

## **Rebuilding Together**

This document provides an initial post-inspection summary of the clients' functional limitations, problem areas in the home, and a specific list of recommendations for contractors, previously submitted. The next section provides a one-page checklist to be used by surveyors when visiting a house lived in by someone living with chronic obstructive pulmonary disease (COPD), a health condition affecting the lungs, air intake, strength, and stamina. An appendix follows this report, comprising all recommendations for improvement that came to mind immediate following the house inspection.<sup>1</sup>

### **Post-Inspection Summary of the Client's House, Hartford, CT**

#### **1. Functional Limitations:**

##### **Roy – COPD (diagnosis (dx) in 1995), age 67, smoker.**

- Low endurance – tires after about 10 minutes of activity
- Out of breath
- Wheezing
- Susan reported: when he climbs the stairs he sits halfway up to rest

##### **Susan – liver disease**

- Prescription (Rx): water pill
- Multiple p.m. trips to the bathroom
- Fatigue in the p.m.

Both Roy and Susan reported having no functional limitations within the context of the home, but it was clear upon observation and further discussion that there are indeed some concerns. For example, Roy cannot always make it up the flight of stairs from the basement to the kitchen and, there are times, that when he does try, he needs to sit on the step and rest part way. Sometimes, at this point, he decides he is too tired to continue and just goes back down to rest in his bet.

Also, Susan reported Roy is often cold.

Susan, herself, is finding that she is much more tired in the evenings lately. This has been attributed to a recent diagnosis of liver disease. Additionally, as Roy is not often able to come upstairs, Susan must make several trips downstairs to bring him things, or make trips to the head of the stairs in order to converse with Roy, who is at the bottom of the stairs.

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<sup>1</sup> To keep the COPD Checklist for Contractor/Surveyor simple, citations and references have been numbered.

## 2. Problem Area(s) in the Home:

General problems throughout the home:

- Non-functioning outlets
- Poor lighting
- Uneven flooring
- Exposed electric outlets
- Lack of electric outlets
- Multiple electric cords
- Lack of ventilation/poor air quality/high humidity
- Standing water

Exterior into the Home

- Steep steps
- Uneven/cracked walkway and steps
- 7' wide steps with railings on each side (too far apart for safety)
- Minimal lighting outside
- 8.5" threshold on the main step into the home
- Rusty mailbox
- Unmarked threshold into the entrance of the home
- Doorbell could not be located

Hallway/Foyer

- Difficult to open door/friction due to carpet
- Narrow
- Uneven, plushy carpet
- No space for coats
- Non-functioning security system

Living Room (T.V.) – Upstairs

- Clutter
- Extension floor trip hazard (across the floor)

Kitchen

- Stove top, counter lip extended into the walk space
- Counter top has sharp, non-beveled edges
- Non-functioning oven
- Two heating elements were non-functional
- Main light non-functional
- Hard to read and manipulate control panel to oven
- Scattered rugs
- Badly placed counter/table when coming up from the basement, making it a narrow walkway

Downstairs Bedroom/Basement

- Uneven, cracked cement flooring
- Soiled newspaper on floor in front of stair and bathroom

- Clutter
- Isolated from the rest of the house
- Low hanging, exposed pipes
- Poor access to light source
- Space heater
- Task/eating table near bed not stable
- Improper placement of clock
- Fire hazard due to smoking
- No p.m. lighting
- Lack of devices to get out of bed
- Rainwater leaking in, water damage, standing water

#### Bathroom – Basement

- Slippery, moldy tile
- Height of toilet too low
- Two unnecessary steps into shower which are uneven and covered with slippery tile
- Make shift rug/step outside of the shower
- No light in shower
- Deteriorating shower
- Mirror too low (client must bend down to see his upper body)
- No toilet paper holder
- No grab bars
- Hot water pipes not insulated
- No shelving, storage, or towel racks
- No seating

#### Bathroom – Upstairs

- 17" lip to step into tub
- Cluttered
- No grab bars
- Shower not functional
- Toilet paper holder not stationary
- Clogged sink

