

Neal

Accessibility Problems

- Bath
- Kitchen
- Entrance
- Bedroom
- Living Area
- Whole House
- Outside (deck, ramp, etc.)

Personal Profile

- Neal: Age 16, 2008
- Diagnosed in 1993 with Cerebral Palsy
- Accessibility Improvements Made in 1997 and 2006



Accessibility Solutions

Neal was diagnosed with Cerebral Palsy when he was 11 months old. He is able to get around with the aid of a walker, but also uses a wheelchair while at school. His family lives in a home they rent from his grandma that is part of their family farm (Fig. 1).



Figure 1



Figure 2

Ramp: Neal got his first wheelchair in 1997 when he was five years old. His family added a ramp to the front of the house (Fig. 2) so that he could wheel himself inside and outside. They included a landing at the top of the ramp so that Neal has a level space to open the door and come in. They had to shorten the ramp from the original plans because otherwise it would have stopped in front of their daughter's bedroom window in the basement that opens out (blue circle and arrow, Fig. 2). At first Neal was very cautious about using the steep ramp, but now that he has been doing so for 11 years his mother said "he whips right down it." They are currently looking for an automatic door opener to make it easier for Neal to come and go. Neal's mother also said, "I did not want the rails of the ramp to look like a baby crib. We broke up the look using a pattern of two 2x2s then one 2x4. It is functional, simple and cost effective."

Entrance: The entrance from the garage to the house has also been modified. Although Neal can walk on his own with the aid of a walker, it is hard for him to go up and down the two steps. His family added a railing (Fig. 3) so that Neal has something to hold on to – instead of using two people to help support him.



Figure 3

Bathroom: The bathroom has undergone the most changes for Neal. The original space was very small and hard for Neal to use independently (Figs. 4, 5, & 6).



Figure 4

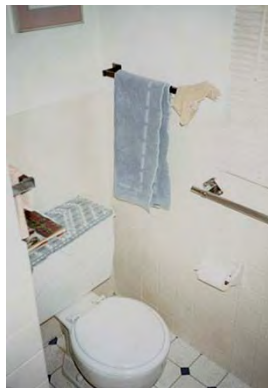


Figure 5



Figure 6

Because they had limited space to work with, the family called upon the expertise of Mary Years, Extension Housing Specialist at Iowa State University, to help them redesign the bathroom and maximize their space. The family took a trip to Iowa State University and visited the Universal Design Lab to get new ideas (Figs. 7 & 8).



Figure 7



Figure 8

Before, the bathroom did not have enough open floor space to allow Neal to maneuver his wheelchair between fixtures (Fig. 9). Mary Yearns worked with the family on creating many different remodeling options. They developed plans “A” through “S” and eventually settled on plan “I” (Fig. 10) as the most cost effective and spacious. The selected remodeling plan provided a five-foot “turning circle” for Neal’s wheelchair (blue circle, Fig. 10).

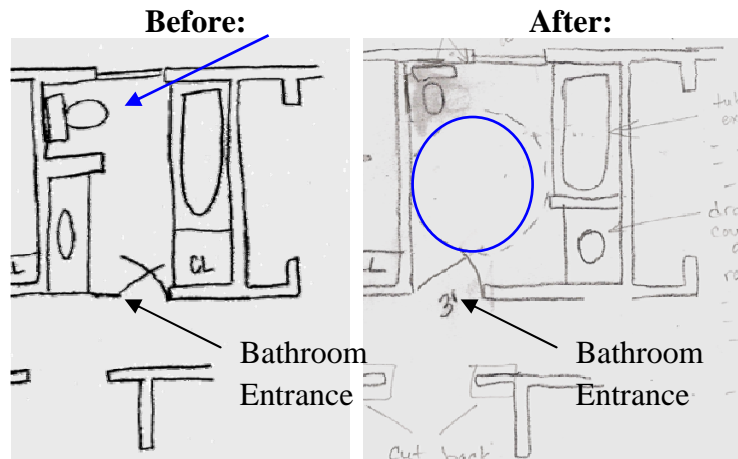


Figure 9

Figure 10

The small compartment for the toilet in the “before” design (blue arrow, Fig. 9 & Fig. 11) made it virtually impossible for Neal to transfer from his wheelchair to the toilet by himself. The privacy wall separating the toilet was taken out (blue arrow, Fig. 12), the vanity was removed, and the toilet was placed on the adjoining wall to create more space for him to wheel up next to the toilet (Figs. 13 & 14). The swing of the door was also changed since the new vanity is on the opposite wall from before (green arrow, Fig. 12 & blue arrow, Fig. 14). Now Neal is able to transfer independently. To do so, he wheels up to the toilet and, while facing it, he uses his right arm to grab the bar that is under the window. He lifts himself up and then pivots to sit on the toilet. When he is done, he uses the other grab bar that is now on his right side to pull himself to a standing position. He turns once again to sit back down in his wheelchair. The new design of the bathroom with the five-foot “turning circle” allows him enough space to easily turn his wheelchair around to leave.

