

PLANNING TODAY FOR TOMORROW

UNIVERSAL DESIGN

HAMPTON ROADS DISABILITIES BOARD
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UNIVERSAL DESIGN

“The concept of designing all products and the built environment to be aesthetic and usable to the greatest extent possible by everyone regardless of their age, ability or status in life” ...Ron Mace

Some Universal Design principles:

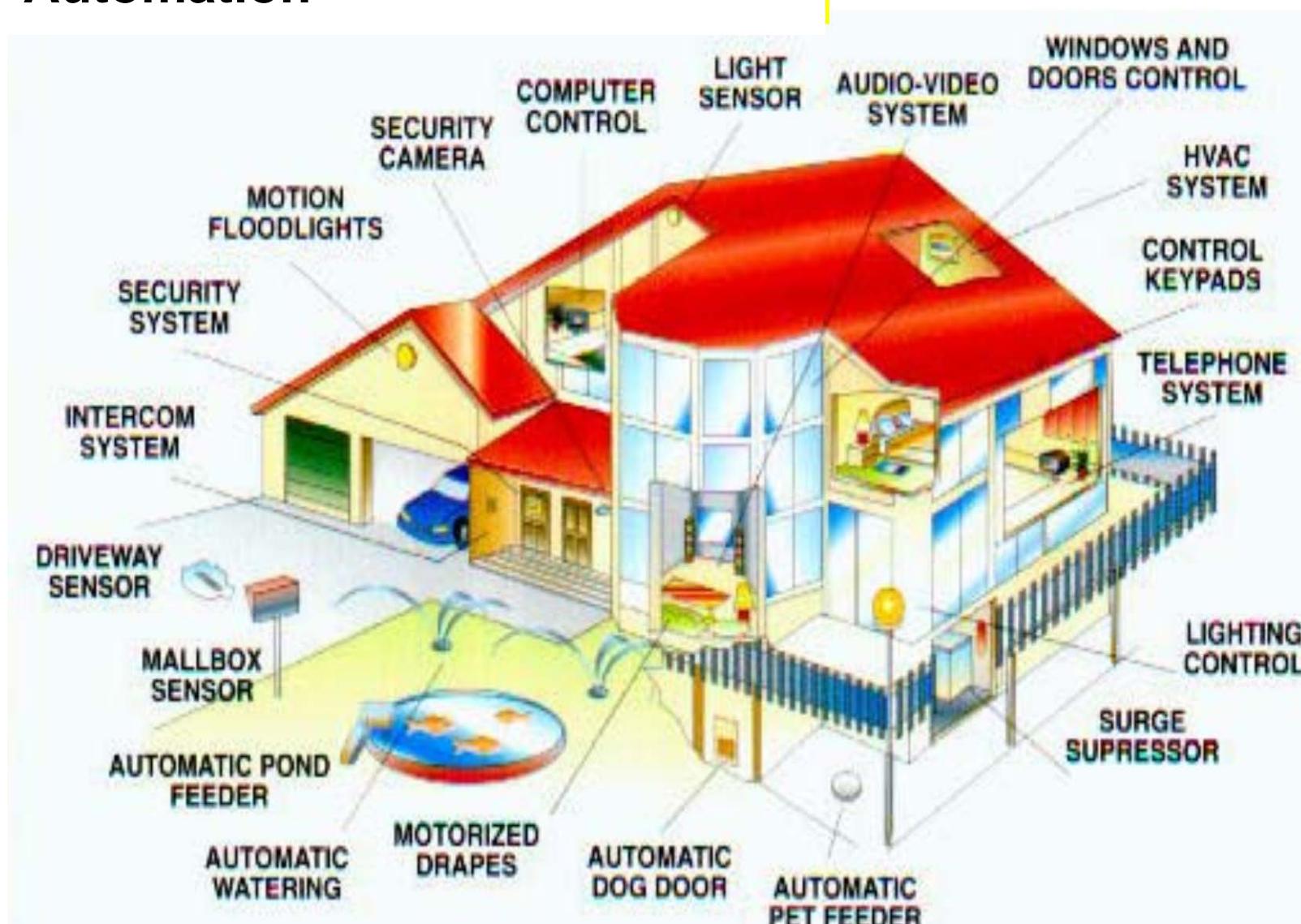
- Safety
- Functional
- Financially feasible, affordable
- Used by most everyone
- Easy to understand, easy to use
- Adaptable
- Aesthetically appealing.