#### Staircase – to Basement

- Plushy carpet with water damage
- Steep 90-degree turn at top of steps
- Staircase very narrow
- Right handrail loose and unsecured, no left handrail
- Poor lighting

#### Doorways

- Numerous doorways below 32" (many 29")

#### Storage Space / Basement

- Cluttered storage areas with poor access to items

### Windows

- Many locks broken or rusted shut
- Locks above 42" (many >50" above floor)
- Drafty, covered in plastic

### Heat, Light, Ventilation, Alarms

- Smoke detectors minimal, many non-functional
- Carbon monoxide detector(s) could not be located
- Lack of ventilation in basement leading to humid, moldy condition

### **Specific Recommendations (Submitted October 11, 2011)**

1. During observation, Roy ambulated up the staircase from the basement to the main floor. He utilized the railing on the left side of the staircase, which was not well-secured to the wall. While reaching the top landing, he reached forward to hold onto the right side of the wall.

#### Recommendations:

- A. The current railing is recommended to be secured to the wall and the height fixed to code (must not be more than 37 inches (94 cm) high nor less than 30 inches (76 cm) from the upper surface of the handrail to the surface of the tread) (5).
- B. A second 7-foot railing is recommended to the right side of the stairwell. Price range is \$150 - \$200.
- C. Motion sensing LED lights installed on the stairs, motion-activated LED lights illuminate the steps when needed. Battery powered. Price range is \$50 - \$127 (5).
- D. Install a 24" vertical grab bar at the top of the stairs (right side, when coming up from the basement). Price range \$15-20.

2. During observation of the bathroom downstairs, there was no light source in the shower stall. This puts Roy and his wife at risk for falls while showering in the dark. It was also noted two tiled steps were in front of the shower. When the home owner(s) exit the shower, these steps become wet and can cause one to slip and fall. Roy has a diagnosis of COPD and can become tired/out of breath easily with activity. No seating unit, other than the toilet, is located in the bathroom for rest breaks. Current toilet is lower than recommended height of 17 - 19".

#### Recommendation:

- A. A Hog Wild 10690B LED Shower Light installed inside the shower. The unit works when the water is turned on and a flood of blue light shines down through the shower stream. No batteries needed, the Shower Light generates its power as water flows through the internal turbine. This can be purchased for \$25 (1).
- B. Place a bath mat inside the shower unit or, if residents prefer, non-slip bathtub treads. The bath mat will decrease the risk of slipping inside the shower. Price range is \$6 - \$20 (5).
- C. Removal of the two steps located outside the shower stall.
- D. A raised toilet seat should be added. Raised toilet seat with arms cost ranges from \$13-\$70 (5).
- E. Drive Medical 12445-1 Deluxe Bath Bench with Padded Arms- White added to the bathroom. Placement recommended outside the shower stall. Roy stated he does not need a shower chair

for in the shower. With his progression of his COPD a bench is recommended. This bench can be used for conserving energy after showering and getting dressed (4).

3. During a daytime observation of the Crane's home, there was a lack of appropriate lighting and it is likely worse in the evening.

Recommendation:

A. Motion sensing LED lights installed in the hallways from both bedrooms (upstairs and downstairs) to the bathrooms. With movement, sensors activate the light and shut off when there is no movement. Does not require wiring. Price range \$8 - \$40 per unit (5).

4. Roy's living area, downstairs in the basement, is removed from the rest of the house.

Recommendation:

A. Install an intercom system with base located downstairs with Roy. If/when Roy is in need he can easily speak in the system to get help. Cost ranges from \$16-\$115.

5. Install new electrical outlets in areas of high use. Cost ranges from \$150-250 per outlet.

6. Susan particularly mentioned that windows were one of her priorities due to drafts and Roy's health concerns. It is recommended that all windows be replaced, as they are single-glazed and let in drafts.

Recommendation:

A. Install American Craftsmen, an Andersen Company 2301 Single-Hung Vinyl Windows, ~\$120 - \$130 each.

7. Suggest contacting The Home Energy Solutions – Income-Eligible (HES-IE) by Connecticut Light & Power (CL&P), which will conduct energy-efficiency audit and provide weatherization methods, including installing energy-efficient, compact-fluorescent light bulbs and caulking drafts.