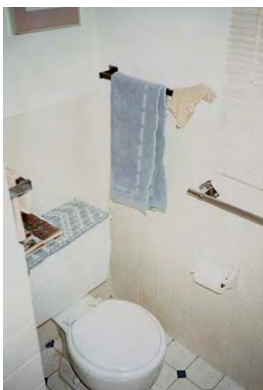


Figure 11 (before)



Figure 12 (before)

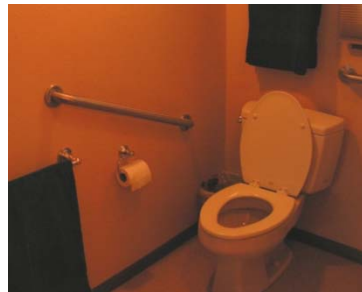


Figure 13 (after)

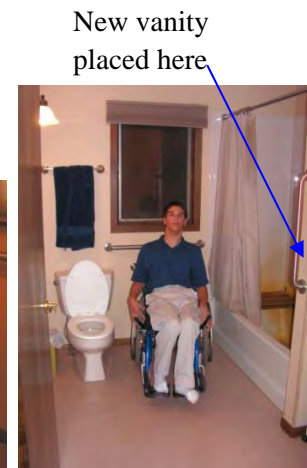


Figure 14 (after)

The shower was a much bigger project. Previously the shower had sliding glass doors (Fig. 15), and controls on the front wall. Neal was not able to use the old shower independently because he couldn't reach the controls while sitting on the bench. Neal searched sites online and found a solution: installing shower controls in the middle of the side wall on a wand that slides up and down on a bar (blue square, Figs. 16 & 17). This enables Neal to reach the controls while sitting on the bench. They also kept the standard controls and shower head on the front wall of the shower for the rest of the family to use (double arrow, Fig. 16). The new bench is attached to the back wall of the shower so that if he is shaking he won't knock it over or fall off (blue arrow, Fig. 17). The prefabricated fiberglass tub/shower that the family initially considered had molded shelves built into it and wouldn't allow them to put grab bars where they wanted. They decided, instead, to buy a new bathtub and install waterproof tile around the walls to accommodate a shower. The walls were reinforced with plywood under the tiles so that grab bars could be installed wherever they wanted. They put in a diagonal grab bar (blue circle, Fig. 16) that is easier for Neal to use with his forearm. They used a shower curtain instead of doors to provide more space for Neal to get in and out of the tub (Fig. 17). One other addition was a shampoo and soap dispenser that only requires the push of a button for Neal to use (blue circle, Fig. 17) and also eliminates bottles cluttering the bathtub.



Figure 15 (before)



Figure 16 (after)



Figure 17 (after)

The sink was moved to the opposite wall (blue arrow, Fig. 18) where the linen closet was located, and the swing of the door was changed so that it does not open in front of the sink. The before picture (blue circle, Fig. 19) shows a mirror that is high above the counter. In the after photo (Fig. 20), the mirror has been lowered so Neal can see himself clearly. Another change is the lever faucet on the sink (blue circle, Fig. 20) which is easier to use than two separate knobs. There is also grab bar near the sink (blue circle, Fig. 21) so Neal can use it to help support himself if he is standing. The cabinet below the sink has been eliminated, providing knee space for Neal to roll under the sink in his wheelchair. A cart on wheels (blue arrow, Fig. 21) has been added to provide storage for bathroom supplies.



