

# **PLANNING TODAY FOR TOMORROW**

## **UNIVERSAL DESIGN**

**HAMPTON ROADS DISABILITIES BOARD**

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**Presented by**

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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:**

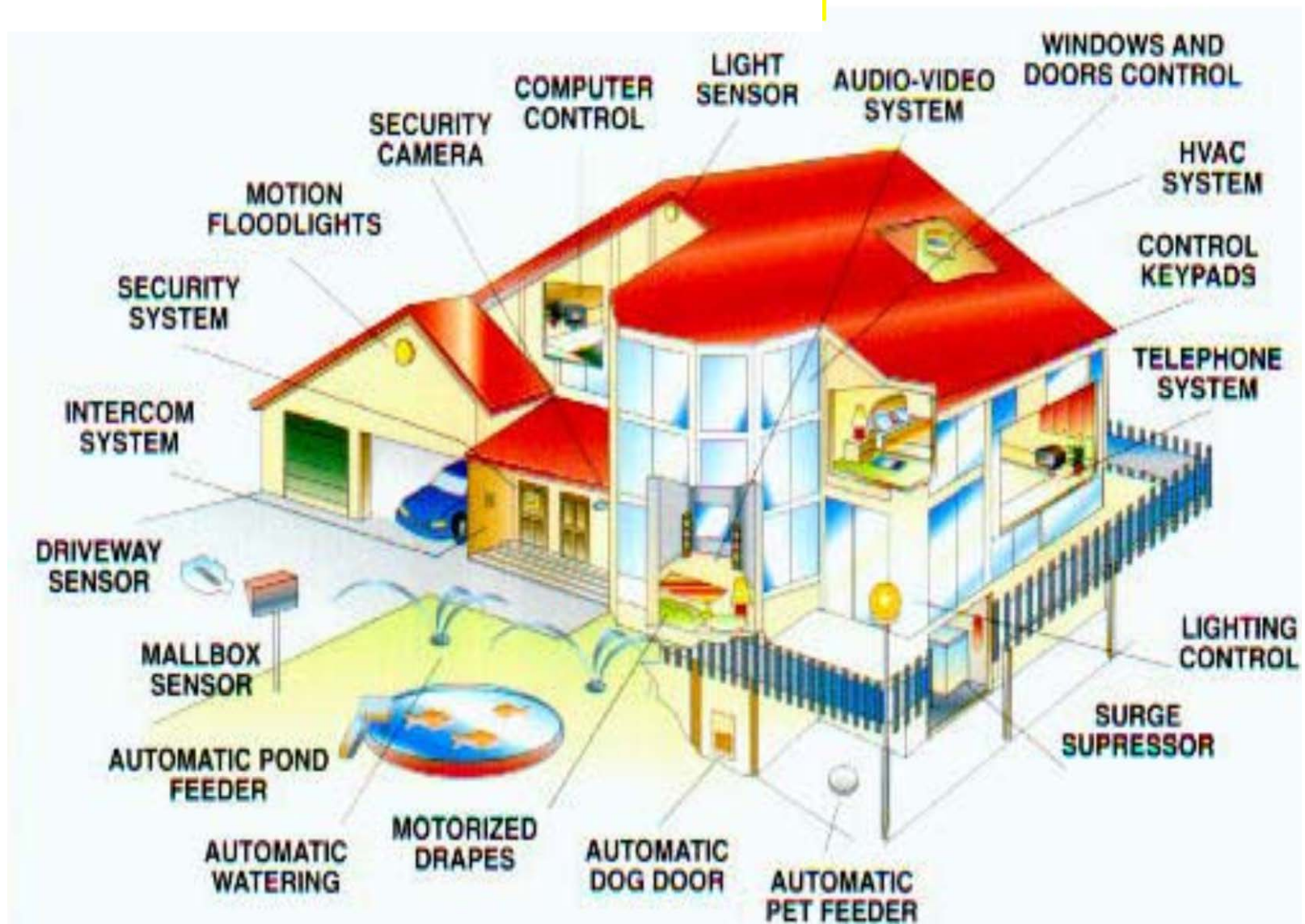
- **Safety**
- **Functional**
- **Financially feasible, affordable**
- **Used by most everyone**
- **Easy to understand, easy to use**
- **Adaptable**
- **Aesthetically appealing.**