DESIGNING FOR REALITY

In a survey of 5 million people at the Joint Center for Housing Studies - Harvard University:

- 1.1 million people have trouble reaching
- 1.8 million people have trouble bathing
- Change in our abilities changes the standards of anthropometric measurements currently used for reaching, sitting, and working.
- Change in our hearing require changes in the acoustical controls in our home.
- Change in our vision require changes in our lighting and tactile needs.
- Change in your communication allows for home care without leaving your home.

Automation



ACCESSIBLE HOUSING

Fixed features installed during construction

No-step entrances

Slip resistant flooring

Pre-wiring for remote controls

Wider entries and interior doorways

Reinforced walls

Accessible, adaptable bathrooms and kitchens

ADAPTABLE HOUSING

Enabling features added when needed

Grab Bars

**No twist hardware such as lever door handles,
faucet controls**

Security systems

Any type of assistive technology

The KITCHEN
The heart of the home

- Stove tops
- Raised ovens
- Counter top microwaves
- Rear drain
- Lever controls
- Cabinet pulls
- Few/no overhead cabinets
- Remote Control window shades
- Adjustable work surface furnishings
- Fully charged fire extinguisher near stove area

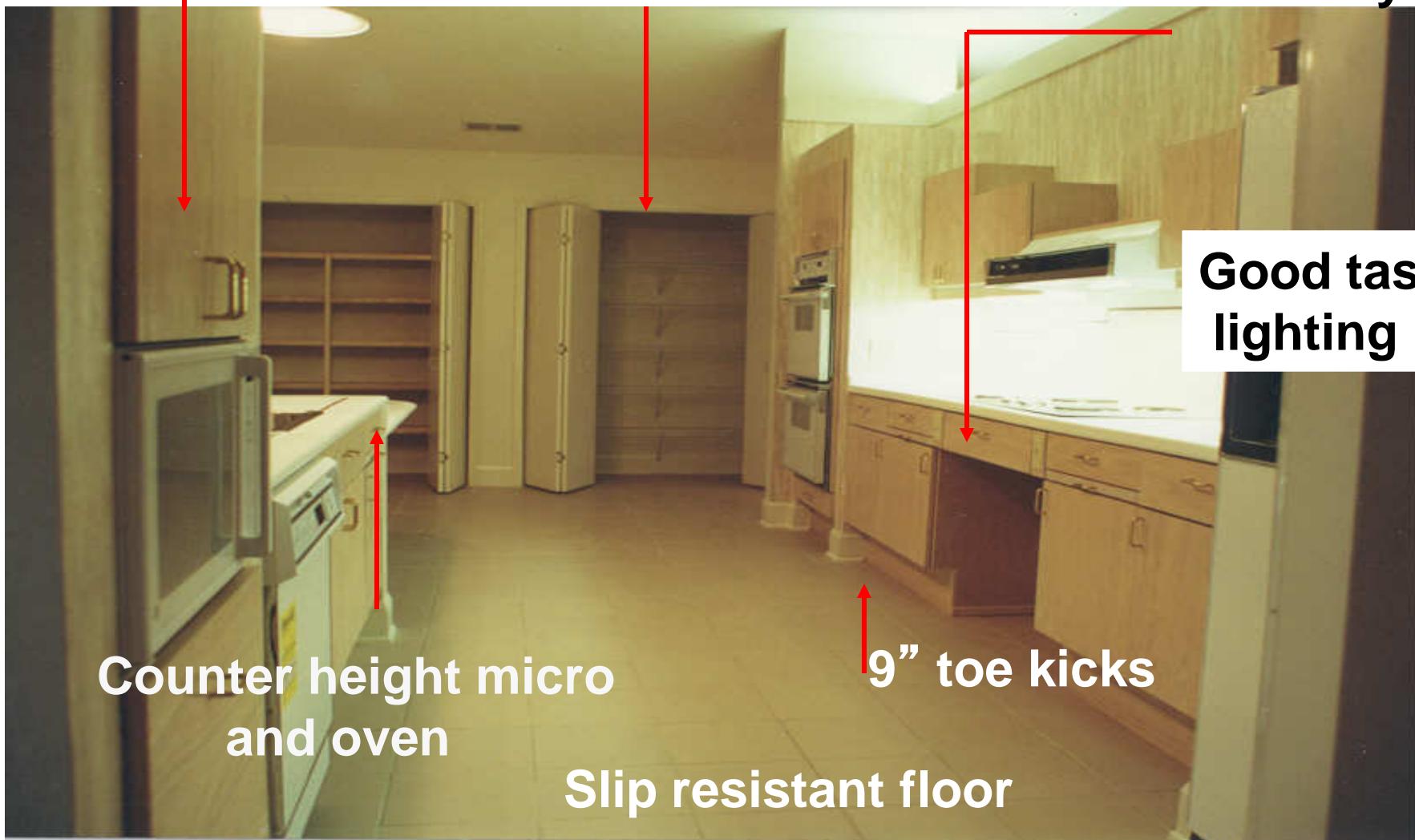


**Pull out cabinets Clearance
Wider corner opening**

“U” shaped handles

**Shallow storage
Bi-fold doors**

**Adaptable
cabinetry**



Drawers outfitted for dishes, pot/pans and glassware

Pull out cutting board(s); Feature textured strip on counters

Use open storage, or side-hinged cabinets.

**Easy to reach controls for
light and vent**



Shallow, wide sink with rear drain.
Stove top- easy to read, tactile cues, side or front controls.
Low relief stripe on all countertops.
Install automatic shut offs for stove and water, gas leak alerts

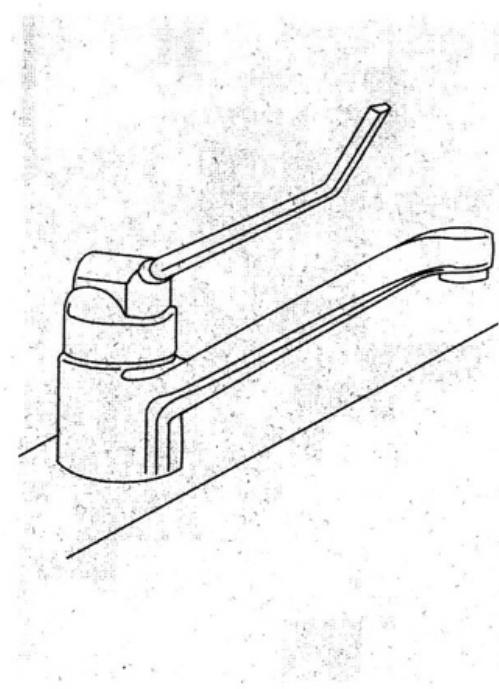


Shallow French Door Bottom Freezer

****Clearance space to
open doors completely**



**Drop down upper
cabinet**



**Lever control
faucet**



Pull out drawers



Pull out refrigerator shelves



Front loading washing machine/dryer

BATHROOMS

Accident

An unexpected occurrence which causes injury, loss, death, or any unfortunate result.

Potential Accidents

Does not just happen, they are planned and are waiting to happen.

An estimated 235,000 accidents occur in bathrooms annually.

Bathrooms are the second major site of drowning in the home.

Human ergonomics are seldom a factor in designing bathrooms.

