



Institiúid Teicneolaíochta Chorcaí
Cork Institute of Technology

ARCHITECTURAL TECHNOLOGY

Fire and Safety 2

Year 4

Semester 2

Aidan Walsh

R00060057

Lecturer: Andrew Macilwraith

24th April 2013

Contents

Introduction	1
General	2
Doors	2
Stairs	4
Conclusion	6
Bibliography	7

Introduction.

The purpose of this paper is to prepare a detailed report on a topic chosen to in class. The topic I have chose for this report is:

" Investigation into electronic accessible features suitable for a historic building"

This topic falls under the section "accessibility solutions for protected structures". The historic building I am looking at for my studio module is the Quad building, which is located on the UCC campus. It holds a holds a significant historical presence within the city and therefore it is important to try and find ways of making the building more accessible without affecting its appearance and materials. There are lots of different levels located within the Quad as well as large heavy doors. These greatly reduce the accessibility of the building for people with certain disabilities. This Report will look at electronic features that will make the building more accessible and are suitable for the Quad building.

The Quad



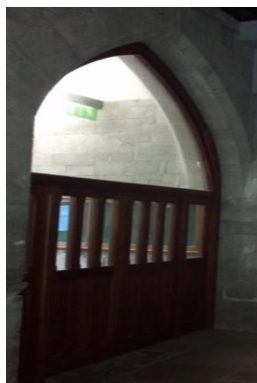
" Investigation into electronic accessible features suitable for a historic building"

General:

There are lots of electronic accessible features available on today's markets. However only certain electronic features would be deemed suitable for historic buildings. The following pages will look at how certain electronic features could be used on the Quad building in UCC in order to make it more accessible to a wider range of people. The Quad is the most historic building on the UCC campus and therefore careful consideration must be given to possible material changes or alterations. The use of electronic equipment may affect the appearance or performance of the building. Therefore it is important to ensure that the electronic features I am choosing are in fact suitable for the building.

Doors:

The first aspect of the building I am going to look at is the entrance doors into the Quad building. Most of these doors are big heavy doors and make the building quite difficult to open for a wide range of people with disabilities.



The previous picture shows an example of the kind of door that is located around the Quad. There are several ways of eliminating this problem. However most of these would affect the historic nature of the Quad building. One way of solving the problems with the doors would be to use automatic door openers and closers.



These door openers/closers can be controlled by either a sensor that will open it automatically or a push button that when pressed would open it automatically.



These are the kind of push buttons you would expect to find when using this type of system. They would be located both internally and externally. This electronic system is suitable for the Quad building as it allows you to keep the original doors. It can be seen as a minimal form of intervention as you are keeping the original materials and will not be overly affecting their appearance. There are many advantages to using this type of system and they are as follows:

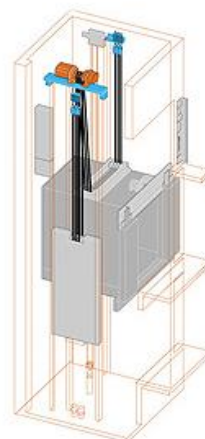
- Very easy to commission – for both new and old doors: install, connect to power, set parameters, ready.
- Push-and-Go: immediate opening upon manual pushing or pulling the door.
- Silent, electromechanical drive with recirculating ball screw.
- Sturdy built-in open-end stop does away with external stoppers.
- In case of obstacles in opening direction, immediate reversal of direction of motion thanks to integrated electronic power monitoring.
- In case of power failure, easy to open manually with controlled closing by means of an integrated spring.
- Sliding lever can be upgraded with a panic device for installation to emergency exit doors.
- Adjustable latching control to ensure correct closing of door.

Some of the internal doors may also require the installation of this apparatus as they may not be accessible to certain people.

(<http://www.edsuk.com>)

Stairs:

The Quad consists of a Ground and first floor. There is also a second floor but this has not been looked at for the purpose of this project. Between the ground and first floor there are several different levels throughout the Quad building. In order to make the upper levels of this building more accessible an Otis lift would be installed. Although this may be seen as a major form of intervention it is necessary. Without a lift it is impossible for people with disabilities to reach the upper levels.



There are certain rooms in the building where a lift can be placed without interfering with the historic nature of the building on a large scale. The lift I have chosen is Otis Gen 2. This lift is perfect for the building as it does not require a service room unlike other lifts. This lift can be seen in the graphic on the right on the previous page. The lift is designed for buildings between 2 and 30 stories in height.

"This system employs a smaller sheave than conventional geared and gearless elevators. The reduced sheave size, together with a redesigned machine, allows the machine to be mounted within the hoist way itself—eliminating the need for a bulky machine room on the roof."

<http://www.otisworldwide.com>

As this elevator does not require a service room on the roof it means there will be less damage done to the original building and much less of a visual impact on the historic building as there will be no machinery coming out on the roof. Although this system requires the partial cutting away of floors it is still the best way to gain access to the upper floors. There are many advantages to using elevators which are as follows:

- It can be easily installed in an older building.
- It is an effective way of transferring people and heavy materials from floor to floor.
- It allows a building to be more accessible.
- They come in many different shapes and sizes and can be used as a design feature within the building.
- It helps make a historic building more modern.

Another issue in this building is the different levels located within the ground and first floor levels. On the ground floor alone there are several different levels with 2 to 5 steps between them therefore it would not be feasible to use an elevator. Where this is the case a platform chair lift can be used. These chair lifts come in a variety of styles and designs, two of which can be seen in the images below. The lift on the left goes straight up and down and requires a certain amount of floor space. The lift on the right is attached to the wall and runs up along the stairs and it folds out from the wall.



These chair lifts are very imposing and not very aesthetically pleasing to the eye. However they are effective and will have minimum impact on the original Quad building. This type of lift can be installed and removed from the building quite easily and will cause minimal damage. It will allow much more parts of the building to be accessible. The advantages of these chair lifts are as follows:

- Quick and easy to install.
- Will allow disabled people access to places that they were previously incapable of accessing .
- Can be easily uninstalled.
- Ideal for a short number of steps in a historic building.

Conclusion:

In conclusion there are many electronic accessible features available on today's market. However when choosing these features for historic buildings careful consideration must be given. The features I have chosen above are what I believe to be the most suitable electronic features for the Quad building. Although some of them may seem quite extreme(the Otis lift), they are the most suitable for the historic nature of the Quad. For the most part they are reversible, which is an important issue in terms of conservation. The lift may not be a reversible form of intervention but it is necessary and without it certain disabled people would be incapable of making it to the upper floors. I conclude that the above features are not only needed but are in fact necessary in order to bring this building up to a standard so that all people can use its facilities no matter what their disability.

Bibliography.

<http://www.edsuk.com/item.php?id=258#4>

<http://www.kmthomas.ca/64-automatic-door-operators->

<http://www.advancesystems.ie/solutions/access-control/automatic-doors.html>

<http://image.made-in-china.com/>

<http://www.otisworldwide.com>

<http://www.otisgen2.com>

<http://www.hiro.de/images/hiro-450-wheel-chair-platform-lift-berlin-ro.jpg>

<http://www.signatureelevators.com>