# **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**



**Good task  
lighting**

**Counter height micro  
and oven**

**9" toe kicks**

**Slip resistant floor**

**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**

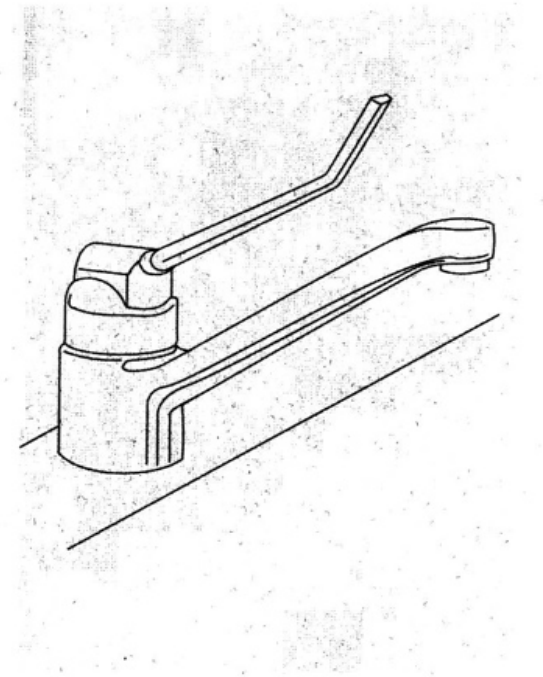


**Shallow French Door  
Bottom Freezer**

**\*\* 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**



**Unattached  
Water plug**



**Free hanging  
Shower head**

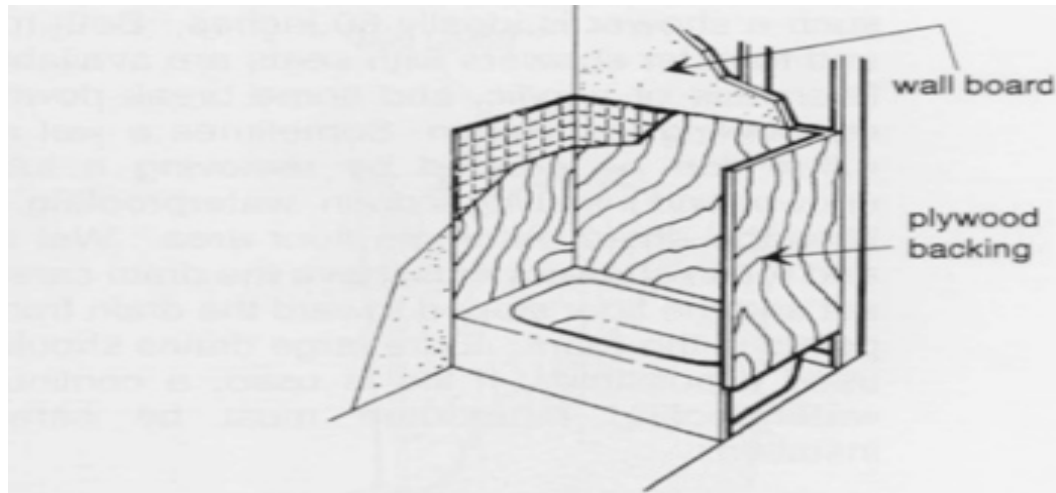


# **Adapt – Make Bathrooms Safer**

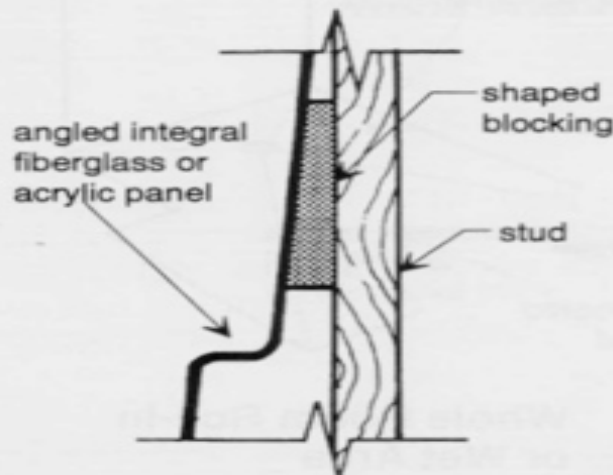


- **Grab bars – installed properly, inside tub**
- **Wide ledge to sit on to get inside and exit tub**
- **Glass blocks to cover space of seat**
- **Add phone, lever controls, hand held shower**