Twist knobs



Free hanging
Shower head



Unattached
Water plug

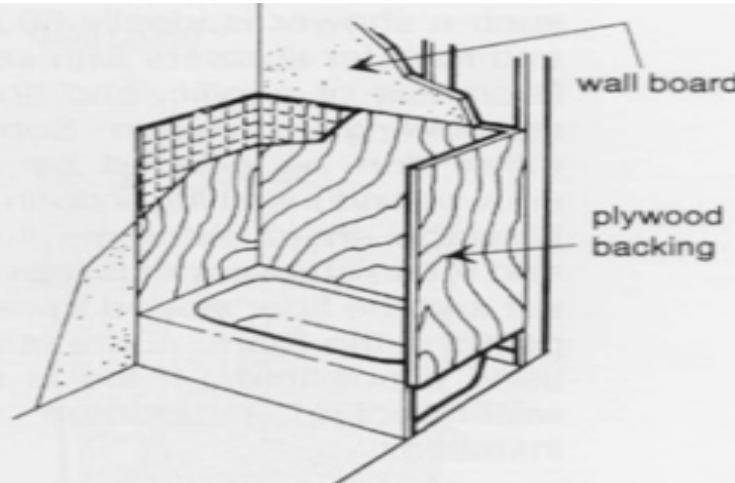


Adapt – Make Bathrooms Safer

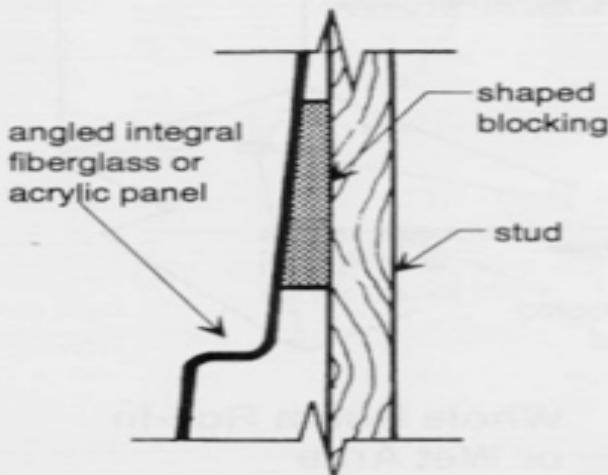


- **Grab bars – installed properly, inside tub**
- **Wide ledge to sit on to get inside and exit tub**
- **Glass blocks to cover space of seat**
- **Add phone, lever controls, hand held shower**

Reinforce a wall for a grab bars (handrails)

