

Adaptation Specifications

for children & adults with muscular dystrophy & allied neuromuscular conditions

A guide to the architectural specifications to be considered

To be used in conjunction with:

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| Chapter 4 | <i>Assessment of Need;</i> |
| Chapter 8a | <i>Equipment for Adaptations;</i> |
| Chapter 9 | <i>Hoisting;</i> |
| Chapter 10 | <i>Disability Needs Assessment Form/Architectural Brief;</i> |
| Chapter 14 | <i>Scales & Templates/Planning & Building Regulations;</i> |
| Chapter 18 | <i>Addresses: Manufacturers/Suppliers/Sources of Advice.</i> |

The following are the issues to be considered:

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Introduction

It is important when planning adaptations for a boy with Duchenne muscular dystrophy (DMD) or for a child or adult with other allied neuromuscular conditions, to understand the disability and to appreciate the long-term physical limitations, as these influence the decisions made and the need for both space and special features. The essential factor to consider is that they will use a wheelchair (usually powered which is less manoeuvrable than a self-propelled wheelchair and therefore requires additional space) and that although they will retain functional use of their hands, the grip and strength will be considerably reduced. Also they will not be able to reach or raise their arms and are likely to lack balance when sitting.

Most of the information in this chapter is relevant to both children and adults, irrespective of the disability, but some items may apply to *either* children *or* adults.

Lift vs extension

The key issue is to decide the best way to provide wheelchair-accessible, en-suite bedroom and bathroom facilities. This may involve making a choice between a lift and ground-floor extension; a separate chapter, *Lift vs Extension*, has been prepared to help with this decision.

Lift

The most suitable position on both the ground floor and the first floor will be from the hall to the landing above. However, in many houses it is more likely that sufficient space will be available only from the sitting room or dining room to one of the bedrooms. If this is the case, it must be ensured that this is not at the expense of sufficient space in the room for both the necessary facilities and the circulation of a wheelchair. Allow for a large-enough lift (for a future large, heavy powered wheelchair) and adequate space to access the lift. See Chapter 14 *Scales and Templates*, page 7.

Access

The issues to be considered are:

- ⇒ the pavement crossing;
- ⇒ the safety of car/wheelchair transfers;
- ⇒ access and movement around the perimeter of the house and patio/paved area;
- ⇒ independent access in and out of the house;
- ⇒ independent access through internal doors.

Pavement crossing

A dropped kerb will be required for wheelchair use. Application should be made to the Highways Department of the Local Authority. If a charge is made, the grants officer should be approached to see if this cost could be included in the Disabled Facilities Grant (DFG) or Improvement Grant. See Chapter 12 *Funding*.

The safety of car/wheelchair transfers

The choice is between the following:

- ⇒ hard-standing area;
- ⇒ carport;
- ⇒ garage.

Hard-standing area

A hard-standing area adjacent to the house is essential to allow the manoeuvre of transferring between wheelchair and a car to be carried out in safety.

- **Width: 3200 – 3600mm** for a wheelchair to be positioned at the side of the car.
- **Length:** Approximately **5200mm** to enable a wheelchair to pass around the back of the car to access the house or garden, with an additional **600mm** for tail transfers from a van using a ramp or hydraulic platform.

Carport

Ideally, but not always possible, the hard standing should be under cover.

- **Height:** In addition to the length and width, as above, height should be considered if a large van is used. This should have a clearance of **2800mm**, but could be lower for a smaller vehicle.

Garage

In a 'new build' scheme, the ultimate provision is an integral garage, with a level-access door to the house. The garage should be wide enough for side and/or tail van-to-wheelchair transfers and should incorporate a storage area.

Access and movement around the perimeter of the house and patio/paved area

Around perimeter of house

Where possible, it is advisable to maintain external access down at least one side of the house for the wheelchair user, in addition to transfer of lawn mowers, ladders, dustbins etc. from the back to the front of the house. This should be a minimum of **900mm** wide, measured from the drainpipes or the outside edge of the drains and not from the house wall.

Patio/paved area

A paved area in the garden is essential for the use of an electric wheelchair, particularly when the lawns are wet and muddy. Ideally, French windows or a glazed door from the sitting room or a ground-floor bedroom extension should open out on to this area, which can be used to create an attractive feature to the house with potted plants or raised beds.

An additional bonus may be that container gardening will provide a suitable hobby for someone in a wheelchair who is interested in gardening. Anyone with arm weakness needs to work at the correct height, with the length of the wheelchair parallel to the raised bed or ceramic pot. Lightweight tools are easier to use if the bed is lower than the wheelchair armrests, but if the soil is too low the tools need to be long and become unwieldy. An ideal height will be approximately **600mm**.

Independent access in and out of the house

This may involve the following:

- ⇒ adaptation of existing steps;
- ⇒ provision of ramp;
- ⇒ installation of short-rise lift/Steplift;
- ⇒ provision of portable ramps;
- ⇒ ensuring that external door(s) are suitable.

Adaptation of existing steps

If the disabled person is able to walk and is unlikely to need a wheelchair in the immediate future, it may be helpful to create shallow steps, and the height and depth will need to be assessed. If the person walks *and* uses a wheelchair, complementary provision of steps and a ramp will be necessary.

Hand rails for steps

The height will be critical for anyone with limited arm strength and this will depend upon the user's height. The standard height range of **900 – 1000mm**, with an outside rail diameter of **50mm**, should be assessed individually.

Provision of ramp

The features in relation to ramps are as follows:

- ⇒ gradient;
- ⇒ hand rails;
- ⇒ safety flange;
- ⇒ platform;
- ⇒ surface.

Gradient

A gradient of **1:15** is satisfactory, as most people with a neuromuscular condition who use a wheelchair will have insufficient strength to propel a wheelchair up any slope and are likely to be using a powered chair.

However, if the person is able to walk, in common with many people with a neuromuscular condition, they may find it difficult to walk up a ramp.

A gradient of **1:15** may be too steep and **1:20** may be easier, but this must be assessed before a decision is made because the alternative of shallow steps may be preferable.

Hand rails

Hand rails are useful for people who are able to walk, but are not needed by powered wheelchair users. However, they may be essential to satisfy Building Regulations where the length of the ramp is over **2000mm**.

Safety flange

For wheelchair users, a side upstand of **100mm** is essential for safety on the open sides of ramps or landings. An earth-filled cavity at the top of the wall, with trailing plants, makes attractive camouflage for a high ramp.

Platform

A level area at the top of the ramp must extend forwards **1200mm** from the face of the door to allow the wheelchair to be positioned safely on a level surface while the door is opened or closed. The measurement is critical to allow the chair to move beyond the leaf of the open door and, if necessary, to provide sufficient space to turn the chair through **90°**, before moving down the slope. The ramp should be **1200mm** wide.

Surface

For safety in icy conditions, the surface must be non-slip. This should be achieved without the surface being so rough that the person is shaken in their wheelchair. The ease of cleaning may also be a factor to be considered.

Installation of short-rise lift/Steplift

In some situations, there is insufficient space for the length of ramp needed to provide the correct gradient. In these cases a short-rise lift or *Terry* Steplift may be the solution and they consist of a powered platform, which rises vertically. These lifts can be used to overcome a steep access from the pavement to the level of the accessible door, or to provide access into the house where there are a number of steps. It is important to ensure that the maximum lifting capacity of the model chosen, is adequate for the combined weight of the user and any heavy powered wheelchair (which could weigh **140kg**) that may be used in the future.