# Reinforce a wall for a grab bars (handrails)

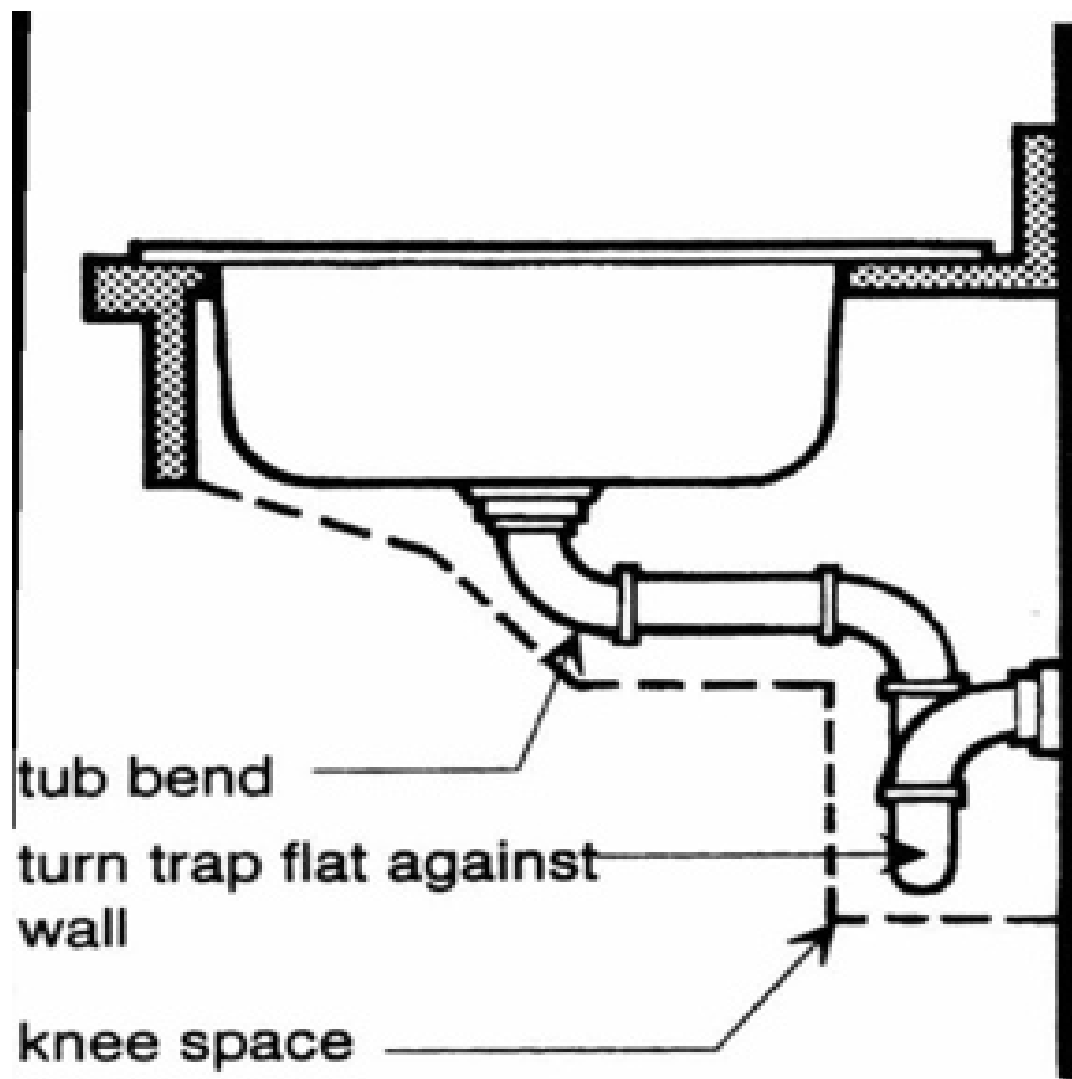


**Whole Wall Reinforcement**



**Shaped Blocking for  
Molded Fixtures**

- Grab bars outside diameter gripping surface 1¼" to 1½"**
- Mount grab bars 1½ 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**