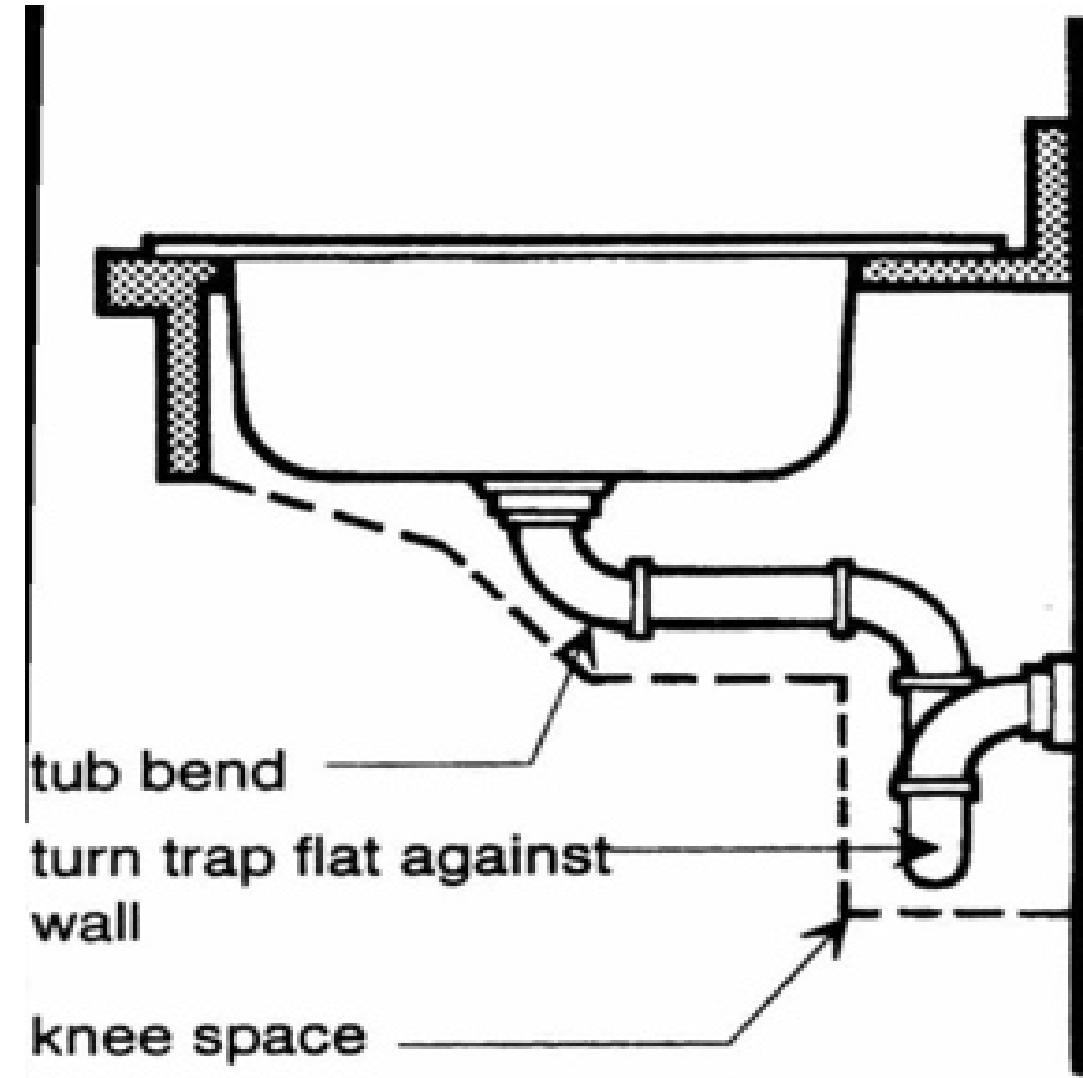


Whole Wall Reinforcement



Shaped Blocking for Molded Fixtures

- Grab bars outside diameter gripping surface $1\frac{1}{4}$ " to $1\frac{1}{2}$ "**
- Mount grab bars $1\frac{1}{2}$ " from adjacent wall.**
- Grab bars mounted 33" and 36" from floor.**



Drain Pipe Clearance for Future Knee Space

Safe seating for bathing



- **Portable seat**
- **Attached fold down seat that is properly secured to wall, not super glued**