Provision of portable ramps

These are not a satisfactory solution on a long-term basis, as they will not provide independence; however, they may solve an immediate problem of access in and out of a house, particularly to a terraced house which fronts directly on to the pavement. Ramp design has improved greatly in the last few years and semi-permanent ramps can be made to measure; portable ramps are easy to fold and are available in lightweight material which is comfortable to handle and easy to lift and place in position (see Chapter 8a *Equipment for Adaptations*, page 2).

Ensuring that external door(s) are suitable

The issues to be checked are the:

- ⇨ width;
- ⇨ threshold;
- ⇨ French windows vs sliding patio doors;
- ⇨ need for a fire escape;
- ⇨ need for an automatic door opener.

Width

Although ideally, doors should have a clear opening of **900mm**, external doors do not always need to be widened if access through them is straight and does not involve a tight turn.

Threshold

Raised threshold sills (including steel weather bars) will prevent access in a powered wheelchair, as the front castors will not rise over a vertical obstruction. This is particularly true of uPVC doors, which have become very popular.

- **Wintun RX100** is a compression threshold, where the gently curved metal threshold incorporates a central rubber projection that is depressed by a wheelchair, and is very satisfactory for both manual and powered chairs.

Wintun Ltd

- **A uPVC door** can be installed with a level access by sinking the frame into concrete to maintain its integrity and strength, but without a vertical seal at the base it may not be guaranteed weatherproof. It may be possible for this to be overcome by the installation of an open porch.

French window vs sliding patio doors

It is usually easier to provide level access with a glazed door (with adjacent window) than with sliding patio doors. Conventionally, French windows open outwards, particularly where space within the room is limited; however, the prevailing winds, the method of fastening the door/s when open and the need for an automatic door opener should be considered.

Need for a fire escape

It will be essential to provide French windows or a glazed door (with adjacent window) in a ground-floor bedroom if escaping from a fire would otherwise involve passing the kitchen, which is often the seat of the fire.

Need for an automatic door opener

There are two types of automatic door openers, infra-red and radio-controlled which operate on both conventional-opening doors and sliding doors. However, many are produced for commercial use and are particularly expensive and the models available for a domestic situation are limited. The models and the need are discussed in Chapter 8a *Equipment for Adaptations*.

For security, uPVC doors are fitted with multi-point locking. However, facilities are available for an automatic door opener to incorporate a self-relocking lock.

Ridley Electronics Ltd

RSL Steeper Ltd

Southern Care Systems Ltd

Independent access through internal doors

The issues to be considered are:

- ⇒ width of the clear opening;
- ⇒ type of door.

Width of the clear opening

Narrow hallways and difficult access problems will influence the need for wide doors. However, in most cases where the existing access does not involve a 90° turn, a clear opening (i.e. from the face of the door to the door jamb the other side) of between **850 – 900mm** will be satisfactory. If new building is planned, **926mm** doors are recommended. This will involve either using blank doors cut to size, having doors made to measure, or widening standard doors.

Type of door

There are three types:

- ⇒ conventional-opening doors;
- ⇒ double-swing doors;
- ⇒ sliding doors.

Conventional-opening doors

If the person is unable to reach with their arms, although standard doors can be closed with the weight of a wheelchair, opening the door will be difficult or impossible; leaving doors open limits privacy. Eventually, the only way that people with a neuromuscular condition will be able to open doors independently is by using double-swing doors or an automatic door opener.

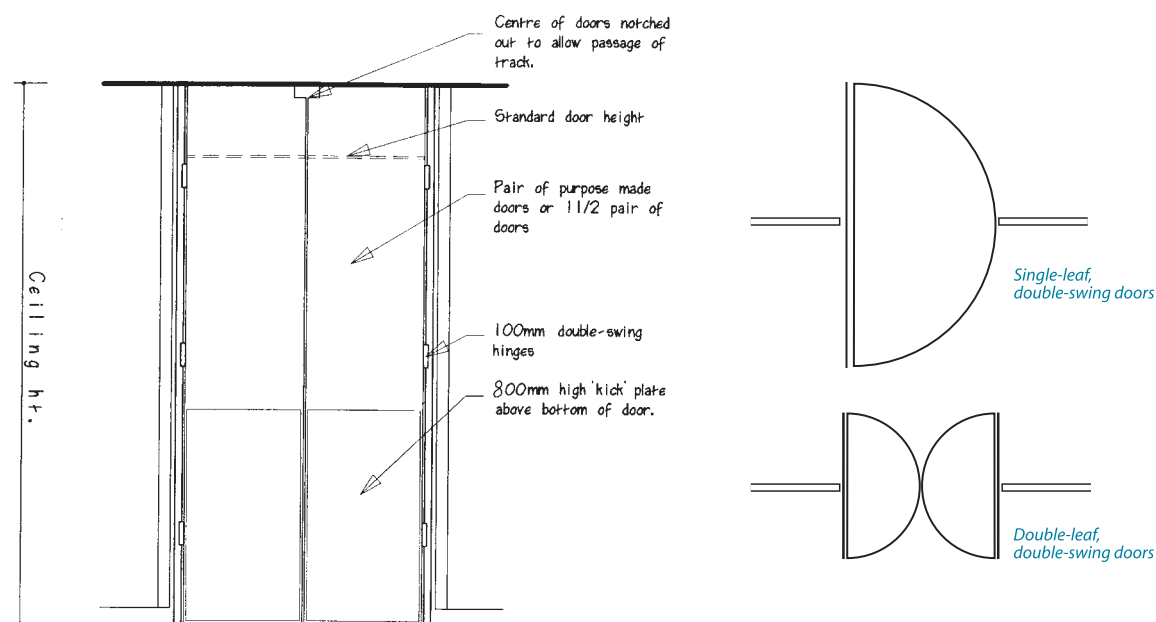
Double-swing doors

These move through 180° pushed with the footrests of the wheelchair. In relation to these doors, a number of decisions must be made:

- ⇒ choice between single-leaf or double-leaf doors;
- ⇒ which doors to alter;
- ⇒ door material and hinges;
- ⇒ safety issues;
- ⇒ the need for door-protection 'kick' plates.

• Choice between single-leaf and double-leaf doors

- **Single leaf.** Usually the first choice for a bedroom, as a single door will provide greater privacy and draught exclusion; however, there may be circumstances where one leaf swinging either into or out of the room takes up too much space.
- **Double leaf.** An alternative to be used where an extended ceiling track has to pass through the opening between a bedroom and bathroom, for example, or where space is limited and it would be an advantage for the size of the door leaf to be reduced.



- **Which doors to alter**

Parents of a disabled child may decide it is adequate to install swing doors on the child's bedroom and bathroom only, but often adults who use a wheelchair choose to have all their doors altered.

- **Door material and hinges**

- **Material.** The weight of the door is crucial to ensure that it is not too heavy to be pushed by a wheelchair and a ply-faced (for painting) flush, internal door with door-protection plates is recommended – for use with the hinges below.