Recommendation:

A. With Susan, contact HES-IE services, 1-877-947-3873.

## Checklist for Contractor/Surveyor Use for People with COPD

A person with COPD has difficulty breathing and reduced strength and endurance. They cannot sustain physical effort for long periods (2). **Two to five minutes** may be a long time for a person with COPD. They may find it difficult to stand, carry items for even a few feet, or have trouble lifting, pushing, or pulling objects. Even raising or lowering themselves from a sitting position to a standing position can be hard. Examine the environment looking for places to improve efficiency; where items can be placed, and where physical assistance and rests can be taken in order to reduce the effort and strength needed to move about (3). As poor air quality inside and outside the person's home can contribute to COPD, improving air quality will lessen the symptoms (6). Specific things to consider relating to expenditure of effort and ease of breathing are:

### **Exterior into the Home**

- Is the walkway to the home level?
- Are any steps even, with sturdy handrail and easy rise?
- Is a ramp needed for easy access?
- Is entrance possible without steps?
- Do door and window locks work easily?
- Is ventilation adequate via intake, exhaust, A/C?

### **Entrance/Foyer**

- Is there a place to safely put down bags?
- Is the light switch easily accessible?
- Is there room for a seat or bench to rest on?
- Is the height of door threshold, knob accessible?
- Does the door swing easily in the correct direction?
- Is there space for wheelchair access?

### **Living Room**

- Are light switches positioned in easily accessible positions (or must one walk across room)?
- Are the TV and telephone easily accessible?

### **Kitchen**

- Are cabinets too high, too low, or hard to open?
- Is there enough counter space to avoid clutter?
- Is kitchen triangle (sink, refrigerator, stove) efficiently positioned to minimize walking and carrying?
- Is seating available?
- Are surfaces: stove/oven/sink/counter at the right height to minimize lifting and be safe?
- Are stove controls positioned for ease of use.
- Are there safe surfaces to rest hot foods on when removed from oven?
- Is there an extractor fan to remove smoke particles?

### **Bedroom**

- Is there a telephone near the bed?
- Is light switch easy to access from the bed?
- Is there a nightlight?
- Is furniture arranged optimally for access to light, clock, pills, bathroom, and exit?
- Are there devices to help get in/out of bed?
- Is there adequate seating and lighting?

### **Bathroom**

- Is there room for ½ or ¾ bath on main living floor?
- Are there grab bars in the tub, shower area, near the toilet? Are they the right height and weight bearing capacity?
- Is the toilet is too high or low?
- Is the tub or shower easily accessible?
- Is there any danger of slipping?
- Is there a bath/shower chair?
- Is there a safe chair to sit on?
- Is mirror height appropriate, sit and stand?
- Are hot water pipes insulated and safe?
- Can the shelves be easily reached?

### **Staircase/Halls**

- Is there room for stairlift or elevator?
- Is there adequate lighting?
- Are there railings on both sides? Are they secure?
- Are railings the correct height, length, and sturdy?
- Are steps too steep? Determine stair flight run.
- Are steps slippery, with/without tread/carpet?
- Is hallway width (adequate for walker/wheelchair)?

### **Doorways**

- Are doorways a minimum of 32" wide?
- Do doors open to make access easy?
- Is there enough space for client to maneuver? (60 inches diameter for wheelchair)
- Would swing-clear hinges help access?

### **Windows**

- Are opening mechanisms under 42 inches from floor?
- Are windowsills no higher than 3ft above floor level?

### **Electric outlets and other controls**

- Are electric outlets accessible (high enough)?
- Are any electric cords safely positioned out of way?
- Are there sufficient outlets around the home?
- Are thermostats readable and accessible?