Adapt - Replace

**Tush-Push
a portable electric
toilet lift**



**Remote controlled
bidet**

Toilets - heights from 14.5"-19", raised if needed

Toilets/Seats can open, closes, flushes, clean automatically

Contrast color from floor/walls



Flush control



Sensor faucet



Soap dispenser

Good even lighting - Audio/visual alarms for fire,

No lock on door - No glass - Secure bath mats

Automatic showers - Body dryers – Soap dispensers

Natural light, privacy



**Roll-in
shower**

Comfort height commode

Plexiglas mirror



**Rounded corners
Drain pipe covers
Lever handles**

**Remove bathtub and
replace with roll-in shower.**



**Remote control
shower and dryer**



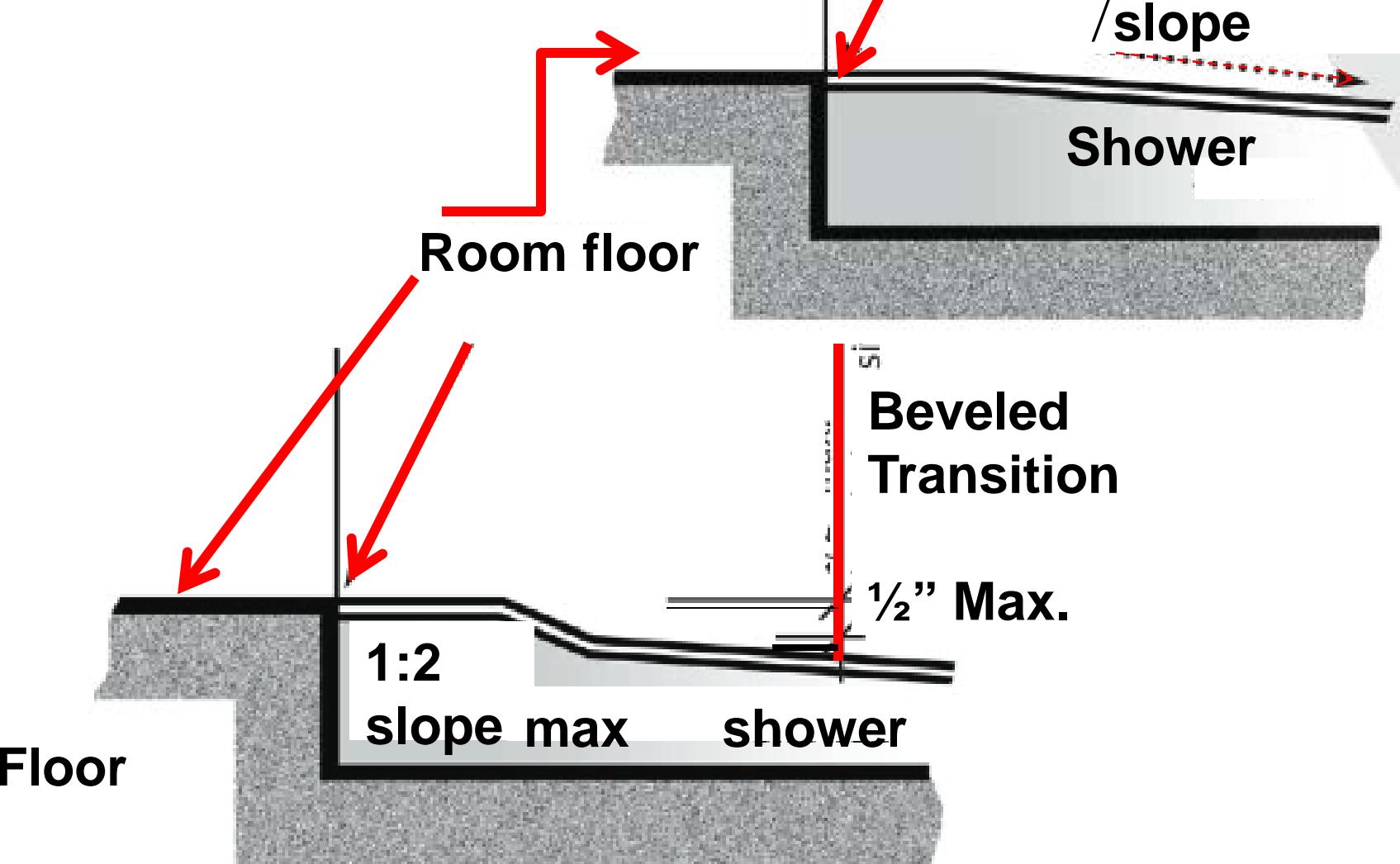
Roll-in Shower



- **Trench Drain – no change in slope of floor**
- **Grate same level as floor**
- **Concrete channel with a drain under the finished floor**

Roll-in Shower Design options

****Confirm sloping goes into Shower!**





Roll-in shower, seating, nature light



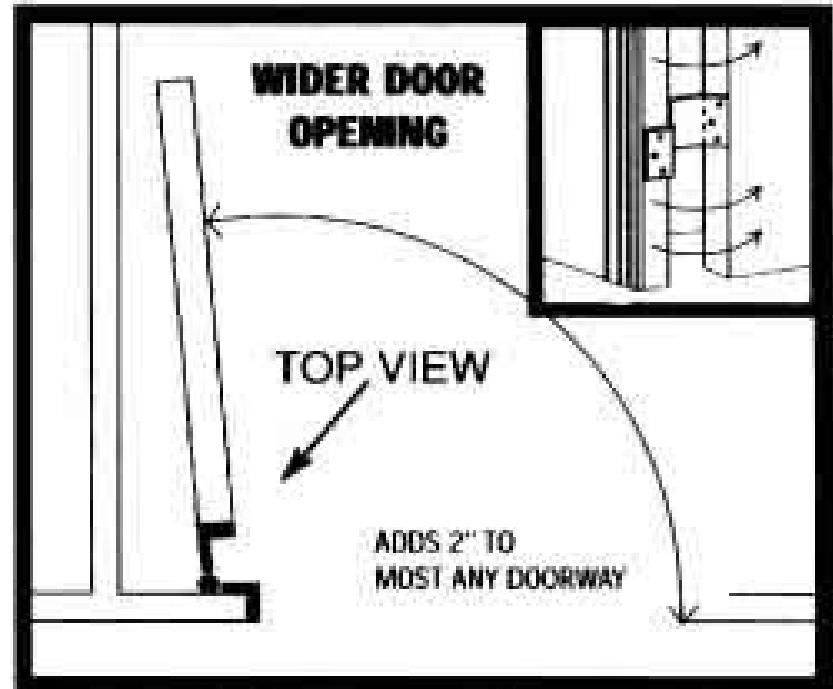
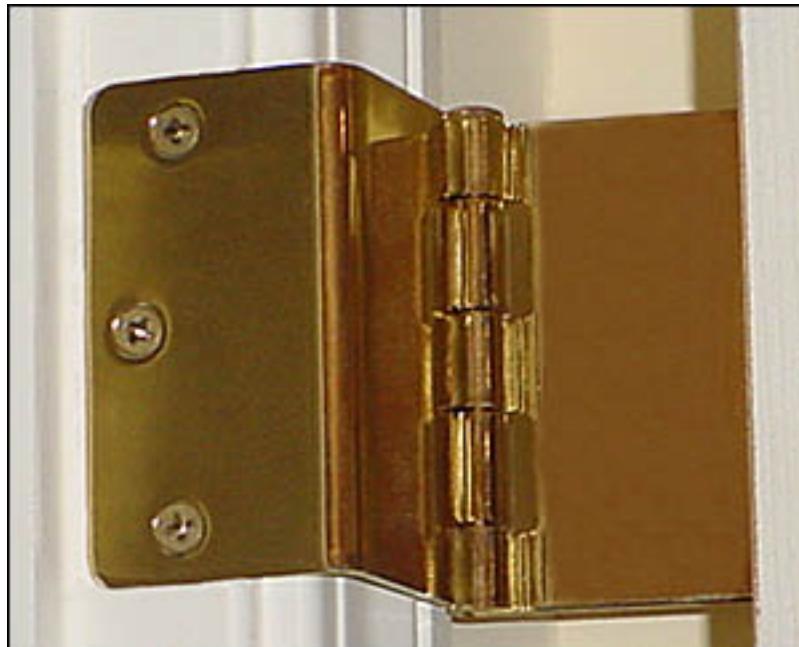
Exterior mounted sliding doors require no major structural changes