- **Hinges. Liobex 100mm double-action spring hinges** are recommended. It is important that the weight of the door is suitable for this size, because if the door is too heavy and **150mm** hinges are needed, it may be impossible for the door to be opened with a wheelchair.

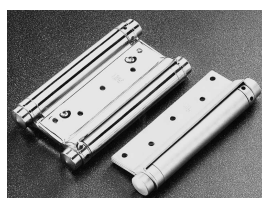
To install Liobex hinges correctly it is necessary to have or fix a plant down on the hanging frame. Ideally the width of the plant should be the same dimension as the thickness of the door. The thickness of the plant should be sufficient to allow the hinge cylinders to rotate freely after the lipped face has been morticed in. The other lipped face should be morticed into the door, ensuring that both cylinders are free to rotate and that standard door/plant clearance is maintained.

The capstan should be fitted at the top on the plant, and at the bottom on the door. This configuration will ensure optimum efficiency and minimum wear.

Normal installation should be **250mm** from the top and bottom of the door, but because the doors are ceiling height a third hinge should be fitted. Take care to ensure the centre line of the hinges is aligned.

Normal operation of the hinge is achieved by tightening both capstans on each hinge and inserting the pins provided. Normally the top hinges will not require more than three holes, and the bottom hinge two holes. It is important that the capstans are not overtightened. Liobex hinges are lubricated before despatch, but should be lubricated regularly to maintain trouble-free operation.

D & E Architectural Hardware Ltd



*Liobex
100mm hinges*

- **Double-action pivot set hinges** allow the door to swing through **180°** and are easy to push, but because they are not spring loaded the door does not close automatically. For this reason, they may be a better choice for adults who are still able to walk, but are unsteady on their feet.

However, if they are in a wheelchair and there is insufficient space to get the chair behind the door to close it with the footrests, they would need to be able to reach with their arms.

D & E Architectural Hardware Ltd

- **Safety issues**
 - **Viewing panel.** Although in the past it was considered to be a wise precaution to install a glass panel, with hindsight these are not felt to be necessary as the person's movements can be anticipated by the sound of the chair motor – and a glass panel has the disadvantage of reducing privacy.
 - **Vulnerable children and adults.** If adaptations are carried out while the child or adult is still able to walk and they are unsteady on their feet or are likely to be unsteady in the future, swing doors will be a potential hazard. At this stage the door can be wedged open; however, care must be taken if there are younger children either living in the home or visiting regularly.
- **The need for door-protection 'kick' plates**

These are not always considered necessary on all doors and some may prefer the alternative of repainting their doors regularly. However, 'kick' plates are recommended to protect the door where it is opened by the weight of a wheelchair. They should be fitted at the bottom of the doors, on both sides.

 - **Size/height.** The height from the bottom of the door to the top of the plate should be either **400mm** to avoid damage from the side 'kerb climbers' on the wheelchair, or **800mm**, to cover also the mark left by the wheelchair armrests and/or tray.
 - **Material.** Yeoman Shield textured door-protection plates are manufactured in impact-resistant uPVC, and are easily fixed using double-sided adhesive tape. 34 colours are available and will be more acceptable than metal plates, which may have dangerous sharp edges and which tend to look institutional. (In the past, Perspex was recommended, but it has proved unsatisfactory as it cracks. The additional disadvantage of Perspex is that it preserves the colour of the paint and as the colour of the exposed part of the door changes, the result is a two-tone door.)

Harrison Thompson & Co Ltd

Sliding doors/need for automatic door opener

There are situations where there is insufficient space to install double-swing doors and architectural designers want to use sliding doors. Considerable arm strength, and the ability to reach when using a wheelchair, are needed to open a sliding door and this type of door therefore, is unsuitable for anyone with a neuromuscular condition unless fitted with an automatic door opener. However, it must be ensured that the runners do not impede wheelchair access and are compatible with ceiling track hoists. The weight of the door may affect the soundproofing.

Ridley Electronics Ltd

Recommended size of rooms

Questions are frequently asked in relation to the optimum size of the rooms. These are difficult to answer without knowing the ease of access to the rooms, the shape of the rooms, the number and size of windows, and how an extension (if one is to be built), will dovetail on to the existing house. Instead, it is more constructive for the architectural designer to be given an accurate brief early in the process; when the essential features and space dimensions have been considered, these will determine the size of the rooms, (see Chapter 14 *Scales & Templates*). The size of the bathroom and the bedroom are discussed in the relevant sections in this chapter.

Use of existing rooms

In planning adaptations, the suggestion is often made that an existing room should be used to provide new facilities for the disabled person. The rooms frequently targeted are the dining room, spare bedroom and temple or prayer room. The viability will depend on the present use and need for the room - and reference should be made to the discussion in Chapter 4 *Assessment of Need*.

Bathroom

The following will need to be discussed:

- ⇒ en-suite facilities;
- ⇒ bathroom size;
- ⇒ bath;
- ⇒ level-access shower;
- ⇒ toilet;
- ⇒ rails;
- ⇒ washbasin;
- ⇒ flooring;
- ⇒ colour scheme.

En-suite facilities

The bathroom must be en suite with the bedroom to allow the option of using an extended track either immediately or in the future. Also, it enables the person to transfer within the privacy and warmth of the two rooms. Severe disability can result in great loss of dignity and it is important that this is prevented.

Bathroom size

This will depend on the following:

- the fittings necessary;
- space needed around the fittings;
- space needed by carers;
- the circulation of the wheelchair.

These issues are included in Chapter 14 *Scales & Templates*.

The bathroom is considered before the bedroom, because in the bathroom, five major decisions must be made *before* the architect receives his brief:

- choice between a bath (with a shower over) and a level-access shower (the factors to be considered are in Chapter 7 *Bath vs Shower*);
- the degree of support needed in the bath or shower;
- the appropriate method of getting in and out of the bath or shower, either independently or with help;
- transfer between the bedroom and bathroom;
- the possible need for an extended track from the bathroom to over the bed, either in the short or long term, because of existing or anticipated difficulty, getting in and out of bed.

The assessment and options available are discussed in Chapter 4 *Assessment of Need* and Chapter 8a *Equipment for Adaptations*.

Bath

There are two issues to be considered:

- ⇒ the bathing options;
- ⇒ the need for a shower over the bath.

Bathing options

There are three recommended bathing alternatives to a shower, which should be considered before a decision is made.

- ⇒ Bath with a *Sunrise Medical Mermaid Ranger* or an *ASM Multi-System*;
- ⇒ *Arjo Sovereign/Solo* baths;
- ⇒ *Kingkraft Easibath Hi-Lift/Contour* bath.

Bath with a *Sunrise Medical Mermaid Ranger* or an *ASM Multi-System*;

Both are used with a mast mounted at the side (or end) of a standard bath in conjunction with a mobile chassis; however, in the case of the Multi-System, there is the alternative of using it with a ceiling hoist.

The following will need to be considered in relation to the choice of bath.

- **Acrylic vs steel**
Acrylic baths retain the heat better than metal baths and are warmer to the touch. However, the quality is important because if the acrylic is too thin it will crack and will not be resistant enough to withstand an occasional knock. Choice is important and families may prefer a steel bath.
- **Shape of bath**
The back of the bath must not be excessively sloped as this obstructs the bath seat and means that the Mermaid Ranger mast will need to be installed nearer to the taps, thereby reducing the space in front of the seat and restricting the leg room.
- **Length**
It is essential that the bath is a **1700mm** model to allow sufficient length for the Mermaid Ranger seat with the bather's legs extended – or the Multi-System.