### **Air Quality**

- Adequate air filtration (indoor / outdoor pollution)?
- Is the home sufficiently ventilated?
- Sufficient venting relating to cooking / heating
- Sufficient heating and cooling system

## References

- (1) Amazon. (2011). Hog Wild 10690B LED Shower Light. Retrieved from <http://www.amazon.com/Hog-Wild-10690B-Shower-Light/dp/B001CSQ10M>
- (2) Johnson, M., Duncan, R., Gabriel, A, and Carter, M. (1999). *Home modifications and products for safety and ease of use* [Brochure, electronic, archived edition]. Raleigh, NC: Center for Universal Design. Retrieved from: <http://design-dev.ncsu.edu/openjournal/index.php/redlab/article/viewFile/94/48>
- (3) McCullagh, M. C. (2006). Home modification. *American Journal of Nursing*, 106(10), 54-63. Retrieved from: [http://www.nursingcenter.com/prodev/ce\\_article.asp?tid=671446](http://www.nursingcenter.com/prodev/ce_article.asp?tid=671446)
- (4) Medical Depot. (2011). Deluxe Bath Bench with Padded Arms. Retrieved from [https://drivemedical.com/catalog/index.php?cPath=74\\_99&page=2](https://drivemedical.com/catalog/index.php?cPath=74_99&page=2)
- (5) OT Geriatric Group, Department of Rehabilitation Science, UB. (2011). Home Safety Self Assessment Tool (HSSAT) v.3. Retrieved from [agingresearch.buffalo.edu/hssat/hssat\\_v3.pdf](http://agingresearch.buffalo.edu/hssat/hssat_v3.pdf)
- (6) Rabe, K. F., Hurd, S., Anzueto, Z., Barnes, P. J., Buist, S. A., Calverley, P., . . . Zielinski, J. (2006). Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease. *American Journal of Respiratory and Critical Care Medicine*, 176, 532-555. Retrieved from: [http://www.who.int/respiratory/copd/GOLD\\_WR\\_06.pdf](http://www.who.int/respiratory/copd/GOLD_WR_06.pdf)

## APPENDIX A

### Original Notes for Initial Recommendation Summary

#### General recommendations for the house

- Waterproof basement
- Install proper ventilation ducts to decrease humidity and poor air quality in basement
- Use a dehumidifier
- Replace windows with double-glazed, better-insulated panes and window frames
- Install proper light sources (high-wattage fluorescent bulbs or motion LEDs) where needed (entrance to house, stairway to basement, kitchen, multiple locations in basement, basement bathroom)
- Install proper electrical outlets where needed, especially to decrease use of extension cords (upstairs living room, basement)
- Install electrical outlet covers
- Repair all smoke detectors or install new ones, install carbon monoxide detectors

#### Exterior into the Home

- Repave or level sidewalks
- Install middle railing to second set of concrete steps
- Install left side railing to first set of concrete steps (closest to the road)
- Install motion light on porch
- Clearly mark thresholds with paint or tape

#### Hallway/Foyer

- Remove plush carpeting/rugs at the entrance to the house
- Install motion sensor lights in hallways upstairs and downstairs

#### Kitchen

- Remove table lip from oven or install bumper to prevent injuries
- Install sturdy dog gate
- Remove entrance door which blocks oven
- Fix or replace non-functional appliances
- Remove/relocate unnecessary table cluttering access to basement

#### Downstairs Bedroom/Basement

- Relocate light switches and outlets to more accessible locations
- Remove flammable objects from around the space heater

#### Bathroom – Basement

- Install better lighting, waterproof lighting specifically in the shower
- Install wall-mounted toilet paper holder on left side of wall
- Install raised toilet seat
- Insulate exposed hot water pipes

#### Bathroom – Upstairs

- Install 24” horizontal grab bar under the window in the bathtub, install 24” vertical grab bar to the left side of the bathtub for easier access
- Install wall-mounted toilet paper holder
- Remove unsafe throw rugs and plush carpet

#### Staircase – to basement

- Install motion sensor LED lights
- Secure right railing (when looking down the stairs) and fix height to code
- Install 6’ railing on left side height to code
- Install 24” vertical grab at the top of the stairs
- Remove newspapers from bottom of steps and replace with non-slip rubber

#### Doorways

- Widen all doorways below 32” to 32” or greater
- Storage space/basement
- Remove unnecessary clutter or build storage areas to contain items

#### Windows

- Install functional window locks at 42” above the floor

#### Electric outlets/controls

- Install newer panels or appliances with larger, easier to read and manipulate interfaces