Figure 18 (before)



Figure 19 (before)



Figure 20 (after)

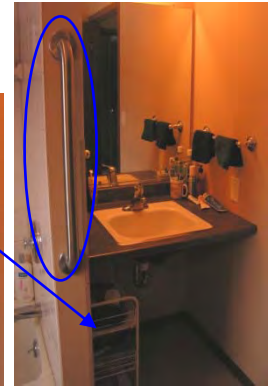


Figure 21 (after)

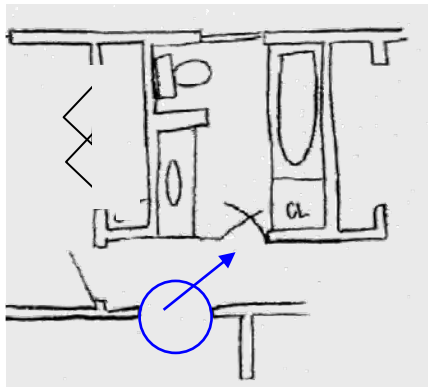


Figure 22 (before)

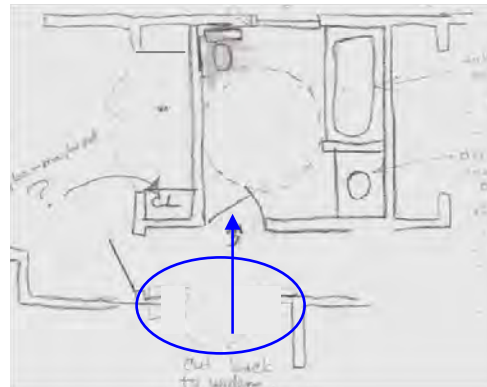


Figure 23 (after)

Another major change was to improve the circulation between the bathroom, bedroom, and dining room. The bathroom door was moved to align it with the dining room door (blue arrows, Figs. 22 & 23). The doorway to the dining room was made a foot wider (blue circles, Figs. 22 & 23 & blue arrow, Fig. 24). This made the previously tight corner to get into Neal's bedroom much easier for him to navigate (Fig. 25). They also installed non-slip flooring, made by Mannington, in the bathroom (Fig. 26) which lessens the chance of falls for Neal when exiting the shower. One last simple modification was to include cordless shades (blue arrow, Fig. 26); the same shades were also installed in Neal's bedroom.



Figure 24

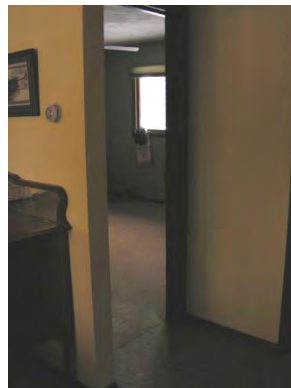


Figure 25



Figure 26

Bedroom: To increase space for Neal to move around in his own room, the doors were taken off the closet and his desk was placed inside (Fig. 27 & 28). Some shelves were added on the side for him as well (blue circles, Figs. 27 & 28). There is an extra closet over the stairs that is accessed in Neal's room (Fig. 29). His mother turned it into a linen closet and place to hang Neal's dress clothes. She said, "He has trouble getting things off a hanger but he is old enough now that he needs a spot to hang up some nice clothes."



Figure 27

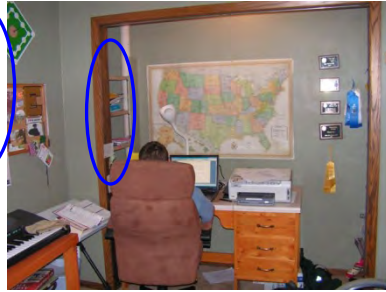


Figure 28

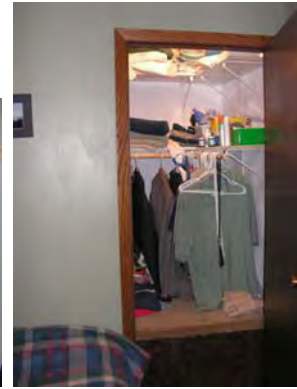


Figure 29

Other Modifications: Some other modifications that the family has made for Neal include cutting a section out of the living room carpet and replacing it with vinyl flooring (blue circle, Fig. 30) so that there is a space for Neal's wheelchair to sit if it is wet or has snow on it, without ruining the carpet. Neal also has some kitchen gadgets that make it easier for him to eat or prepare food on his own. He has eating utensils with bigger handles (blue brackets, Fig. 31) that are easier to hold and a bowl with sloped sides that help him scoop food onto his fork or spoon (blue arrow, Fig. 31). He also uses a cup that has a lid and a hole for a straw so that he doesn't need to worry about spilling liquids (blue circle, Fig. 31). The clear round object is a style of bumper guard. It has 3 "hooks" that snap around a plate. The guard keeps food on the plate and Neal uses it to help push food onto his eating utensils (blue square, Fig. 31). He can stir or mix things in a bowl with a non-slip coating on the bottom (blue circle, Fig. 32). The bowl sits in a base that allows him to tilt it without spilling or having to hold it. He can make sandwiches by using a sandwich preparation board that has a raised lip on two sides to keep the bread from sliding around (blue arrow, Fig. 32).