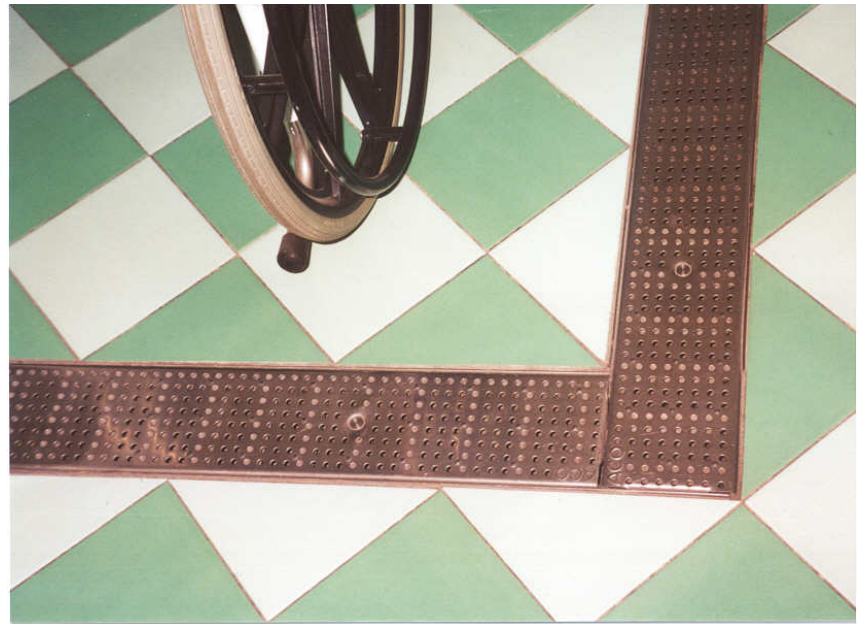
**Remove bathtub and  
replace with roll-in shower.**



