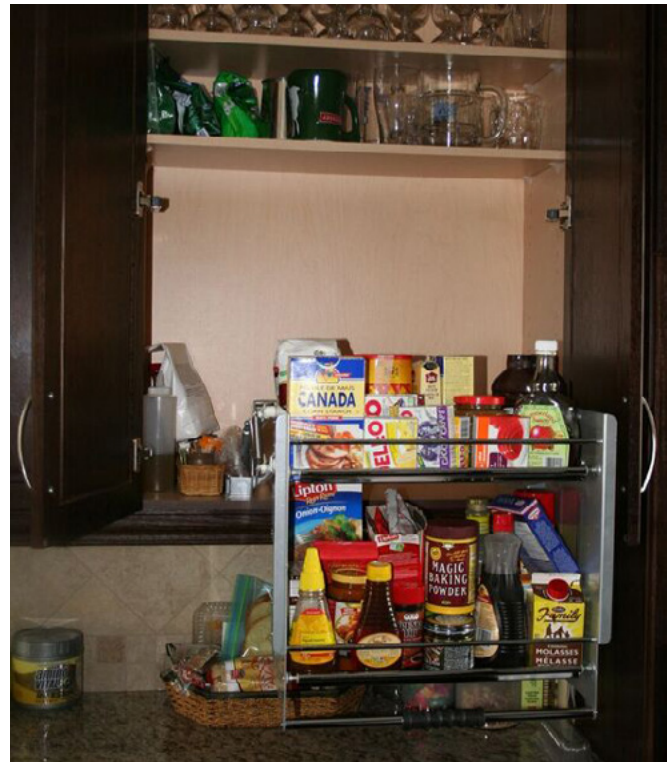
Upper cupboard systems are available that can be electrically raised or lowered. In addition, there are shelving and rack systems that can be installed in existing cupboards, which enable the entire rack to be pulled out and down, increasing the usability of the upper cupboards for everyone (see figure 9).

Installing lower cabinet drawers that pull out fully to display their contents for easy retrieval is an excellent approach (see figure 10).

Another strategy for providing accessible storage is using a series of small and large drawers instead of cupboards. Cupboards and drawers should have D-type pull handles, which are easier for people with reduced mobility or agility to use. These pulls should also contrast in colour so they are easier to identify for people with limited vision.



**Figure 8: Pantry with swing-out doors and pullout shelving**  
Photo by: Ron Wickman



**Figure 9: Upper cabinets featuring shelving that can be pulled down and out shelving to provide access to contents for people who cannot reach high**

Photo by: Ron Wickman



**Figure 10: Lower cabinets featuring drawers to provide access to contents**  
Photo by: Ron Wickman

Touch-and-release drawers and cupboards are universally accessible to many people, including those with limited dexterity. Other hardware includes full extension drawers, soft-close fittings, door shock absorbers, bumpers, and push button controls.

A contrasting colour for the interior of drawers and cupboards may also increase visibility for people with limited vision. Putting labels on drawers that provide a list of the contents will help persons with dementia.

A drawer or shelf that pulls out beneath a wall oven or microwave with a side-opening door can be used as a heat-resistant surface. The side-opening door makes it easier for someone in a wheelchair to reach inside. These drawers or shelves reduce the necessity of carrying hot pans and can provide a place for hot items to cool before they are moved. They can also provide an additional work surface in smaller kitchens (see figure 11).

Pantry cupboards with doors that open fully, using 180-degree or swing-clear hinges, will allow everyone to easily see the contents and to reach the shelves. In addition, internal lighting adds greater visibility for people searching for items in pantries and cupboards.



**Figure 11:** A pullout shelf positioned below the oven, which can be used to place utensils or items that are going into the oven

*Photo by: Ron Wickman Architect*

## Sinks and cleanup areas

When a sink will be used from a seated position, a shallow sink with the drain offset to the rear is recommended. This will allow sufficient knee space and will result in the drainage pipes being out of the way, eliminating the hazard of users burning their legs (see figure 12). Alternately, the drainage pipes can be insulated rather than offset.

An accessible sink should provide knee space clearance—760 mm (30 in.) high, 785 mm (31 in.) wide and 610 mm (24 in.) deep—to allow someone using a wheelchair to wheel under the sink.

Plumbing should be flexible to suit adjustable sink heights.

Single-lever, pullout spray-type faucets are the easiest for most people to use. Faucets should also permit easy control of water temperature, flow and direction. Faucets located at the side of the sink are easier to reach. Having instant hot water is also a good idea.

A faucet controlled by a single lever or a motion detector is the most convenient. However, separate hot and cold lever



**Figure 12: Accessible kitchen with space open under the sink and pipe protection to prevent users from burning their legs**

*Photo by: Ron Wickman Architect*

handles help avoid confusion for those users with dementia. A lever faucet and a pullout hose with a spray nozzle provide convenience for everyone, especially if there is a soap dispenser incorporated into the faucet design. This provides flexibility and ease of use for all family members.

## Switches and controls

All switches and controls should be easy to operate. Also, switches and electrical outlets must be strategically located to be within reach of people in a seated position and to suit adjustable worktops. Switches and outlets located below the countertop provide easy access to operate the cooktop overhead light and fan as well as electrical access to plug in a kettle or toaster (see figure 13). However, careful consideration should be given to locating outlets out of the reach of children. For added safety, an override switch could be installed.

Other controls and switches, should be located at a maximum height of 1,220 mm (48 in.) from the floor. Controls and switches can also contrast in colour to be easier to find for people with low vision.



**Figure 13: Outlet located below countertop**

*Photo by: Ron Wickman Architect*

## Adaptability

Many kitchens are used by both people in wheelchairs and others who are ambulant. Finding an effective countertop height for all users is very difficult. A flexible kitchen design offers an adjustable height sink, cooktop, worktop and upper cabinets. There are both low-tech and high-tech ways to provide for height-adjustable counters and cabinets. Cost will typically dictate the design approach. The most cost-effective, low-tech design is to build into the supporting structure with a series of support points so that the counters or cabinets can be manually removed and repositioned in a more accessible position (see figure 14). Care must be taken with this design strategy so that exposed surfaces are finished when the counters are lowered. Sinks and plumbing must also be strategically located to maintain leg room when the counter with sink is lowered.

Another good idea is to have rolling base cabinets complete with a finished top. These base cabinets can be moved out so the counter is open underneath; they could also serve as a small tabletop for use in the living area. This can be useful for people who use a wheelchair and want to roll items along with them to another location, similar to a walker with a basket concept (see figure 15).



**Figure 14: Adjustable kitchen countertops**

*Photo by: Ron Wickman Architect*



**Figure 15: Accessible kitchen with rolling cabinet**

*Photo by: Ron Wickman Architect*



[cmhc.ca](http://cmhc.ca)

©2021, Canada Mortgage and Housing Corporation  
Printed in Canada  
Produced by CMHC 69716 20201120-005A

Although this information product reflects housing experts' current knowledge, it is provided for general information purposes only. Any reliance or action taken based on the information, materials and techniques described are the responsibility of the user. Readers are advised to consult appropriate professional resources to determine what is safe and suitable in their particular case. Canada Mortgage and Housing Corporation assumes no responsibility for any consequence arising from use of the information, materials and techniques described.