Figure 30

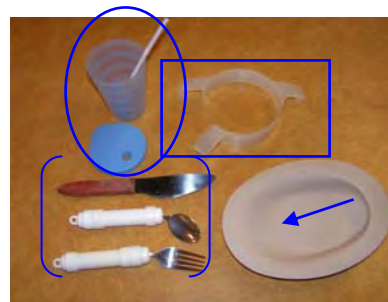


Figure 31



Figure 32

Financing the Project

- Personal Funds
- Loans
- Grants
- Other

The family used a combination of personal funds along with funds from the Ill and Handicapped Waiver program. The waiver provides up to \$6,000 per year, if eligible, for home or vehicle modifications. Neal's family was on a waiting list for this waiver for 18 months before he was given a slot to be considered.

The biggest challenges they encountered, according to Neal's mother, were "patience and paperwork. The project took one month for remodeling work, but the entire process took a couple of years." In March of 2004 they applied for the waiver. They learned about Mary Yearn and the Universal Design Lab at Iowa State University in April, and went for their visit in June. The project was big enough that they wanted a professional opinion. Neal's mother said, "We made the mistake of telling contractors how much money the waiver would give us and that there was potential for more. Since the contractors knew how much money they could get, they were overbidding what we could actually afford. The first bid was \$12,000, not including plumbing or electrical work, which was way over what DHS would accept. The family eventually found a contractor that could give them a bid of what was needed to be accepted by DHS.

Another problem they encountered during the process was a change in supervisors at DHS. They submitted the cost information on March 31 and the contractor did not get paid until the end of May. This was all due to a paperwork error which was corrected. They got the 'okay' to start the project in October of 2005 at which point they got an 'okay' for the contractor bids. It took the family until January of 2006 to find a contractor and once they got the 'okay' from DHS they had to get a slot in the contractor's schedule. In March of 2006 they started and were mostly done a month later. Neal's mother said, "We thought it would be a couple-day project, but it turned into a month-long project."

Lessons Learned/Advice for Others

Neal's mother had some advice for others. She said, "There will be surprises when you do remodeling. You have to be patient though; you are getting things – just not at the same pace as everyone else."

She also cautioned that, "You don't realize how expensive it is to remodel for handicapped design. The cost is high because the demand is low." She also suggests "do research on what you need." Neal's family started researching before they knew whether they would get funding from DHS so that as soon as they got the funding they could start the remodeling project. Neal's family had him involved in researching and making suggestions, which made the modifications better in their opinion.

One last piece of advice she had was, “Tell people to network, learn from others, ask questions and go to the ISU Universal Design Lab. Don’t think you can’t afford a modification because you don’t have the money – money is out there. Benefits you will gain are 10-fold.”

What Would You Do Differently?

Neal’s mother said:

“The tub has waterproofing behind it, but we should have put cement wallboard one foot outside of the tub too. Because we have a bench in the tub, the curtain can only go a certain way. If we had tiled out further past the tub we wouldn’t have water problems.”

“I like the angle of the bar along the toilet, but I think we put it too far back. The back of the bar is even with the back of the tank, and it is a four foot bar. If we had extended it farther out Neal would be able to reach and pull with the bar.”

“We also thought the bench would be a good idea; a couple of times he has fallen, which cracked a few of the tiles and left scars on his back.”

“DHS wanted modifications that were the most effective for the least cost. Next time we would put in a curbless shower because it would have been even easier for him to use than the tub.”

What Difference Did It Make?

Neal has been extremely happy with the changes to the bathroom (Fig. 28); within two weeks he was using the shower and bathroom on his own 95% of the time. Now he is independent about 99% of the time in the bathroom. Making these modifications gave him the confidence to be able to button his pants and shirts. These changes have also given him the confidence to use public restrooms on his own. Since he is more independent, he and his mother can go places together without worrying about where the family restrooms are. His mother wonders what he would have gained had they done the remodeling earlier.



Figure 28

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