**Remote control  
shower and dryer**



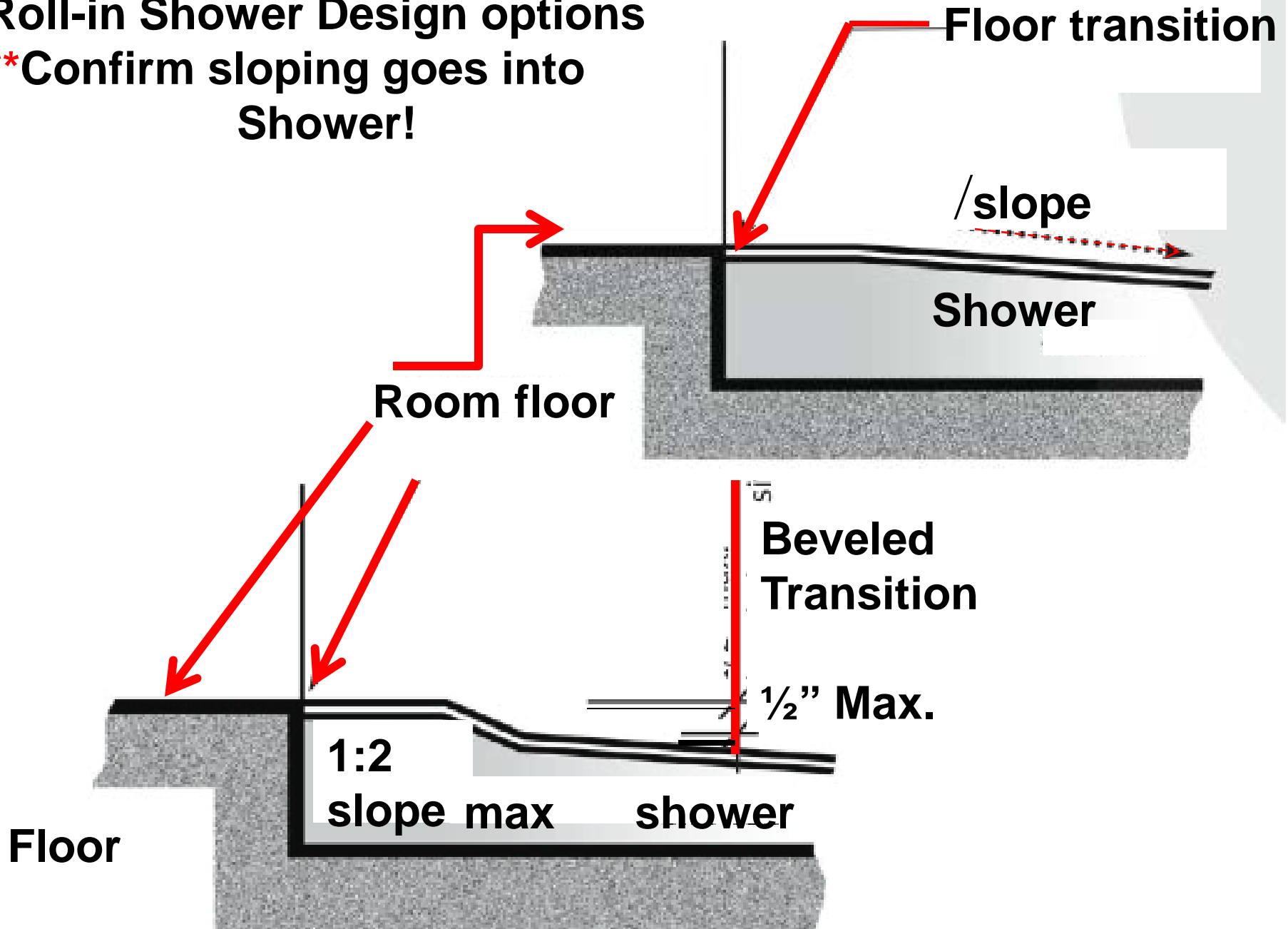
# Roll-in Shower



- 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**



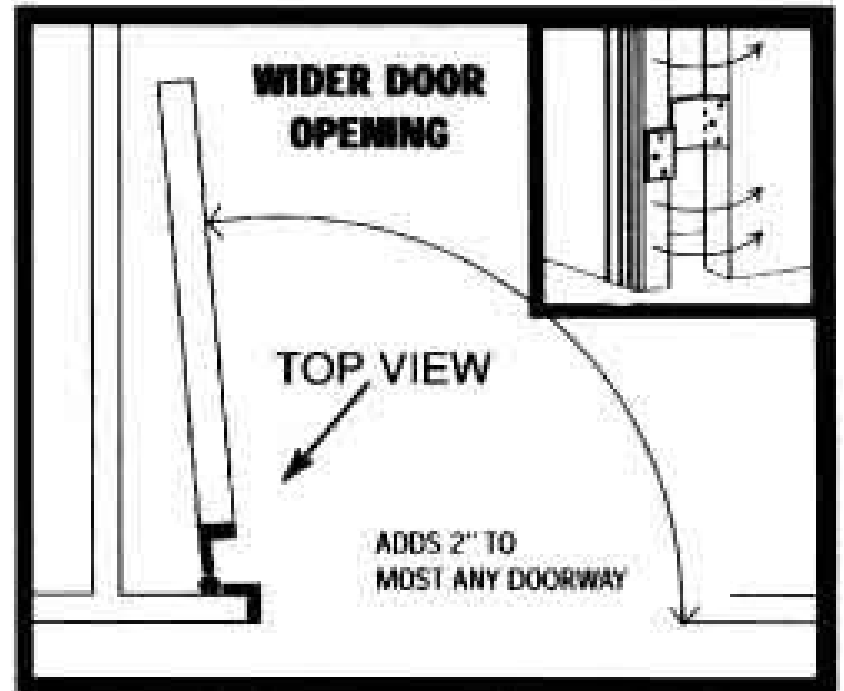
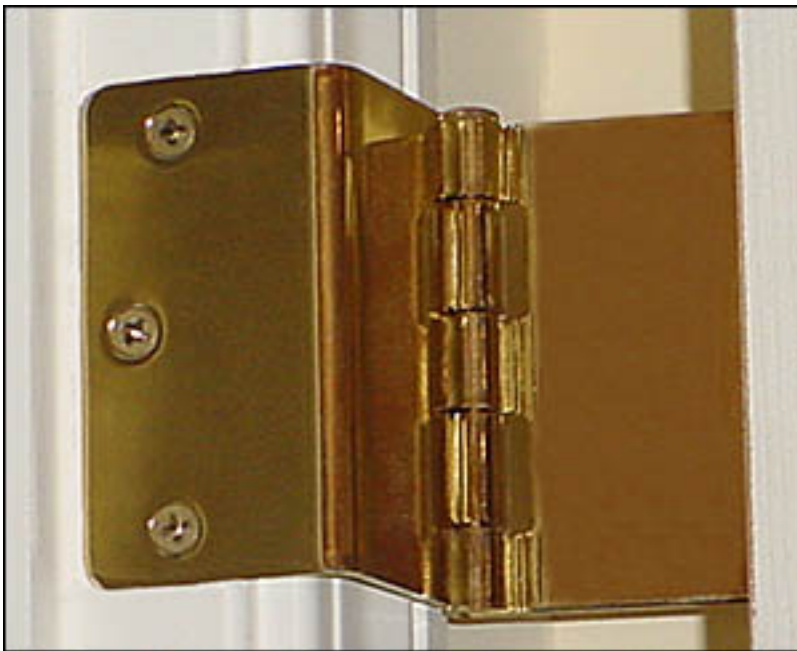
**Exterior mounted sliding doors require no major structural changes**