NOTE:
Doors swings into entry

Swing-away hinges – or – Swing Clear Offset Door Hinges

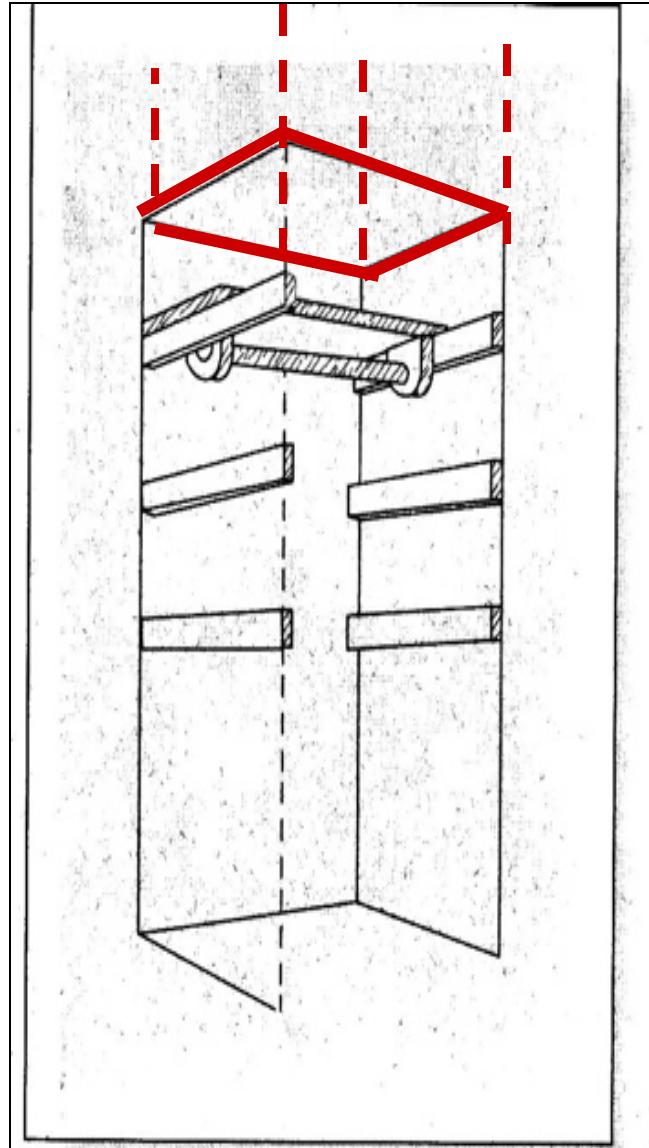
Used to widen doorways up to two full inches hinges work with most regular sized doors and most existing hinge holes without the time or expense of modifying the door frame. Your may have to remove partial door stop



SPACE & ETC.



**Avoid wasted space.
Multi-depth storage 12"-18"
Reinforce Hooks**



**Stacked closet can be
future elevator shaft**

Avoiding clutter in the closet



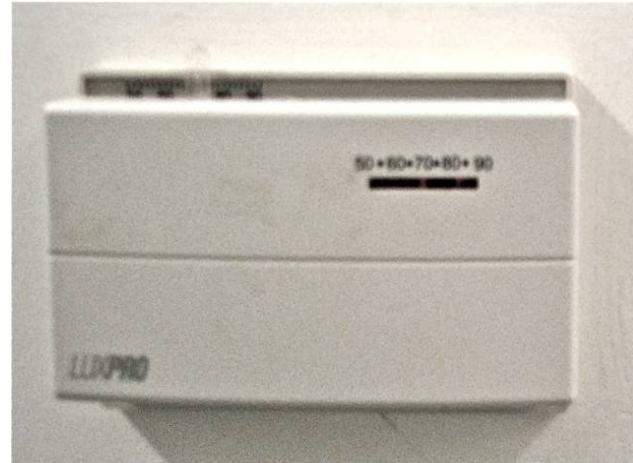
- Divide closet into sections.
- Adjustable Rods - Adjustable shelves
- Bi-fold doors - Sliding doors
- Lighting in closet
- Hooks, Hooks, Hooks