- **Hand grips**
Many helpers find hand grips useful, although they may obstruct bath seats that straddle the rim of the bath.
- **Recommended models**
 - **Steel:** *Twyfords* New Luna (with optional slip-resistant surface and hand grips).
 - **Acrylic:** any model where the shape is as above.

Arjo Sovereign/Solo baths

These specialist baths are used with an extended track between the bedroom and bathroom. The baths and the tap options are discussed in Chapter 8a *Equipment for Adaptations*.

Arjo Ltd

Kingkraft Easibath Hi-Lift/Contour bath

These baths should be considered for a small, totally-dependent child. See Chapter 8a *Equipment for Adaptations*.

Kingkraft Ltd

The need for a shower over the bath

All the alternatives should include a shower over the bath (or with an extended hose from the taps) and the need is discussed in Chapter 8a *Equipment for Adaptations*.

Used with Mermaid Ranger

The shower should be wall-mounted at the *end* of the bath *opposite* the taps because this is easy for a carer to reach. If there is a space to enable a helper to move around the end of the bath to control the shower or lift off the shower head which is wall-mounted at the *side* of the bath, this will be equally satisfactory if the shower head is hand held and not used fixed to the wall. The alternative of having to lean across the width of the bath will be difficult for a helper and it will be impossible to contain the spray of water when the shower is used in the conventional way by others standing in the bath.

Used with Arjo Sovereign/Solo baths

The entire *Arjo* tap options for the Sovereign and Solo baths incorporate a shower. Alternatively, the baths can be used with a wall-mounted shower – or mixer bath taps with an integral shower head on a long hose. However, the last option will not be thermostatically controlled.

Used with Kingkraft Easibath Hi-Lift/Contour bath

These baths incorporate a shower.

Level-access shower

There are a number of options to be considered:

- ⇒ sloped floor;
- ⇒ tray;
- ⇒ Neatdek;
- ⇒ shower screen or curtain;
- ⇒ shower seat/chair;
- ⇒ shower rails.

Sloped floor

A slope to a corner drain is usually thought to contain the water more satisfactorily than a slope to a central drain. The gradient must be minimal to allow a disabled person with arm weakness to propel the shower chair up the slope and it is essential to ensure that the contractor is competent to lay the floor satisfactorily.

Tray

A shower must have level access (without a deep tray), although shallow trays designed to be used in conjunction with shower chairs are satisfactory provided that the access is level. These may be essential in an upstairs installation where there is limited floor depth, or may be recommended where it is vital to contain the water within a very confined area. If the shower area is to be surrounded by carpet it may be advisable to install a single course of tiles around the shower tray. Shower trays are discussed in more detail in Chapter 8a *Equipment for Adaptations*.

*Autumn Mobility Ltd
Creative Healthcare Ltd
Go Independent*

Neatdek

The Neatdek is particularly recommended because it has the advantage over a sloped tiled floor and most shower trays, in that it is absolutely level, making it easier to use a self-propelled shower chair, and provides a stable surface for a wheelchair positioned in the shower area. This will be particularly important if the shower area is adjacent to the toilet and doubles up as the transfer space at the side of the pan.

Go Independent

Shower screen or curtain

The difficulty in retaining water within the shower area and for a carer to stay dry, can be overcome by the use of half-height shower doors, either standard or made to measure, and either portable or wall mounted. However, these are more suitable for anyone who is independent in the shower, as it can be difficult for a helper to lean over the top of the screen. Where a helper is involved, a drop-down rail that incorporates a shower curtain may allow them to get closer to the person needing help to wash.

*Autumn Mobility Ltd
Go Independent
Pressalit Care Ltd*

Shower seat/chair

The recommended models are discussed in Chapter 8a *Equipment for Adaptations*.

Shower rails

Shower rails can be either:

- ⇒ fixed height;
- ⇒ variable height.

Fixed height

These are suitable when the disability needs are not progressive and easily identified or where help is not always at hand to adjust the equipment. A continuous hand rail will help anyone who is unsteady on their feet to walk safely from the shower or around the bathroom.

Variable height

These are more suitable when the height of the rail will need to be changed in the future.

Toilet

There is a need to consider:

- ⇒ position;
- ⇒ type.

Position

Centre of the pan to the nearest obstruction (including floor-level pipes) at the wall side should be **500mm**.

N.B. *A side-entry soil pipe may obstruct a superimposed chair used for support.*

There must be a minimum of **900mm** on the exposed side of the toilet, to allow space for wheelchair transfers. If the user transfers with the wheelchair at an angle of **45°** to the pan, **1500mm** will be preferable to accommodate the length of the chair and allow space for manoeuvring into position. This space will also allow the wheelchair to be reversed to turn to go out of the room.

Type

The choice is between:

- ⇒ close-coupled toilet;
- ⇒ low-level pan with long flush pipe;
- ⇒ shower toilet.

Close-coupled toilet

The pan must not be close-coupled, as this will not allow a Mermaid Ranger on its chassis – or some models of shower chair depending on their size and shape, to be aligned directly over the pan with the lid and seat raised.

Low-level pan with long flush pipe

This type of pan which has a standard-height pedestal is essential for use with a superimposed Mermaid Ranger or toilet/shower chair because the flush pipe can be lengthened to ensure that the seat of the chair lines up correctly with the pan below. The measurement between the front of the cistern and the front of the bowl must be **600mm**.

The most suitable method of ensuring that the flush pipe is the correct length is to ask the Mermaid Ranger supplier to have a chair in the house when the plumber is ready to install the pan.

Twyford Classic (or equivalent)

Shower toilet

This is equipment previously known as a combined toilet and wash/dry bidet. It should be used with a ceiling hoist rather than a superimposed Mermaid Ranger or shower chair, as the user's bottom forms a seal on the seat and the washing and drying action is more satisfactory than if there is a gap. To ensure flexibility in the seating position of the user, the ceiling hoist track should run front-to-back over the pan, rather than from side-to-side, unless a side transfer is used.

- **Clos-o-Mat**

A decision will have to be made whether a plinth (available in **25, 50, 75** and **100mm** heights) will be required; a super-sensitive switch must be supplied.

Total Hygiene Ltd

- **Geberit**

This is an alternative model and further details are included in Chapter 8a *Equipment for Adaptations*.

ESL Healthcare Ltd

Rails

For rails to be useful for anyone with arm weakness they must be at the correct height, in the optimum position, and capable of being raised out of the way when access is needed. Also, they must extend beyond the front of the pan, so that when rising, users have their hands in front of them. The ideal solution is the *Pressalit* support arms on horizontal and vertical brackets, so that their position at the side of the user and their height can be adjusted as necessary.

Washbasin

- ⇒ recommended models;
- ⇒ taps;
- ⇒ electric shaver point.

Recommended models

There are two recommended washbasins, both of which were designed for people with muscular dystrophy:

- ABW4/ABW4SP from *Astor-Bannerman (Medical) Ltd*. N.B. The mirror makes it unsuitable to position these washbasins in front of a window.
- Spectra from *Southern Care Systems Ltd*.