**NOTE:  
Doors swings into entry**

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

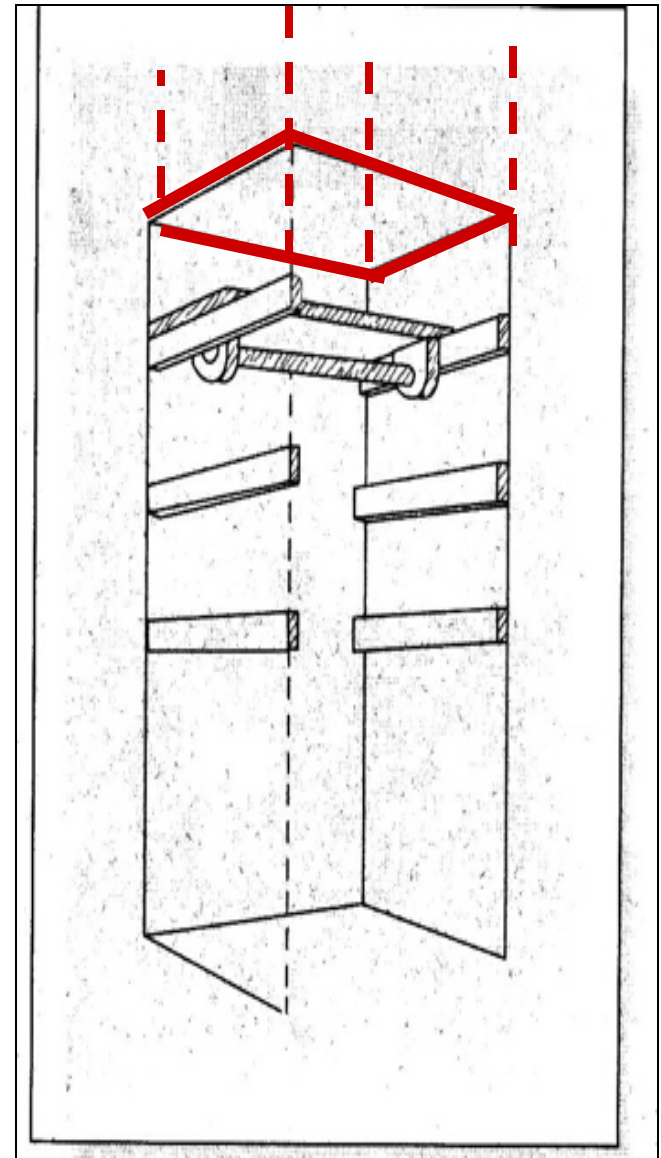
**Used to widen doorways up to two full inches hinges work with most regular sized doors and most existing hinge holes without the time or expense of modifying the door frame. You may have to remove partial door stop**