**Wider doorways
No thresholds**



**Lever door
handles**



**Easy to read
controls**



**** Mark escape routes and toilet routes with reflective tape.**



**No glare flooring
Slip resistant finishes**



**Equal risers
Contrast treads
Non-glare lit stairs
Handrails, securely installed
on both sides of staircase**

Eliminate raised threshold from the outside deck to the inside of the house.



Otodor®- Automatic Swing Door Opener

For interior doors up to 42" wide and as heavy as 100 lbs.

Easy to install. A handyman or locksmith should be used
to install the electric strike.





Berm pathway to eliminate steps



Add ramp and decorate with landscape





No step entrances. Easy entry access





Lever hardware

No step entrance

Automatic light sensors

Non-slip exterior floors

Window to see visitor before opening door



Landscape to control water drainage, encourage birds, a variety of smells, sound of water.

Create secure walking paths for exercise, accessible planters, shaded seating.

Full view of paths, gardens, exercise areas from inside of home.

More Home Features for People Using Wheelchairs

- Corner guards
- Reinforced railings around the house
- Slip resistance flooring
- Easy to open windows
- Lowered front peep holes, with closures
- No-step entrances, No thresholds
- Lower mirrors in bathroom
- Level stable walkways on to garden and patio

More Home Features For People Who are Deaf

Alerting devices that feature a loud tone, flashing lights or vibrations to alert people with a hearing loss to various environmental sounds -

- Door bells
- Telephones
- Fire/smoke alarms
- Carbon Monoxide detectors
- Security alarms

Audible, visual alarms in bathroom, bedroom, kitchen, garage, work stations.

More Home Features for People Who are Blind

**Use labels with tactile markings and with Braille
for major buttons and functions:**

- W/D
- Dishwashers
- Ovens and stoves
- Refrigerators
- Thermostats
- Control panels
- Counter top tactile guides
- Don't change/add furniture placement
unless you tell the person with is blind.

More Home Features

- Contrast colors, brightness, and textures of walls, fixtures, floors, and doorways.
- Task lighting in areas of bathing, toileting, kitchen.
- Flooring - slip resistant, secure, low pile, antibacterial
- Round edges for safety.
- Noise control for heating/air conditioning units
- Use hardware that is operable with a closed fist
- Place working surfaces near electrical outlets
- Create open space under work counters, minimum 30"width, 19" deep and 27" clearance from floor.

Safety and security in and around the home should never be sacrificed for aesthetics

Ageing in Place

Challenges

Any Questions?

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Resources

- http://fta.dot.gov/publications/publications_10935.html
- http://info.sen.ca.gov/pub/07-08/bill/sen/sb_1601-1650/sb_1608_bill_20080421_amended_sen_v98.html
- http://www.abledata.com/abledata_docs/icg_hear.htm
- http://www.adaptiveaccess.com/offset_hinges.php
- <http://www.asla.org/ContentDetail.aspx?id=24980>
- <http://www.calbo.org/documents/SB%201608%20-%20Overview.pdf>
- <http://www.cdfa.net/cdfa/cdfaweb.nsf/pages/greenbuildingfactsheet.html>
- <http://www.cityofboston.gov/bra/gbtf/GBTFhome.asp>
- <http://www.cnt.org/repository/pwpf.pdf>
- http://www.dhcd.virginia.gov/images/Housing/LHTC/LHTC%20Application_Guidelines_2014.pdf
- http://www.epa.gov/smartgrowth/pdf/partnership/2010_0407_partnership-in-action.pdf
- http://www.ercsv.org/index.php?option=com_content&view=article&id=230:creating-a-green-building

<http://www.jchs.harvard.edu/research/publications/emerging-trends-remodeling-market>

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<http://www.lower-my-energybill.com/residential-thermostats.html>

<http://www.ncsu.edu/project/design-projects/udi/>

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<http://www.smartgrowth.org/about/issues/issues.asp?iss=14>

<http://www.smartgrowth.org/library/article.asp?resource=4578>

<http://www.sustainable.doe.gov/>

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<http://www.usgbc.org>