See further details and comparative chart in Chapter 8a *Equipment for Adaptations*.

Taps

Astor-Bannerman / Southern Care Systems

There is a choice between:

- manually-operated taps;
- touch-sensitive switches on a handset; or
- infrared controls installed within reach, on the basin surface in the optimum position for the user. See Chapter 8a, page 20.

Lever taps only

These are recommended for a family bathroom if the parents do not want electronic taps installed. It is important that the tap chosen has a lever of at least **150mm** and is a low tap so that the user does not need to reach up. The tap length is unlikely to be sufficient to allow hands to be washed under the outlet by anyone unable to reach, and these taps will not be suitable for independent use by a boy with DMD. Two taps are likely to be more satisfactory than a single tap in the centre of the basin, as this may be in the way if the user leans forward.

Electric shaver point

It is essential for a shaver socket to be accessible to the washbasin to enable convenient recharging of an electric toothbrush and to allow the use of a mains electric shaver. See Chapter 8a *Equipment for Adaptations*, page 21.

Flooring

This is discussed on page 22.

Colour scheme

Work carried out within the grants system will include a sum to cover a basic range of tiles. It is important that the applicant or their family should be given the opportunity to choose the colour scheme for the fittings and wall tiles and, where necessary, to pay the balance between the cost of the basic range and their preferred range.

Bedroom

The issues to be considered are:

- ⇒ en-suite facilities;
- ⇒ bedroom size;
- ⇒ ceiling hoist.

En-suite facilities

It is important that the bedroom is en suite with the bathroom to allow the option of being undressed on the bed and transferred with the ceiling hoist over the bed to either:

- a shower chair, Mermaid Ranger or ASM Multi-System, (the choice is discussed in Chapter 8a *Equipment for Adaptations*) and wheeled into the bathroom in privacy and within the warmth of the two rooms – or
- the bath and/or toilet on an extended track. See Chapter 9 *Hoisting*.

Bedroom size

It is difficult to be precise about the recommended minimum size of a bedroom. In addition to the shape of the room, access, the number and size of the windows and doors, this will be affected by the specialist needs. The most satisfactory solution is to ensure that the architectural designer is aware of the equipment and space required, and will subsequently design a room of appropriate size.

The detailed space implications are related to the following:

- ⇒ circulation space for a powered wheelchair;
- ⇒ French Windows;
- ⇒ door to bathroom;
- ⇒ bed;
- ⇒ standard storage units;
- ⇒ work/equipment surface.

Circulation space for a powered wheelchair

The maximum width of the average chair is **750mm**, the length, **1250mm**, and the diameter of the full turning circle should be **1700mm**.

French Windows

French windows or an external glazed door may be needed to provide access into the house, access to and from the garden or as a fire escape. This may be essential where an extension is built near to the kitchen, which is likely to be the seat of the fire.

Door to bathroom

This must be large, for a clear opening of **900mm** to be suitable for the use of a wheelchair – and an extended track to the ceiling hoist, installed either immediately or in the future.

Bed

This is likely to be a specialist bed and the following will need to be considered:

- ⇒ type;
- ⇒ size;
- ⇒ position;
- ⇒ space around the bed.

Type

An electric bed is likely to be needed when the person can no longer stand up from the edge of the bed or sit up independently. See Chapter 8c *Electric Beds*.

Size

- **Length:** All the recommended models are approximately **2155mm** in length
- **Width:**
 - Single: **1080mm**
 - Wide single: **1220mm**
 - Double: **2160mm**

Position

- A bed with the headboard in the centre of a wall will provide access on both sides (which is essential for a double bed for two people) but will restrict the wheelchair circulation in the bedroom.
- A single bed adjacent to a wall has the added advantage that the person can reach a wall-mounted light switch (see page 24 for installation position). A pull switch is likely to be both difficult to reach and to pull with sufficient strength to switch it on or off. However, there should be sufficient space at the side of the bed, to allow the bed to be pulled **1000mm** away from the wall, if/when access is needed for a carer on both sides.
- Ideally, the bed should be positioned so that the occupant can look out of the window when sitting up in bed.

Space around the bed

- **Side of bed for disabled user: 1800mm**, which is sufficient space for two adjacent wheelchairs to be positioned in order to use a ceiling hoist to transfer from one to another. It must be ensured that if the head of the bed is near to the bathroom door, that there is **1000mm** between the edge of the bed and the door frame to allow access on both sides of the bed (as discussed on previous page) without obstructing the doorway.
- **Side of double bed for partner:** Minimum of **1000mm**.
- **Foot of bed: 700mm** for a carer to move with ease and to be able to attend to the person's feet.

Standard storage units

Wardrobe: Min. 1000 x 600mm

Chest of drawers: 900 x 500mm

Work/equipment surface

The following need to be considered:

- ⇒ medical importance;
- ⇒ layout;
- ⇒ drawers;
- ⇒ shape;
- ⇒ depth;
- ⇒ length;
- ⇒ height adjustment;
- ⇒ position;
- ⇒ typical layout.

Medical importance

The need will be of greater concern to the OT than the architectural designer and therefore this has been covered in Chapter 8a *Equipment for Adaptations*. See also Chapter 11h *Justification of Working Surfaces*.

Layout

If standing is possible, there should be two separate surfaces for use either when in a wheelchair or when standing. Ideally, these should be adjacent so that if the 'standing' surface is no longer needed, it can be lowered (provided that this is not hampered by the height of the drawer unit), to lengthen the wheelchair-accessible surface.

Drawers

It is also essential to supply a storage unit, to be positioned under the standing surface. The recommended unit is made up of three drawers below a 'pull-out' surface, and these may be suitable for independent use because the drawers glide on runners. The pull-out shelf is useful for reference books when working at the adjacent surface.

Shape

For the lower surface, the aim should be to provide an L-shape so that, when the child or adult cannot lift up their arms, the computer keyboard can be placed across the right-angle with the adjacent surfaces used to support their forearms. The monitor can then be placed in the corner using the otherwise inaccessible surface and allowing sufficient space between the keyboard and screen.

Depth

The front-to-back measurement of the surface must be **600mm** to allow sufficient depth underneath for the length of the wheelchair, including footrests.

Length

The length will be determined by the space available, but ideally should be a minimum of: **1800 x 1200mm** for the L-shaped sitting surface and (depending upon the brackets used), either **600 or 800mm** for the standing surface.

Height adjustment

A height-adjustable system is important to allow the person to work at the optimum height and which can be altered when sitting in different wheelchairs or (in the case of children) with growth.

Decisions will need to be made in relation to the following:

- ⇒ height;
- ⇒ brackets.