**SPACE & ETC.**

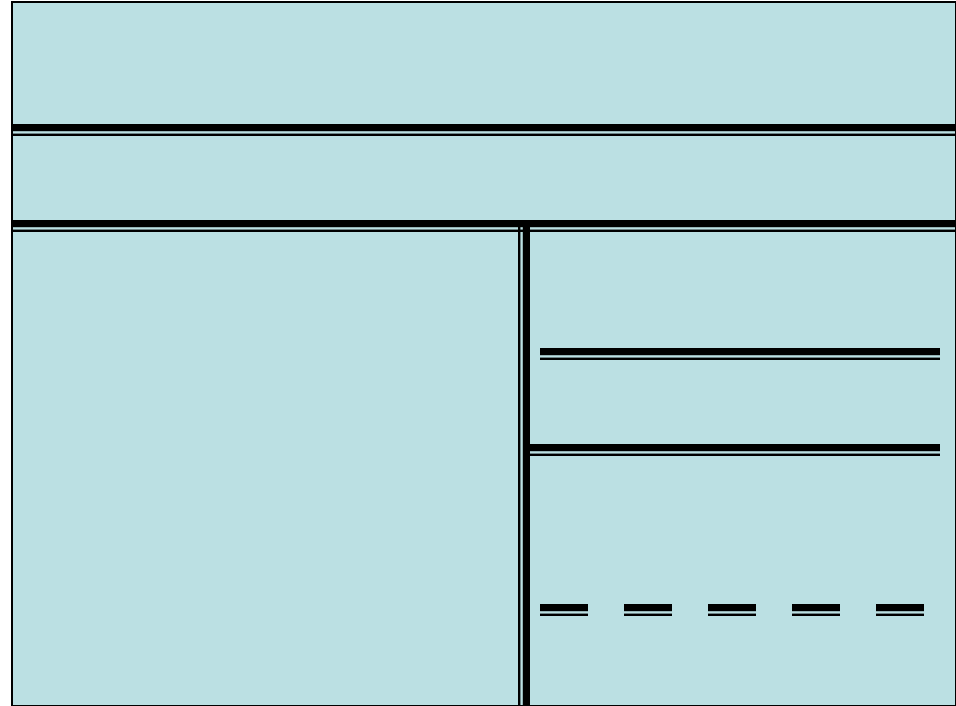


**Avoid wasted space.  
Multi-depth storage 12"-18"  
Reinforce Hooks**



**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**

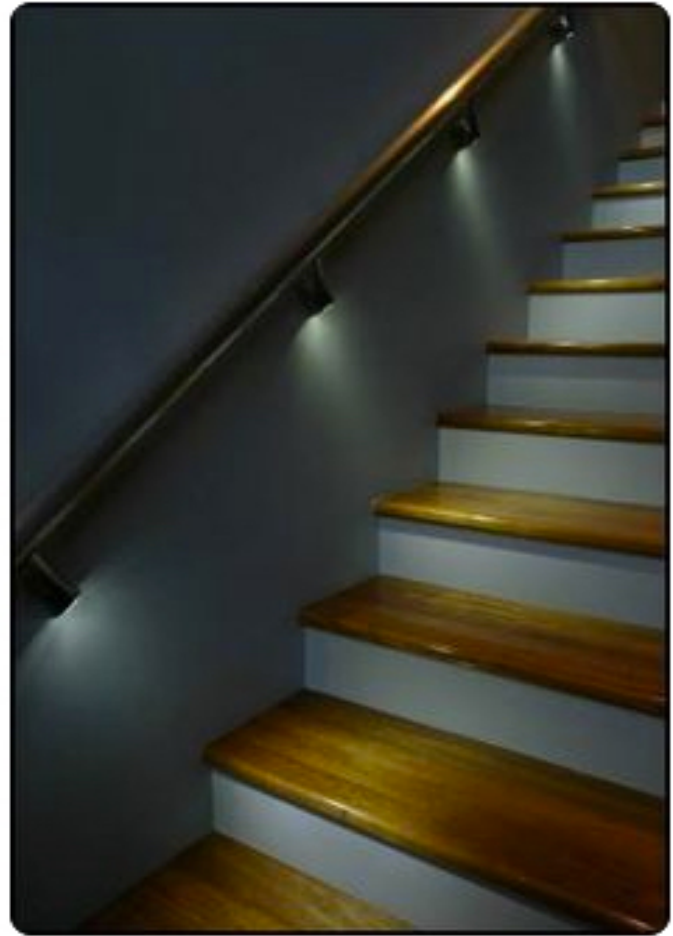


**Easy to read  
controls**

**\*\* 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**



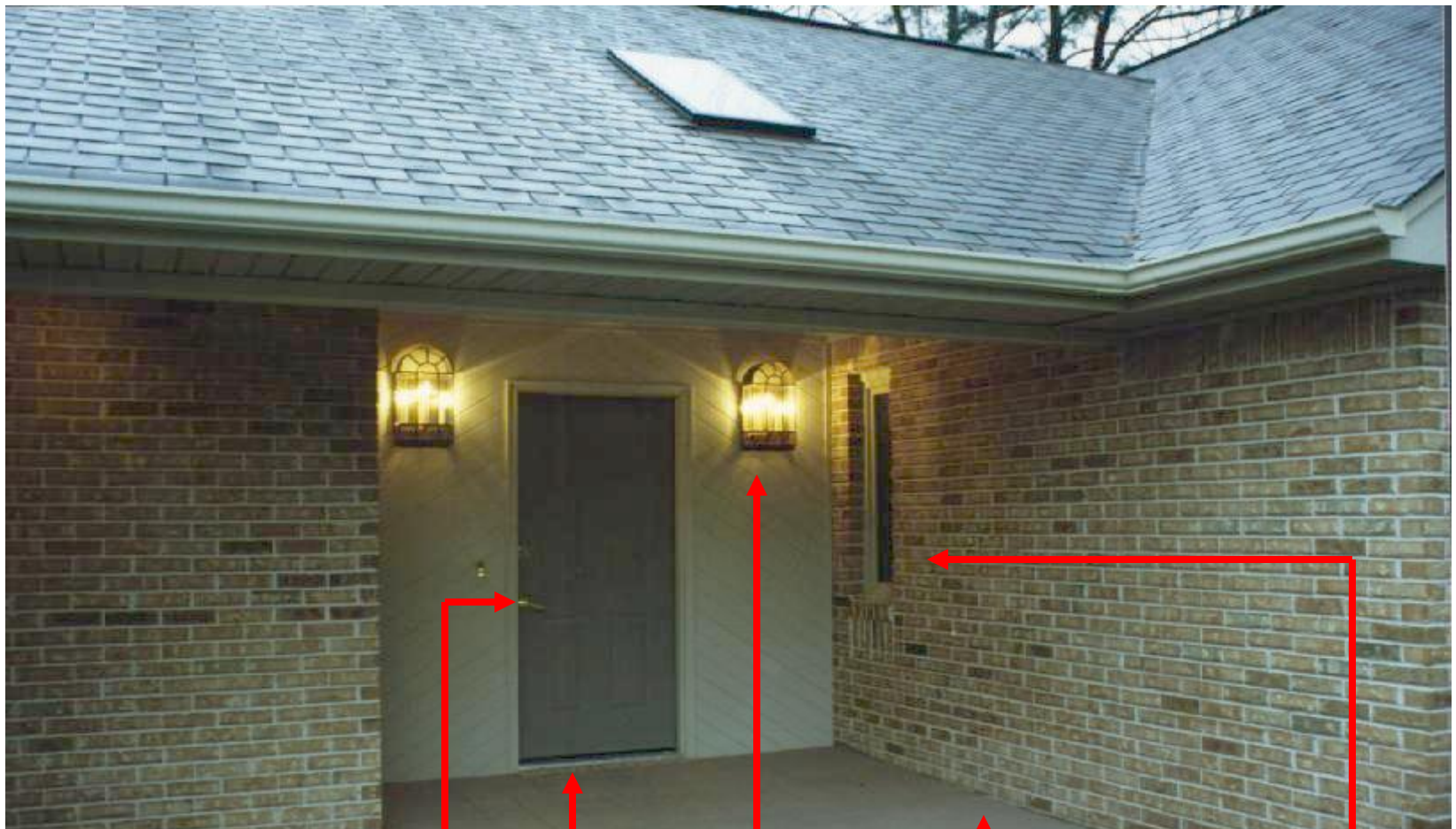
**Add ramp and decorate with landscape**





**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?**

**Presentation by Shirley Confino-Rehder cid**

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# Resources

- [http://fta.dot.gov/publications/publications\\_10935.html](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://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.abledata.com/abledata_docs/icg_hear.htm)
- [http://www.adaptiveaccess.com/offset\\_hinges.php](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.cdfa.net/cdfa/cdfaweb.nsf/pages_greenbuildingfactsheet.html)
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- <http://www.cnt.org/repository/pwpcf.pdf>
- [http://www.dhcd.virginia.gov/images/Housing/LHTC/LHTC%20Application\\_Guidelines\\_2014.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.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.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>

<http://www.lgc.org/ahwahnee/principles.html>

[http://www.lgc.org/freepub/community\\_design/articles/ahwahnee\\_article/index.html](http://www.lgc.org/freepub/community_design/articles/ahwahnee_article/index.html)

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

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

[http://www.nps.gov/dsc/d\\_publications/d\\_1\\_gpsd\\_6\\_ch6\\_chart2.htm](http://www.nps.gov/dsc/d_publications/d_1_gpsd_6_ch6_chart2.htm)

<http://www.phillipsliftsystems.com>

<http://www.publicceo.com/index.php>

[option=com\\_content&view=article&id=1231:yolo-county-hosts-casp-training-&catid=151:local-governments-publicceo-exclusive&Itemid=20](http://www.publicceo.com/index.php?option=com_content&view=article&id=1231:yolo-county-hosts-casp-training-&catid=151:local-governments-publicceo-exclusive&Itemid=20)

<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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