- **Height**

The brackets should be positioned on the wall to allow the surface to be adjusted for:

- **wheelchair access: 700 – 900mm;**
- **standing: 900 – 1100mm.**

- **Brackets**

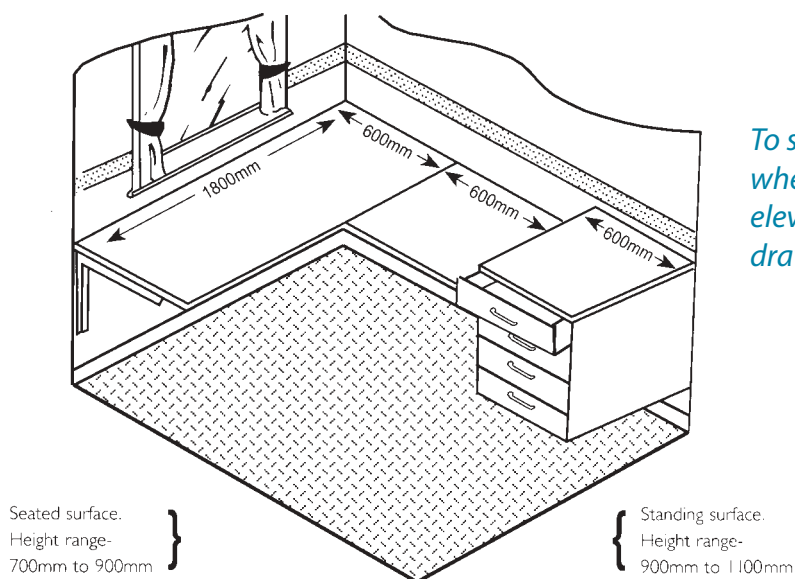
There are two options:

- **Huntleigh Renray.** These units are recommended as the wall rail and brackets are strong and well constructed and allow the height to be altered in 10 stages of **20mm**. The brackets fit behind the drawer unit. The firm will supply the complete package including a drawer unit and a melamine worktop, and in many schemes this may be easier to organise. Alternatively, **40mm** worktop can be bought locally to avoid carriage costs. As the child grows, if the height needs to be adjusted by more than **190mm**, the bracket position can be raised.
- **Astor-Bannerman.** This firm supplies brackets that allow infinite adjustment within the limit of **300mm**. Because they fit at the side (not behind) the drawers, and are **100mm** wide, an additional **200mm** width must be added to the length of the superimposed worktop.
 - A drawer unit can be obtained from: *Independence Kitchens* or *MFI/DIY* stores.
 - a **40mm** surface can be obtained from: *MFI/DIY* stores (at the same time as the drawer unit); or with the brackets direct from *Astor-Bannerman*.

Position

Ideally, the lower surface should be positioned in front of a window and in this case, if necessary, the maximum height of the surface can be lowered to **800mm** from the top of the surface to the floor.

Typical layout



To show layout of L-shaped wheelchair-accessible surface and elevated standing surface with drawer unit

The illustration is reproduced with kind permission of Huntleigh Renray Ltd. See also their leaflet concerning a sample order, which is included in the equipment literature.

Ceiling hoist

See also Chapter 9 *Hoisting* which discusses:

- the need for hoisting;
- the essential features required for people with neuromuscular conditions;
- the justification of the additional expense of a ceiling hoist rather than a mobile hoist;
- the factors to be considered when choosing between a wall-to-wall track in the bedroom only or with an extended track into the bathroom.

If a hoist is not needed immediately but is likely to be needed in the future, it will be necessary for the designer to be aware of the need to increase the loading on the joists supporting the track. The extent of the preparatory work will depend on the position of the track in relation to the joists and it would be prudent for any necessary work to be included in the plans (although the hoist may not be installed for several years). The supplying firm will be happy to advise about the optimum layout of the track, the joists and the electrical supply.

When the adaptations are planned the following must also be considered:

- ⇒ track;
- ⇒ position of used spur outlet;
- ⇒ model of hoist.

Track

Position

The track should be positioned parallel to the wall behind the bed headboard so that the centre of the track to the wall is **1020mm**.

Length

There are two options:

- ⇒ wall to wall across the bed;
- ⇒ wall to wall across the bed with the track extended into the bathroom.

The factors to consider in making the choice are covered in greater detail in Chapter 9 *Hoisting*, in addition to the need for an electric turntable or electric switched track.

- **Wall to wall across the bed**

The track should extend from the wall beside the bed for the minimum length needed to cover the floor area required for two wheelchairs, in order for the hoist to be used for transfers i.e. **1800mm**. However, ideally the track should extend wall to wall to ensure it is less obtrusive and to allow the hoist to be charged in the bedroom, but not over the bed. Exceptionally, there may be a situation where this is impossible because there is a door opposite the bed and insufficient space above the door for the hoist.

- **Wall to wall across the bed with the track extended into the bathroom**

This should pass front to back over the bath seat (swung out of the bath) and the toilet – particularly for use with a shower toilet to allow adjustment of the user's position on the seat.

Position of fused spur outlet

This power socket should be installed on the wall at ceiling height at one end of the length of track that is not above the bed position. If a hoist is not needed immediately, it is still wise to install the outlet so that the decorations do not have to be spoilt in the future. A rechargeable-battery hoist model is recommended, as there is no dangling cord between the electrical supply and hoist motor and is suitable for an extended track – either installed initially or in the future. Anyone with acute hearing may be kept awake by the buzzing sound of the hoist as it charges. If the hoist is charged in the bedroom, it is advisable to install a pull-cord or accessible switch to enable the carer to turn off the hoist or alternatively to charge the hoist during the day.

Model of hoist

Six models are recommended as they have sensitive light-touch controls and the slings are particularly suitable for people with neuromuscular conditions – in addition, the spreader bars are available (either as standard or as a special order) with three sling hooks on the end, and with a **360°** swivel.

See Chapter 9 *Hoisting* for details of electric turntables/switched tracks, room-covering hoists and recommended models.

Floor surfaces and coverings

The following should be considered:

- ⇒ shower/bathroom;
- ⇒ bedroom;
- ⇒ other areas;
- ⇒ coconut matting/outside tap.

Shower/bathroom

Among the alternative floor surfaces are non-slip ceramic tiles, *Altro* safety flooring, *Nairn* Surestep tiles, *Marley* Safetred Aqua and Dimension – and other types that might be recommended by the architectural designer. The disabled person or the parents usually appreciate being asked to make the choice.

Where the bather is able to walk but is unsteady, the surface may be crucial. Although this must be non-slip, the surface must not be too abrasive as the texture grips the sole of the shoe and makes it very difficult to lift the foot. In addition, the alternatives must be practical to clean; a conventional *Altro* surface, which is used in so many installations, might be considered to have too much ‘grit’ in the surface - and raised projections should be avoided, as these harbour dirt around the edges.

Bedroom

As in the bathroom, the surface must be suitable for people who are able to walk, but have difficulty lifting their feet and/or for those in wheelchairs. The choice is likely to be carpet and it will be important that the pile is not so thick that it will be resistant to the wheelchair. *Flotex* is a very hard-wearing carpet and has been used with success for many years and this has to be balanced against its utilitarian appearance.

Bonar Floors Ltd

Other areas

A compromise might be hardwood (or laminated) floors, which are very suitable for a wheelchair although the surface might be damaged by grit on the chair wheels. However, these may not be suitable for anyone with any degree of difficulty in walking; if this type of flooring is used, to ensure safety it will be important that it is neither polished nor covered by rugs.

Coconut matting/outside tap

A tap outside the house, in a convenient position for attaching a hose to wash the muddy wheels of a chair, is a thoughtful provision. This can be complemented with a large well with a generous area of wall-to-wall coconut matting immediately inside the wheelchair-accessible door, in order to dry the wheels before entering the house. The depth of the well must precisely match the depth of the matting, to ensure that the rim of the well does not impede wheelchair access. If in the future the matting becomes worn or flattened, it can be raised; one suggestion is to use a layer of carpet underneath. Although the matting is heavy to lift and shake, it can be vacuumed. It is now available in colours.

Electrical fittings

These cover the following:

- ⇒ light switches;
- ⇒ power points;
- ⇒ smoke alarm.

Light switches

There are four issues to consider:

- ⇒ height;
- ⇒ space at either side of the switch;
- ⇒ position in the bathroom/bedroom;
- ⇒ type.

Height

Anyone with a neuromuscular condition is unlikely to be able to raise their arms; the height of the sockets and light switches must therefore be lower than the height usually recommended for wheelchair use.

The ideal height of **700mm** from the bottom of the switch to the finished floor level (FFL) is influenced by the height of the wheelchair armpads. At this height the hand and forearm can be moved sideways and horizontally to touch the switch, while the elbow remains supported on the wheelchair armpad.

Space at either side of the switch

The limited arm movement and inability to reach makes it necessary to approach the switch with the wheelchair parallel and close to the wall. Therefore, there must not be any obstruction **600mm** on either side of the switch.

Position in the bathroom/bedroom

Bathroom light

A wall-mounted switch outside the bathroom is recommended because it is easier to use than a pull cord. Also, it enables the person to go into a pre-lit room, as it is difficult to manoeuvre into the room and turn on the switch simultaneously.

Bedroom lights

Three-way switches are needed:

- ⇒ outside bedroom;
- ⇒ by the bed;
- ⇒ in an accessible position.

- **Outside bedroom**

As above, a switch outside the room will be ideal, in addition to two switches in the bedroom.

- **By the bed**

This is to be used when in bed. Position precisely to ensure that the switch is accessible when the person sits up using an electric bed, as they will not be able to reach behind the backrest of the bed as it rises vertically.

- **Position:** 1020mm from the wall behind the bed headboard i.e. directly under the hoist track.
- **Height:** 760mm from the base of the switch to the finished floor level. This recommended height is higher than other switches in order to clear the mattress and bedding when the electric bed is at its minimum height. The light switch is essential because a lamp on a bedside table would not be suitable for independent use because of the inability to reach. See power points by bed (page 26).

- **In an accessible position**

When the natural light fades, for anyone in their bedroom it is important to be able to switch on a light without having to go out of the room. As it will be impossible to reach the light switch at the side of the bed, a switch must be positioned in an accessible position. If the bedroom has an external door, the optimum position might be at the side of this door, to be used also when coming in from the garden.

Type

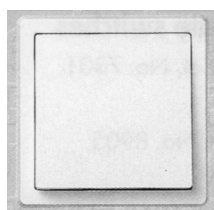
The pressure required to operate switches is important. Standard switches and pull cords are likely to be too difficult to use, as they require too much finger strength or downward arm pressure, respectively. However, there are several alternative solutions, as follows:

- ⇒ Clipper switches;
- ⇒ touch-sensitive switches;
- ⇒ remote-control switches.

Clipper switches

In these large rocker-type switches the whole front plate moves to operate the switch and requires less pressure than a standard switch.

Legrand Electric Ltd



*Tenby Clipper
light switch*

Touch-sensitive switches

These are dimmer switches which are operated by contact with some part of the body; although it is necessary to maintain the contact with the switch to dim the light, one light touch only is needed to turn the switch on and off.

Intelliswitch: Argos
Superswitch: electrical retailers

Remote-control switches

This type of switch is marginally more expensive, but is recommended for anyone unable to move their arms, as previously discussed, or where there is no suitable accessible position for a switch.

Superswitch: electrical retailers

Power points

The following will be needed:

- ⇒ **13amp** sockets;
- ⇒ TV power point and aerial;
- ⇒ phone socket;
- ⇒ wheelchair-charging socket;
- ⇒ electric shaver point;
- ⇒ fused spur outlets.

13amp sockets

The issues to be considered are:

- ⇒ type;
- ⇒ number needed;
- ⇒ position/height.

Type

Switched sockets should be installed, because some users will be able to turn them off either by reaching with their fingers or with the use of a 'reaching stick'. Over the bedroom work surfaces and kitchen units, an alternative to installation on the wall is to use sloped socket boxes positioned on the worktop.

Number needed

- **General use**

As a person with a neuromuscular condition will depend heavily on electrical equipment (such as an electric bed) there is the need to include more than the average number of sockets.

- **Use with an environmental control**

A number of additional sockets will be needed for use with the accessories linked to the environmental control. It is practical to install these when the adaptation is being carried out, but the exact position is not always known. The feasibility and forward planning should be discussed with the representative when the meeting is held to assess the facilities and the client's needs.

Possum Controls Ltd
RSL Steeper Ltd
SRS Technology Ltd

Position/height

- **By bed**

1 x twin socket at a height of **700mm** for use with items positioned on a bedside cabinet (e.g. clock or table lamp) or above a wall-mounted shelf at the side of the bed, see Chapter 14 *Scales & Templates*. The bottom of the shelf must clear the maximum height of the bed. The items can be reached from the shelf only when the bed is at its maximum height.

- **Foot of bed**

1 x twin socket at skirting-board level. If this socket is placed marginally under the foot of the bed, it will ensure that the electrical cords from the powered bed will remain out of sight and avoid a potential hazard.

N.B. The length of the bed is longer than standard (i.e. 2155mm).

- **Over work surfaces.** If the surfaces are height adjustable, it will be necessary to install either:

- sloped sockets boxes on the surfaces;
- wall-mounted sockets to clear the maximum height. Allowing for inflexibility of the cord immediately below the plug, the height is:
 - 2 x twin sockets above the sitting surface – bottom of socket to FFL: **1100mm.**
 - 1 x twin socket above the standing surface – bottom of socket to FFL: **1300mm.**

TV power point and aerial

Most young people want a TV in their bedroom and the position is usually chosen so that they can watch from the bed.

Phone socket

This may be important for use with an environmental control, both when in bed and when sitting at the work surface.

Wheelchair-charging socket

Position

Wet batteries give off fumes, although this is not a problem with dry batteries. As no one can be certain which type of battery will be used in the future, it should be planned to charge the chair outside the bedroom. There must be a designated area for charging the wheelchairs, with the provision of an adjacent electrical socket and background ventilation; this must not be in a cupboard where there is insufficient circulation of air.

Shelf for charger

It is convenient to provide a shelf below the charging socket on which to stand the charger in order to avoid stooping and the need to lift the charger when vacuuming or cleaning the floor.

- **Width: 500mm**
- **Depth: 300mm**
- **Height: 850mm** to enable a wheelchair to be positioned underneath.

See wheelchair and equipment storage on page 29.

Electric shaver point

This should be installed adjacent to the washbasin for the convenience of recharging an electric toothbrush and the use of a mains electric shaver.

N.B. The Astor-Bannerman washbasin has an integral shaver point.

Fused spur outlets

These will be needed for the following equipment:

- ceiling hoist. This power socket should be installed on the wall at ceiling height at one end of the length of track, preferably in the bedroom but not above the bed. If a hoist is not needed immediately it is still wise to install the outlet so that the decorations do not have to be spoilt in the future. A rechargeable battery model is recommended, as there is no dangling cord between the electrical supply and hoist motor, and is suitable for an extended track installed either initially or in the future.
- electrical height-adjustable washbasin;
- shower toilet;
- wall-mounted bathroom heater/*Apres Shower Dryer*;
- electrical height-adjustable shower seat;
- specialist bath;
- automatic door openers;
- electric shower. A dedicated circuit from the consumer unit (to a fused spur outlet) will be needed.

N.B. *In each case, individual firms should be consulted regarding the optimum position.*

The installation of all equipment needing an electrical supply should be in accordance with the current edition of the Institute of Electrical Engineers (IEE) regulations.

Smoke alarm

Although it is a requirement of Building Regulations that a smoke alarm is wired into the electrical system in all new buildings, this does not include extensions. However, many Grants Departments now require that they are fitted and are included in the grant schedule. This is a wise precaution in a house with a ground-floor extension – in view of the fact that house fires usually break out downstairs and the child's parent/s will probably be sleeping upstairs. A mains alarm eliminates the responsibility of seeing that the battery is replaced regularly.

Heating

The factors to be considered are:

- ⇒ temperature;
- ⇒ type of heating;
- ⇒ heating controls;
- ⇒ justification for funding.

Temperature

Muscles are the main source of heat production and maintenance of body temperature; cold muscles do not work as well as warm muscles. Therefore, the severe muscle wasting of neuromuscular conditions, coupled with the inevitable lack of mobility, means that it is essential to provide a higher-than-average level of heating (i.e. 21° – 24°C) in both the bedroom and bathroom. This is particularly important in the bathroom, especially where it has more than one outside wall.

Type of heating

The choice is between one or more of the following:

- ⇒ radiant heater;
- ⇒ central heating;
- ⇒ booster heater/bathroom;
- ⇒ body dryers;
- ⇒ bathroom towel rail.

Radiant heater

Most people find it warmer and more comforting to sit by a source of radiant heat, but as these normally would not be left on when everyone is out of the house, they should be supplementary to a satisfactory form of central heating.

Central heating

The source of heat must be constant and controllable. It is important that when the disabled person arrives home, the house is pre-heated to the correct temperature; therefore, the house must have central heating rather than relying on radiant heaters only. Night-storage heaters are not adequate because the heat cannot be controlled or boosted when necessary.

Booster heater/bathroom

In addition to central-heating radiators, it will be necessary to install a wall-mounted fan heater in the bathroom. This is important to allow the instant heat to boost the temperature prior to bathing in the winter, or to be used when the central heating is turned off in the summer.

Dimplex

Apres Shower Body Dryer

This can be used as an alternative to the above, with the additional bonus of drying the body independently after bathing or showering.

*Apres Shower Dryers Ltd
Go Independent
Total Hygiene Ltd*

Bathroom towel rail

This is a comforting 'luxury' that can be installed in combination with the central-heating radiator, or separately as an additional source of heat.

Heating controls

These must be positioned where they will be accessible and at the correct height if it is necessary for the user to be able to control the system. See siting of electrical light switches on pages 23 – 24.

Justification for funding (see Chapter 11i)

Grant eligibility is based on medical need only. The validity of the discussion regarding the temperature in the house should be confirmed with the hospital medical consultant if the need has to be established for the central heating boiler and radiators to be grant eligible. It would not be expected that the grant would cover radiators needed in rooms that are not used by the disabled person.

Intercoms

It will be necessary to install an intercom in the bedroom of a child or adult to call their parents or carers.

There are two types:

- ⇒ models which plug into a **13amp** socket;
- ⇒ intercoms linked into an environmental control.

Models which plug into a 13amp socket

These are more convenient than transmitters and receivers linked with a cord, as they can be moved from one room to another.

Intercoms linked into an environmental control

If an extension is being built for a teenager or adult, it may be appropriate to consider the need for an environmental control so that adequate additional twin switchless **13amp** sockets can be installed when the building work is carried out.

Intercoms are provided within the facilities included in these systems, which are supplied through the National Health Service and are discussed in Chapter 8a *Equipment for Adaptations*.

Wheelchair and equipment storage

Many people who need a powered wheelchair have two chairs and a transit chair, in addition to such items as standing frames; if the family either does not have a garage, or the garage is too small, storage can be a nightmare. Therefore, it is necessary to make suitable provision, particularly where previous storage areas have been used to provide new accommodation in the adaptations. See Chapter 14 *Scales & Templates*. The area designated for the storage of the wheelchairs may be the appropriate place to charge the chairs.

Ingredients of a first-rate adaptations scheme

Successful completion of a scheme will depend on a number of important factors as follows:

- ⇒ a competent assessment;
- ⇒ involvement of the disabled person and/or the family or carer;
- ⇒ the architectural brief;
- ⇒ an experienced architectural designer;
- ⇒ the architectural service provided;
- ⇒ choice of builder;
- ⇒ inspection of building work.

A competent assessment

This must reflect the specific needs of the disabled person and their carer/s. See Chapter 4 *Assessment of Need*.

Involvement of the disabled person and/or the family or carer

Where necessary, explanation of the plans and good communication/liaison between everyone concerned will ensure that the people for whom the adaptation is being carried out will feel that they have received the help needed.

The architectural brief

A comprehensive and accurate architectural brief is vital. Please use Chapter 10 *Disability Needs Assessment Form* in conjunction with this adaptation information because it has been designed to:

- identify the options relating to the individual needs;
- provide a time-saving method of recording the decisions made;
- provide an architectural brief for the drawing of the plans;
- consider the funding options;
- act as a check-list to ensure that all the details have been included.

An experienced architectural designer

It is important that the architectural designer understands the needs of people with a neuromuscular condition and that they have access to this manual. Choosing a designer from the *Muscular Dystrophy Adaptations & Building Design Network* will be a good start because they are aware of the specific needs, but it does not mean that other designers will not be equally competent.

The architectural service provided

Excellent plans can be drawn, which may fail to produce the perfect end result because they are not carried out as intended. The best outcome will be achieved if the architectural service includes the inspection of the building work and seeing the scheme through to completion. Grants should cover this work, and applicants should be aware of the level of service to be provided.

Choice of builder

Builders are usually chosen because they have submitted the lowest tender; however, one or two problems may arise:

- lack of understanding of the disability needs and no experience of adaptations;
- making inappropriate suggestions and changes;
- lack of continuity on site;
- lack of respect for the family and property when on site;
- ignorance of how to leave the site safe.

Now that the *Muscular Dystrophy Adaptations & Building Design Network* has been set up, each architectural designer will be able to give advice about choosing the right builder.

Inspection of building work

In spite of the care taken by architectural designers to include all details in the plans or job specifications, builders do not always appreciate the need to interpret all these instructions precisely. It is vital, therefore, in addition to inspection of the work by the designer, that the grant applicant and/or their carers, appreciate the reasons for each recommendation so that, where necessary, they know that the architectural designer must be alerted if they feel that mistakes are being made.

It is advisable (but not always possible) for the OT to visit regularly while the builder is working. It is essential that the disabled person or the family keep their OT or Muscular Dystrophy Family Care Officer in touch with the progress, so that the installation of fittings from the disability point of view is checked before the builder leaves the site.